



ADAPTATION FUND

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PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY: Regular Project
COUNTRY/IES: Solomon Islands
TITLE OF PROJECT/PROGRAMME: Enhancing resilience of communities in Solomon Islands to the adverse effects of climate change in agriculture and food security (PIMS 4451 Atlas IDs Proposal 00059792, Project 00074942)
TYPE OF IMPLEMENTING ENTITY: MIE IMPLEMENTING
IMPLEMENTING ENTITY: United Nations Development Programme (UNDP)
EXECUTING ENTITY/IES: Ministry of Environment, Climate Change, Meteorology and Disaster Management (MECMD) through its Climate Change Division, and the Ministry of Agriculture and Livestock (MAL)

AMOUNT OF FINANCING REQUESTED: USD 5,533,500 (IN U.S DOLLARS EQUIVALENT)

PROJECT / PROGRAMME BACKGROUND AND CONTEXT:

Geographic and socio-economic vulnerability context

East of Papua New Guinea, Solomon Islands is located in a cyclone zone and has a very diverse population of 510,000 (2009), over 900 islands and a total land area of 28,000 square kilometers. Of the total land area 77% comprises non commercial forest and cleared land, 13% is unlogged commercial natural forest and 10% logged over natural forests. Much of the forested areas are on slopes greater than 30 degrees and above the 400 meter contour. Log exports have been the main source of government revenue over the past years rising to as much as 60% of total national income. Unfortunately this has been at a cost to the environment with a lot of land area now compacted and difficult for colonization and re-growth by pioneer forest species and for cultivation by local communities.

The archipelago comprises the larger mountainous islands of volcanic origin, small low lying islands in atoll settings, uplifted coral islands and man-made artificial islands of rock which are home to thousands of

inhabitants. The bigger islands have low coastal areas that are already experiencing inundation and loss of coastal vegetation. Much of the country has abundant though very fragile water resources. Mountainous islands have delicate watersheds and are dissected by rivers and streams while low lying atolls and islets depend on rain and aquifers as the main sources of water. On the bigger and higher islands the quality of water is deteriorating as a result of logging, mining and slash and burn farming while pollution and salt water inundation are the biggest threats to water quality and availability on low lying islands.

Solomon Islands population is growing at an annual rate of 2.8% making it one of the highest in the world (SIG Population Report, 2000). At this rate the population will double around 2025 placing extreme pressures on the national accounts with the economic growth rate currently below the population growth rate. Approximately 41% of the total population is under the age of 14 years, indicating a very high youth dependency ratio. The rate of population growth over the past 20 years now places the country in a situation where this rate is now higher than the economic growth rate, causing serious concern about the country's capacity to cater for the increasing population. About 85% of the population live in rural villages comprising of 65,000 households averaging six people (SIG Population Report, 2000). In 2008 the country had an overall HDI value of .602 and a GDP per capita (USD PPP) of 2,301 (UNDP, 2008). The agricultural sector absorbs 75% of the labor force and accounts for 42% of GDP. The majority of rural dwellers reside on hilly and mountainous areas or along very low lying coastal areas; both iterations of rural habitation are highly exposed to abnormal and extreme weather. Strong communal systems define organization and management regimes for land and other resources, including livelihood systems in agriculture, fishing and small business ventures.

Development planning has not been easy for the Solomon Islands government which has been struggling to maintain equity in the delivery of services and economic growth across its culturally-diverse people speaking more than 95 languages and is geographically-scattered. Unit cost of service delivery is often very high with the remote populations being more disadvantaged. The incremental costs expected to be borne by a Pacific island country like Solomon Islands will be significant as a result of climate change and will be an added burden on national budgets and community resources. It has been predicted that small island states could face losses far exceeding 10% of their GDP (Berz, 2001) and that the Asia Pacific region in general, will be where much of the "human drama of climate change will be played out" (Australian Human Rights Commission, 2007).

Climate change scenarios for Solomon Islands

With good reason, there are currently no projected climate change scenarios downscaled to the national or island level for Solomon Islands. Efforts to better understand the likely implications of climate change on island communities are underway through the GEF-funded Second National Communications and the AusAID funded Pacific Climate Change Science Program (PCCSP). The IPCC Fourth Assessment Report (FAR) is limited in its projected climate change scenarios for the Melanesian region as AOGCMs do not have adequate resolution. The complex topography of Melanesia is a further complicating factor in climate change scenario generation and analysis.

Nevertheless, the FAR confirms the increase in average global mean surface temperature of 0.74° C since 1906. In the South Pacific the general 20th century surface air temperature was an average of 0.05° C but has since increased to 0.3° C over the last 30 years associated mainly with an increase in sea surface temperatures (Barnett et al. 2001). In nearby PNG there has been a decadal sea level rise trend of up to 8-10mm/yr and Richard and Timmermann, 2009) notes that the overall rate of increase in the Melanesia region is three times the global average (Richard K and Timmermann A 2009).

The technical summary of the IPCC AR4 (IPCC 2007) highlights a number of scenarios already being experienced by many communities in Solomon Islands and include; sea level rise and increased sea-water

temperatures; overtopping of coastal infrastructure and; increased periods and levels of precipitation. The Solomon Islands NAPA summarizes what many Solomon Islanders are experiencing in the various sectors of the economy as reflected in the relative prioritization of climate change adaptation issues. The most recent feedback on these observations was provided by rural communities as part of the SNC consultations during July-August 2010. Temperature data analyzed for a number of weather recording stations in the country show a rising trend over the past fifty year period while many coastal communities can show evidence pointing to a rise in sea level.

Solomon Islands climate is tropical with daily temperatures ranging from 23°C to 30°C and wide variation in rainfall from 3,000mm to 5,000mm depending on geographical location and time of year. Occurrences of drought are often linked to the El Niño Southern Oscillation (ENSO). The 1997 El Niño resulted in severe drought conditions in many parts of the country affecting food gardens and resulting in the NDMO having to distribute food supplies to affected areas. A milder drought with similar effects was experienced during the 2009 El Niño. December to March is cyclone season when the country usually experiences 1-2 tropical cyclones per year, mainly in the southern and eastern parts.

A manifestation of climatic extreme events and resultant damage has already been felt. For example, Cyclone Namu which struck in 1986 destroyed the rice industry resulting in heavy reliance on imports, increasing poverty and slowing a number of development indicators. Over 130 people were killed, 90,000 lost their homes (one third of the population at that time) and property and infrastructure damages cost more than USD 25 million. In 2003 the category five cyclone Zoe with maximum wind speed of 285 km/hour hit the small outer island of Tikopia and is the most intense ever recorded in the Pacific. These types of events are now increasingly becoming the norm, and are indicative of the costs likely to be imposed by climate change. Without the introduction of sufficient measures to support the Solomon Islands to adapt to a range of contingencies, the scale of damages will be larger, and the toll of opportunities foregone will be longer-lasting.

Over the past few years flooding, king tides, excessive rainfall and storm surges have rendered rural locations and communities disaster areas. The frequency of calls for disaster relief assistance from the national government is reaching levels never before experienced in the country since it attained political independence in 1978. A typical example is the flooding incident that occurred on west Guadalcanal in early 2010 that devastated several villages and killing 9 people. The rainfall recorded for Honiara weather station within 12 hours during the night of the flooding was the highest daily rainfall ever recorded for Honiara in its 30 years record (standing at 251.8mm). According to recent models and predictions on sea temperature increases, the Melanesian sub-region which Solomon Islands is part of may be the most affected area in the Pacific with potentially significant losses in marine biodiversity due to likely future occurrences of coral bleaching (Coles, 2008). Studies on the effects of climate change on disease incidence in the Pacific have predicted that cases of malaria and dengue are expected to increase significantly in the coming years in Fiji, PNG, Vanuatu and the Solomon Islands (Potter, S. 2008). This is already observed in Solomon Islands by use of the SCOPIC software that has modeled the strong correlation between high rainfall and high incidence of malaria.

Vulnerability of agriculture food production systems to climate hazards and risks

Past assessments of a number of vulnerable areas in the country reveal how agricultural practices that rural populations rely on, including associated business activities, are being placed under increasing pressure from rising populations and emerging climate change hazards and risks. The Solomon Islands' NAPA outlines the effects of climate change on a number of sectors, most notably agriculture. The implications of changes in long-term temperature and rainfall patterns, as well as the changing frequency of incidences of extreme weather (such as tropical cyclones) are expected to have long-term effects on food production

systems, thereby undermining development. The traditional practice of shifting cultivation that allowed for regeneration through fallowing for extended periods is no longer possible in most areas due to increasing population pressure on land and there is mounting evidence, supported by a number of assessments and surveys that the fast growing population of rural families and communities are struggling to cope with the effects of changing weather patterns. (Source: National Agriculture and Livestock Sector Policy 2009-2014), increasing intensity of rainfall disrupting planting times and lowering crop yields and loss of soil fertility due to leaching, soil erosion and on-going cultivation. (Kastom Gaden survey of South Guadalcanal 2006)

The informal agriculture smallholder sector has always been the foundation of food security in Solomon Islands. With a heavy reliance on ecosystem services such as soil conditions, water resources and forests this system has provided food and shelter for most of the nations population and has been the main safety net during difficult times such as the ethnic unrest during 1999-2003 when law and order broke down and the main formal economic activities in the country came to a grinding halt. Extrapolating from the work carried out by Bourke (2004) on calorific values and amounts of root crops consumed by people in neighbouring Papua New Guinea a local firm has estimated that the production of root crops in Solomon Islands, using the national population and the equivalent calorific values, quantities and price for imported rice, is a conservative 1.189 billion Solomon Dollars (USD 148,625 million) per annum (Solomon Islands State of Environment Report, 2008). Disturbances to the smallholder system by unsustainable land use practices and climate change will reduce the capacity of this system to feed the country and will place significant cost burdens on the government.

The soils of Solomon Islands make up one of the country's most important resources which is also very fragile and requires careful management and protection. A nation wide reconnaissance level assessment of soil types in 1976 (Hansell and Wall 1976) classified soil types and found that most have good structure but are generally deficient in potassium which is needed for production of root crops. Soils on sloping land are very prone to leaching and erosion and are vulnerable to rapid degradation if located in areas of high rainfall and high population density. (Pacific Horizon, 2009). The SI NDMO has had to respond to emergency food deficit situations where communities in the windward side of the main islands cannot produce sweet potato (*Ipomea batatas*) due to abnormally prolonged periods of high rainfall causing excessive vegetative growth and very minimal tuber formation. According to the Director of the NDMO this situation is becoming more regular over the years.

The Solomon Islands NAPA has determined, through a broad national consultative process, that agriculture, human settlements, water and sanitation and human health are priority vulnerable sectors requiring urgent support to enhance resilience against the predicted impacts of climate change. More than 80% of the population live in rural areas and are predominantly dependent on agriculture, forestry and fisheries for food security and livelihoods. These populations rely mainly on their traditional food production systems, traditional knowledge, strong communal systems and on agriculture, fishing and small business activities to support livelihoods.

Unsustainable land management through poorly designed and uncontrolled and unsustainable timber extraction methods, intensive agriculture on converted forest land and the extension of subsistence farming as a result of increasing population all place extreme pressures on the land and soil resources. Most of the accessible soils have fertility and/or micronutrient deficiencies and increased exposure results in soil leaching and erosion. Quantitative data on soil erosion rate and extent of land degradation are few and far between and to date there is no systematic and planned approach to investigating and documenting alternative sustainable cropping and agriculture land use systems in Solomon Islands.

■ Vulnerability of agriculture and food production systems in targeted regions

Vulnerable agriculture and food production systems in Solomon Islands have been grouped into a number of regions based on the criteria: high population density; degree of exposure to climate variability and change; disaster history; low socio-economic indicators; poor soil conditions and stresses experienced in relation to shortage or excess of water. Using these criteria the following regions were established and will be targeted by the AF project:

- 1) Areas of the windward side of the large islands with high population gardening on sloping land with poor and declining soil fertility and experiencing increasing events of intense rainfall (4-5M p.a.) affecting production of root crops particularly sweet potato.

The locations in the country that fall under this category and have been tentatively identified by the project design team include:

- Weather coast area of north Guadalcanal Province
- Weather coast area of Makira Province
- South Choiseul

These areas are also isolated and have very minimal support from the national government by way of basic services and have been the target of disaster relief programs in the past years due to food shortages. Increasing pressure by the government to expand monocultures of copra or cocoa, with no emphasis on the maintenance of arboreal diversity, is accelerating agrodeforestation on the Weather Coast and will play a major role in the decline of arboreal diversity and self-sufficiency and the loss of knowledge of traditional agroforestry systems among the young generation. Over the past five years these areas have been the focus of food supplies from the NDMO to approximately 35,000 people worth approximately USD 2.5M. A V&A assessment of these areas by the NGO, Kastom Gaden Association has found that increasing rainfall is causing excessive soil nutrient loss, reduced production of sweet potato discouraging families to work their gardens. No new or improved farming technologies have been applied and the low productivity is increasing the reliance of families on food relief supplies.

- 2) Areas in the leeward side of the large islands in the country with high population gardening on sloping land with fragile land/soil systems located alongside or within watershed areas and beginning to experience periods of low rainfall and low availability of water.

Locations in the country that fall under this category and have been tentatively identified by the project design team include:

- North Malaita in Malaita Province
- Central Maringe in Isabel Province
- Honiara city

Communities in these areas face increasing pressures to grow staple crops on degraded land. The recent 2009 population estimates of these areas include: North Malaita (62,000 people), Central Maringe (18,000 people) and Honiara city (85,000 people). Climate variability and climate change pose a serious threat to such systems if planning is not undertaken now to manage soil fertility and available water resources. The three areas targeted in this region are some of the most densely populated parts of the country deriving their food and livelihoods on sloping land that is getting

smaller over the years due to population pressure. A small disturbance to crop production due to abnormal weather conditions will cost the government significant amounts of money and the on-going decline in soil fertility will exacerbate vulnerability situation of families. For example a 25% reduction in food supplies due to poor soil conditions and abnormal weather events will require the government to provide food relief to these areas totaling USD 71M per year. (estimate determined from figures provided by NDMO and National Statistics Office). On a national scale about 42% of total rural expenditure on food is spent on cereals or imported rice and wheat flour. This is further indication that a drop in agriculture food production in the rural areas due to poor soils, unsustainable farming practices and coupled with climate disturbances will seriously undermine food security in the country.

Included in this region is the capital city of Honiara where the population is increasing at 6% per annum due to migration from the other islands. Many low income residents are turning to urban agriculture activities to supplement dietary needs. Long periods without rain have a direct negative impact on family nutrition as many do not have sufficient income to regularly buy food from the main food market. On the other hand, a lot of grey water is wasted and not used to support crop production due to limited exposure to new technologies.

- 3) Man-made (artificial) low lying islands located on the leeward side of the island of Malaita having very high population density and very restrictive land area for growing vegetables and fruit trees.

Locations in the country that fall under this category and have been tentatively identified by the project design team include:

- Lau lagoon in Malaita Province
- Langa Langa lagoon in Malaita Province

Around 12,000 people inhabit these these islands and are experiencing hotter temperatures (being surrounded by seawater) and stronger south-easterly winds during the months of May to October making it very difficult to travel to mainland for water and vegetables. Prolonged periods without rainfall are becoming more frequent and many use the sea water to wash and bathe. Inhabitants of these islands have very limited income opportunities and many rely on bartering with villagers on the mainland to obtain root crops and vegetables. A recent V&A assessment undertaken by the Solomon Islands Red Cross in the Lau and LangaLanga lagoons has highlighted specific vulnerabilities of the inhabitants and proposed adaptation options including improving rainwater catchment and using improved technologies to grow vegetables. The assessment was also able to determine, from feedback provided by elderly island inhabitants that sea level rise and increasing frequency of storm surges and over topping of waves onto the small islands is becoming a problem which has led islanders to build new layers of rocks to raise the level of the islands. The artificial islands were built by distinct language groups that do not own land on the main island and have nowhere else to settle.

The vulnerability of the aforementioned regions and locations due to their exposure is further exacerbated by other causes and barriers. Although not an exhaustive list, critical causes of vulnerability and the barriers to addressing them in the context of the proposed project are outlined below.

- (a) *Absence of understanding, awareness and information regarding the likely adverse*

impacts of climate change and consequent sea-level rise.

The NAPA, completed in 2008, highlighted that awareness and education on the implications of climate change on communities were critical steps in adapting to climate change. While communities are familiar with current weather, there is less appreciation of the impending changes in long-term climate. Understanding of the range of possible future changes, including associated uncertainties, is critical for planning and adjusting local practices, processes, systems and infrastructure, which at present in the Solomon Islands are more suited to manage extant climate variability. There is currently no systematic and coherent understanding of the slow-manifesting but longer-term changes in climate and their likely implications on diverse communities and social groups. The absence of coherence in perceptions of change and what needs to be done to manage uncertainties is a recipe for undermining resilience to climate change and adaptive capacity and therefore human development.

Systematic efforts to inform and prepare the public to adapt and manage expected changes have not been undertaken as yet. Comprehensive and sustainable awareness-raising programmes have not been designed and therefore not implemented. The main barriers being that resources for implementing comprehensive programmes of support have not been available through other existing sources (e.g. public funds) due to competing needs for scarce resources. Furthermore the limited available resources are targeted at most immediate needs i.e. increasing cash crop and food crop production. The lack of a communication strategy and the lack of capacity to develop one is an added barrier and despite past recommendations the government has not been able to strengthen systems for data and information management.

(b) Relevant Government institutions and the policy framework governing the development and management of the agriculture sector and related fields (e.g. land use, forestry, water management) have not systematically included consideration of impending climate change risks and opportunities.

Critical constraints or barriers include limitations in technical capacities, and absence of appropriate policy instruments to effect climate resilient behavioral adjustments in key markets. The recently formed National Coalition for Reform and Advancement (NCRA) Government has established nine Policy Actions (NCRA Policy Statement, 2010) in October 2010 which includes actions addressing adaptation to climate change, strengthening capacity of Meteorological Services and National Disaster Management Office and mainstreaming. The National Agriculture and Livestock Sector Policy (2009-2014) addresses climate change in various sections including: Promoting risk management and climate change mitigation, and shielding farmers from impacts of natural disasters and climate change. It also outlines several policy options for cross sectoral services on climate change, disaster risk reduction and disaster management.

Notwithstanding the clear recognition of climate risks and the need to adapt in the Agriculture and Livestock Sector Policy, there are none, if any, policy instruments and mechanisms to support, facilitate and incentivize climate change risk management at the community level. Government agencies at the national, provincial and local levels (e.g. the Extension and Information Division of MAL) are currently short in technical capacities, personnel, resources and mandates as well as relevant climate change information to meet the objectives outlined in the policy. The Government's National Economic Recovery, Reform, and Development Plan (NERRDP) (2003) outlined a number of priorities for 2003-2006 including (i) law and order; (ii) financial stability; (iii) ensuring good governance and democracy; (iv) revitalizing the productive sector and rebuilding supporting infrastructure; and (v) social services and health but risks to productive sectors from climate change and subsistence activities were absent from the Plan.

The Ministry of Environment, Conservation and Meteorology (MECM) through its Climate Change Division coordinates the implementation of the government policy on adaptation to climate change. However, the MECM Corporate Plan 2008-2010 is undergoing a review to integrate priority areas of intervention as identified during the NAPA process including on disaster risk reduction. The MECM, in partnership with the Ministry of Development Planning and Aid Coordination, is however capitalizing on monitoring and evaluation aspects of the Medium Term Development Strategy (MTDS) to disaster risk

reduction and climate change into the development planning process. Even the Solomon Islands and Secretariat of the Pacific Community (SPC) Joint Country Strategy (JCS), designed to guide the provision of SPC technical assistance and other support services to Solomon Islands over the period 2009-2012 is short in consideration of climate change issues. Under the JCS priority area “5: economic and productive sectors”, a set of technical and advisory support and capacity building activities is outlined in the sustainable management of integrated forest and agriculture systems and animal health and production, including food security issues. These activities do not integrate climate risk and resilience. In effect, the success of the capacity building activities (e.g. training of smallholders on improved crop management practices and protection of cash crops) are likely to be undermined.

A national sustainable development policy that incorporates considerations of climate change risks and opportunities including strengthened institutions and allocation of appropriate budget allocations is increasingly recognized as a requirement for ensuring that economic development is resilient to inevitable uncertainties. There is an opportunity for resources to be put to effective use for this given that the governments’ decentralization/“devolution order” authorizes provincial governments to formulate their own regulations for devolved functions. This includes a range of development related functions relevant for climate change planning. Although this process is still at an early stage, capacity can be built up at sub-national level to lead appropriate planning processes addressing future climate change concerns, including related uncertainties.

(c) Island communities have not taken measures to prepare and manage the risks posed by climate change

While climate change is a global problem, its impact is felt most acutely by people living in rural communities. Local communities, especially the most poverty-stricken and vulnerable among them that depend on natural resources for their livelihoods, are particularly at risk. These communities and local/sub-national authorities need immediate assistance to strengthen resilience and increase their ability to manage climate change risks and linked opportunities as faced by their populations. While there are innumerable community based actions in response to climate variability, the Solomon Islands has limited initiatives underway that address human-induced climate change, especially in vulnerable communities. Currently environmental and climate change considerations are only being integrated into community development programmes in a few scattered projects.

A number of programmes and facilities promoting rural development such as the government Rural Constituency Development Fund, or the Rural Development Programme financed by AusAID, EC and WB), projects promoting sustainable livelihoods (e.g. Cocoa Livelihood Program (CLIP) and the SI-Australia Rural Livelihood Program financed by AusAID) exist, but without systematically integrating climate risk and resilience, and without raising awareness amongst local communities on climate-induced changes exacerbating existing environmental and socio-economic problems. The UNDP-funded Provincial Government Strengthening Project (PGSP) makes provision for support towards environmental management and adaptation but the planning and implementation of activities at the provincial level is slow due to limited technical capacity.

A number of assessment of community-based adaptation in the Pacific have found that to empower local communities, a participatory bottom-up and top-down approach is considered the best approach for the Pacific region. In addition, decision making for adaptation implementation needs to be systematic and transparent, and grounded on robust socio-cultural, ecological and economic assessments of vulnerability and coping capacity. Furthermore, cost-effective and culturally appropriate technologies can enhance communities’ resilience to climate related risks.

(d) Absence of systematic information on practical adaptation measures including best-practices.

Solomon Island's NAPA outlined that effective adaptation will require supportive institutions, finance, information and technological support. The need for detailed assessments of climate impacts and risks for the agriculture sector was highlighted to be critical for meaningful integration of climate change risks into future plans and initiatives. One of the many factors inhibiting the implementation of many development and environmental projects is the lack of data and/or data sharing. A number of Ministries have not been able to set up efficiently organised information databases due to constraints in expertise, technology and financial resources. Data and information is building up in Solomon Islands on relevant sectoral issues but the information is scattered in the different government, NGO, regional organisations and individuals. Without a system for managing, sharing of existing data and information, the likelihood of making well-informed policy decisions is constrained. As a result, sub-optimal policies and cost-effective responses are not likely to be made resulting in wastage of scarce financial resources and unsustainable or short term results.

The Preferred Solution: The preferred solution is to support communities to better manage and adapt to climate change pressures in the context of food security through community based adaptation. An institutional and policy setting must also be developed to support communities with risk management in the context of climate change uncertainties.

Barriers (to be overcome):

Limited understanding, awareness and information regarding the likely adverse impacts of climate change and consequent sea-level rise.

Generally the level of public awareness and understanding of climate change scenarios and impacts amongst communities and the general public in Solomon Islands is still very low. The Solomon Islands National Capacity Self Assessment report identifies awareness raising as an important capacity issue as well as the need to incorporate climate change in the national curricula. (Solomon Islands NCSA report, 2007). At the rural level people have begun experiencing doses of climate variability in the changing weather patterns and sea level rise that can be attributed to climate change. However many are not aware of the links to global development issues and the gloomy outlook predicted by climate scientists. Community-based consultations undertaken by NGOs in the Solomon Islands (Kastom Gaden, 2007) records rural people's experiences and reflections on these changes particularly increased salt-water inundations, increased frequency of flooding, coastal erosion as well as prolonged and heavier rainfalls.

The NAPA completed in 2008, highlighted that awareness and education on the implications of climate change on communities were critical steps in adapting to climate change. While communities are familiar with the implications of weather there is less appreciation of the impending change in long term climate. Understand of the range of possible future change, including associated uncertainties is critical for planning and adjusting local practice processes, systems and infrastructure which at present in the Solomon Islands are more suited to manage extant climate variability. There is currently no systematic and coherent understanding of the slow-manifesting but longer term changes in climate and their likely implication on divers communities and social groups. The absence of coherence in perceptions of change and what needs to be done to manage uncertainties is a recipe for undermining resilience to climate change and adaptive capacity and therefore human development.

Limited capacity of communities and farmers to integrate climate change considerations such as climate hazards and risks into design and management of agriculture based food production and processing systems

Traditional agricultural practices that rural populations rely on, including associated business activities, have been placed under increasing pressure from emerging climate change risks. The implication of changes in long term temperature and rainfall patterns as well as the changing frequency of incidences of extreme weather such as tropical cyclone are expected to have long term effects on food production system., thereby undermining development.

Much of the work in crop diversity is targeted at improving diversity and production per unit area of land and not designed to enhance resilience against future climate change. A local NGO the Kastom Gaden Association is making good progress in promoting and demonstrating organic farming and use and distribution of local varieties. The limited number of MAL field staff with limited resources at their disposal are not sufficient to extend their work from improving production to that of enhancing resilience of farming systems to adapt to climate change.

Very limited if not no attention is given to increasing the capacity of certain areas in the country to provide food banks or areas where food can be grown and kept for longer periods and which can be used to supply communities whose food gardens are destroyed by extreme events such as prolonged rainfall, cyclones, drought and flooding. Knowledge about the extent of agro-biodiversity in the country is not well known and documented and still needs to be included in awareness raising programs and school curricula as part of resource materials.

Lack of land use planning that integrates climate hazards and risks

The past 15 years has seen a marked decline in the capacity for land use planning within MAL. To date there is only one officer in headquarters responsible for land use planning and only four out of the nine provinces have a land use planning officer. Land use planning equipment is based on the old fashioned compass and chain link and there is no capacity to use GIS and to interpret satellite imagery. Land use planning officers also do not possess the skills to plan and facilitate community based land use plans. Agriculture extension officers engage with communities on a more regular basis but have not been trained to facilitate land use planning. Outside of MAL the Ministry of Lands and Housing mapping section has limited capacity for GIS and satellite imagery interpretation. Within the private sector there are a number of highly trained Solomon Islanders who provide services to industries and government in providing cadastral and bathymetry surveying services. These glaring limitations make it more difficult for the government to integrate climate risks and hazards into land use planning. Integrating climate considerations into land use planning will require strengthened coordination mechanisms, training of policy makers and field officers, procurement of satellite imagery and equipment and engagement of additional field staff to carry out community based consultations and land use planning.

Limited capacity for on-site integrated management of water resources to support agriculture and aquaculture systems

An important area where no work is being done at present is that of managing water resources to support agriculture and aquaculture. Many of the populated areas in the country not only exert pressure on soil resources but also on water resources. These areas are also commonly associated with steep slopes and relatively infertile soils. The opposite situation also occurs in other areas where there is too much rainfall. Farmers, government and NGO field staff have not yet begun to address this situation and to modify farming systems to make use of limited or excess water. Integrated water and agriculture, livestock and

aquaculture is now a serious challenge for countries such as Solomon Islands where predictions are that certain areas will experience higher rainfalls while others will get less.

The quality and supply of water resources in Solomon Islands is increasingly becoming threatened by development activities including logging, large scale agriculture and the fast expanding land clearing for subsistence agriculture. On many of the large islands such activities are undertaken without regard for future demand for clean and sustainable supply of water. In some villages on the islands of Malaita, Vella la Vella, Makira and Choiseul communities are having to cope with situations where some rivers are frequently dirty while others flow rate have been reduced considerably. Community based water catchment and watershed management has not been carried out in the country and is becoming an urgent need now that there is increasing population pressure on land resources. Provincial governments have begun to consider establishing ordinances to protect water resources with support from the national government.

Water resources assessment, planning and management falls into the mandates of the following government ministries: Ministry of Mines, Energy and Rural Electrification (MMERE), Ministry of Health and Medical Services (MHMS) and Ministry of Infrastructure Development (MID). MMERE has established a water division while the MHMS oversees the quality of water through the Rural Water Supply and Sanitation (RWSS) Programme. These Ministries together with MAL, MOF, MECM and Meteorology Services are yet to experience collaborative work to support communities plan and manage water resources considering agriculture, aquaculture needs and climate change. This is a totally new area of work which requires training and field equipment.

Limited integration of climate change into laws, policies, strategies and programs of government and stakeholder institutions.

Despite the rising threats and increasing hardships and losses due to climate variability and climate change most national and provincial government sector plans and decision-making processes do not yet reflect this challenge and the main attitude and approach to addressing climate related issues continue to be predominantly reactionary rather than anticipatory.

In the area of legislation the various provisions in the range of existing national laws and regulations of Solomon Islands can contribute more to enhancing the capacity of communities to minimise risks and adapt to the impacts of climate change on the coastal and marine ecosystems. Some of these include: provisions for EIA, code of logging practice, fisheries management, watershed management. Unfortunately, compliance is not always guaranteed and enforcement measures are minimal and often ineffective due to very limited human and financial resources and corrupt practices. Compounding this situation is the fact that many rural communities are not well aware of the laws and regulations that govern use of natural resources. If and when this eventuates they may still find it difficult to understand and accept how a central government that is far removed from their lives can make rules that govern how they use their resources.

National policies on land use and management are non-existent, while at the same time, weak and under resourced national and public institutions are in-capable of carrying out any effective land management programmes. Further, existing legal framework and regulations are out of date, irrelevant and inappropriate to guide any meaningful intervention in addressing sustainable land use and development. Land in the Solomon Islands is communally owned and about 88% of the land is held under customary tenure.

Until such a time when legislative reforms are carried out and enforcement capacity is strengthened, voluntary compliance and pro-active adaptation measures will need to be promoted and up-scaled at

the rural and community levels including through: education, targeted awareness raising, and implementation of practical on-the-ground adaptation measures that show benefits to resources owners and use of traditional governance systems and resource management practices. In other words community-based sustainable development principles and practices, supported where possible by legislation, stand a better chance of being used to guide adaptation actions by rural communities in Solomon Islands over the coming years.

Limited capacity of government, civil society and training institutions to support the agriculture sector and farmers address climate change hazards and risks

At the time of this proposal development the Ministry of Finance had issued a notice to all government Ministries advising of austerity measures being taken by the government and that all Ministry 2011 recurrent budgets are to be cut back by 10% from the 2010 levels. Such a directive effectively prohibits Ministries from recruiting to fill vacant positions. Within MECM Climate Change Division the pressing need to fill three vacancies to add to the staff of three. This is in addition to the fact that most government Ministries only get to use about 60% of their annual recurrent budget allocations. Government capacity for community outreach and engagement is constrained by finances as well as the sheer limitations in staff numbers where the field staff-population ratio amongst most Ministries is around 1:3,000 (communications with senior MAL officer). Field staff are expected to undertake a wide range of roles in addition to their generic agriculture duties and can include supervising national elections, partaking in health programs and responding to disaster situations. Furthermore they are implementing a range of projects sanctioned by the government addressing cash crop production, pest and disease control and supporting some research work.

These are the realities in an LDC such as Solomon Islands and there is very little room for government agencies and their stakeholders to take on additional work and begin a program of raising awareness and promoting new farming practices to address climate change without funding support and collaboration by other partners.

Absence of or lack of information and knowledge management to support adaptation to climate change

Solomon Islands NAPA has established that effective adaptation will require supportive institutions, finance, information and technological support. The need for detailed assessments of climate change impacts and risks for the agriculture sector was highlighted to be critical for meaningful integration of climate change risks into future plans and initiatives. One of the many factors inhibiting the implementation of many development and environmental projects is the lack of data and/or data sharing. A number of Ministries have not been able to set up efficiently organized information databases due to constraints in expertise, technology and financial resources.

Data and information is building up in Solomon Islands on relevant sectoral issues but the information is scattered in the different government, NGO, regional organizations and individuals. Without a system for managing, sharing of existing data and information, the likelihood of making well-informed policy decisions is constrained. As a result, sub-optimal policies and cost effective responses are not likely to be made resulting in waste or scarce financial resources and unsustainable or short term results.

■ PROJECT / PROGRAMME OBJECTIVES:

The proposed project will strengthen ability of communities in Solomon Islands to make informed

decisions and manage likely climate change driven pressures on food production and management systems. In particular, the project will lead to the following key results (outcomes)

- Adaptive capacity of communities enhanced to climate change risks in agriculture sector in 3 target regions;
- Strengthened institutions and adjusted national and sub-national policies related to governing agriculture in the context of a range of climate change futures; and
- Fostered the generation and spread of relevant knowledge for assisting decision-making at the community and policy-formulation level.

■ PROJECT / PROGRAMME COMPONENTS AND FINANCING:

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (US\$)
1. Community Based Adaptation initiatives implemented in at least 30 Communities across at least 3 regions in the Solomon Islands	<ul style="list-style-type: none"> • Climate change resilient traditional crop and livestock production, management and processing techniques introduced at the community level • Establishment of nurseries at the provincial and community levels to ensure the continuous supply of resilient traditional plants. • Transfer of appropriate technologies to support traditional crop production in the face of climate pressures • Establishment of provincial and community level food banks including facilities to dry and processing for storage and marketing to overcome periods of climate related disruptions • Development and implementation of community-level integrated land-use plans to support traditional crops and livestock • Extension services and communities are trained on the use of climate information in decision-making processes to support traditional agricultural practices 	Adaptive capacity of communities enhanced to climate change risks in agriculture sector in 3 target regions	3,500,000
2. Institutional strengthening to support climate resilient policy frameworks for the agriculture sector	<ul style="list-style-type: none"> • Integration of climate and disaster risks into national and provincial Agriculture and Livestock sector policy, other relevant policies, strategies and related instruments and coordination mechanisms. • Capacity of Solomon Islands Meteorological Services (SIMS) strengthened to produce enhanced weather and climate information services tailored to the agriculture sector and land resources management • Capacity of CCD of MECDM, MAL and SNR enhanced to support land use planning and integration of climate considerations into field operations. 	Adjusted national and sub-national policies related to governing agriculture in the context of a range of climate change futures	750,000
3. Climate Change Adaptation specific knowledge production,	<ul style="list-style-type: none"> • Lessons learned and best practices are generated (case studies, photo stories, short videos, posters, brochures, etc) and distributed to other communities, civil society, policy makers in government and globally through appropriate mechanisms. • Training materials developed incorporating climate 	Fostered the generation and diffusion of knowledge on adapting to climate change	350,000

sharing and dissemination	change issues and used for training of field staff and students. •	in a systemic manner at the community and regional level.	
6. Project Execution cost			500,000
7. Total Project/Programme Cost			5,100,000
8. Project Cycle Management Fee charged by the Implementing Entity (if applicable)			433,500 ¹
Amount of Financing Requested			5,533,500

■ PROJECTED CALENDAR:

MILESTONES	EXPECTED DATES
Submission of Concept to AF	Apr 26, 2010
Approval of the Concept by the AF Board (Estimate)	Jun 15, 2010
Development of a Full Project Proposal	July 15, 2010
Submission to AF of a Full Project Proposal	Oct 25, 2010
Start of Project/Programme Implementation	Jan 2011
Mid-term Review (if planned)	Jan 2013
Project/Programme Closing	Jan 2015
Terminal Evaluation	June 2015

■ PART II: PROJECT / PROGRAMME JUSTIFICATION

- A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience.

COMPONENT 1 - OUTCOME, OUTPUTS AND ACTIVITIES

Component 1 Community based adaptation initiatives implemented in at least 30 communities across at least 3 regions in Solomon Islands

¹ On the request of the Government of the Solomon Islands, the project will be implemented by UNDP using the MIE modality. UNDP is able to provide the following implementation services through its country office, regional and headquarters networks: project identification, formulation, and appraisal; determination of execution modality and local capacity assessment of the national executing entity; briefing and de-briefing of project staff; oversight and monitoring of AF funds, including participation in project reviews; receipt, allocation and reporting to the AF Board of financial resources; thematic and technical capacity building and backstopping; support with knowledge transfer; policy advisory services; technical and quality assurance; and troubleshooting assistance to the national project staff. Further details on the types of specialized technical support services which may be provided are articulated in the table provided to the AFB Secretariat on 14 May 2010 (Annex 3).

Outcome 1 Adaptive capacity of communities enhanced to climate change risks in agriculture sector in the following three regions in Solomon Islands:

1: Windward side of the main islands including: South Guadalcanal, South Makira and South Choiseul

2: Leeward side of the main islands including: North Malaita, Central Maringe District of Isabel Province and Honiara city

3: Artificial (man-made) islands of Langalanga and Lau lagoons on the leeward side of Malaita Province

Description of the vulnerabilities of these areas are presented in pages 5-6.

Output 1.1 Development and implementation of integrated land use plans at the community level targeting 3 regions and at least 30 communities in the country that are vulnerable to climate hazards and risks.

Activities under this output will impact significantly on the capacity of MAL and the country to plan use of land not only for production, conservation and sustainability purposes but also to enhance resilience against future climate change impacts. Status of land use planning will be reviewed and a national conference on land-use planning will bring together experts, community representatives and development agencies to raise awareness on the need to integrate climate change into land use planning and to consider various options for land use planning approaches. This will set the scene for the development of a national land use policy and follow up planning and implementation of land use planning with communities in targeted areas.

Necessary hardware and software will be acquired including sourcing of expertise to train local staff. Communities will be engaged using participatory approach taking into account gender dimensions to empower community members to utilize modern technology (e.g. GIS systems) and information to plan and monitor land use through adaptive management that integrates climate considerations. The exercise will be supported with meteorological and planning data generated by SIMS, satellite imagery and field equipment procured by the project to integrate climate risks to ensure resilience of natural ecosystems and productive areas. The approach will be documented and packaged for use as a guide and training manual in future land use planning activities and follow up meetings will be held with communities to present the final product (maps, guidelines etc) of the exercise and conduct training on how it can be used for on-going planning.

Coupled with activities under Output 1.1 the approach to building resilience of agriculture and aquaculture production systems will not only be site specific but also take into consideration wider areas such as catchments, watersheds and geographic regions. Lessons learnt and products developed such a field manuals, maps, reports will be made available to guide on-going work and for public use.

Output 1.2 Climate change resilient farming and aquaculture production techniques and systems implemented at community level

The activities to be implemented to achieve this output are at the core of this project and involve direct engagement with communities. Prior to community engagement field staff will undergo training in V&A assessments to be organized by the CCD of MECM. During this time tentative sites recommended during project design will be reviewed and planning for community engagement

undertaken. The V&A “tool box” used by both developed and developing country governments, donors and development agencies will be assessed and appropriate tools used and adapted for Solomon Islands situation. These will range from “top-down” satellite imagery tools to “bottom-up” community-based participatory methods (UNFCCC, 2008). Experiences in the Pacific has led to the recommendation that V&A work is most effective when a mix of approach is taken including top-down modeling and bottom up community based assessments (Nakalevu et al, 2005).

Resources from the Adaptation Fund will be used to support and improve traditional land use and crop management techniques so that they are more robust to the uncertainties of climate change. This includes selection and use of appropriate traditional crop varieties and species such as shade tolerant yam (*dioscorea* spp), wetland taro (*colocasia* spp), ngali nut (*canarium indica*), leafy vegetable shrubs, banana (*musa*) varieties tolerant to wet conditions, cut-nut (*barringtonia* spp, *terminalia* spp), mukuna beans (mukuna bractiyata) etc which are tolerant to changing local climatic and environmental conditions including drought and high rainfall. In addition, the funds will support the establishment of in-situ collections of diverse useful plants in farmers food gardens, agro-forestry plots and farmer training and vocational centers to ensure the continuous supply of above stated resilient traditional planting material to farmers. Mukuna is an introduced species that improves soil fertility and effective on degraded land while a number of banana species from the island of Makira are endemic and have high levels of carotenoid and riboflavin species have very good nutritional value and can be grown in high rainfall areas in food gardens and agro-forestry systems with limited maintenance requirements. The Kastom Gaden NGO and MAL research division have been conducting observation trials on many of such species and are now in a position to promote and support its wider use in the country. Most of these species are already starting to be sold in local markets.

On-the-ground adaptation measures will also include other proven farming techniques of soil erosion control, soil fertility enhancement, and prevention and protection of weed, pest and disease, adequately refined to factor in needs under a changing climate. Resources will be made available to organize and provide training to farmers in integrated and conservation farming systems (including agro-forestry, cover crops, intercrop and contour planting). Training activities will include use of audio-video documentaries to promote different approaches and methods of organic agriculture. These will be tailored to different micro-climatic environments with guiding support from agronomists and meteorologists. Integrated agriculture, aquaculture and small livestock production systems that are sensitized to emerging climate change risks will be implemented in training institutions located in targeted vulnerable areas, identified earlier in pages 5&6, to manage water effectively and support sustainable production and supply of root crops, vegetables and fish protein. “Look and learn” site-visits by farmers in high rainfall areas and agriculture extension staff will be undertaken to neighboring Vanuatu to observe wetland taro (*colocasia esculenta*) growing in rainfed areas and terraces and to South-East Asia to observe integrated aquaculture and agriculture systems. Farmers from these areas have been prioritized given their high exposure to extended and increased rainfall and will be selected using criteria established by MAL and Kastom Gaden Association. The initiative will strengthen collaboration between the MAL, MOF and MECM to provide on-going joint and integrated technical support to communities that are experiencing food shortages in high rainfall and high population areas as well as vulnerability to climate variability.

Fruit and nut trees are important in Solomon Islands agriculture and can provide a solid foundation for food security under a changing climate. A national NGO, the Nut Growers Association of Solomon Islands (NGASI) will be supported to collect and distribute climate resilient germplasm of fruit and nut varieties and provide materials to help farmers incorporate fruit and nut trees into their farming and agro-forestry systems. NGASI is the only NGO focusing on indigenous and exotic fruit and nut trees and their members have very strong experience in agronomic and farmer extension work. NGASI

has already started specific studies into *canarium* and *barringtonia* species and starting to incorporate other lesser known indigenous species with good nutritional values. This activity will build on the existing efforts of the NGASI to strengthen its network of fruit and nut growers and to also promote better processing and storage.

AF resources will be utilized to initially finance a Field Officer per province to support the currently Chief Field Officer with coordination of activities and services and provide backstopping to extension field staff whose areas will be targeted in this project. These FOs will be taken on the government payroll at the end of the project when they have also gained strong experience in the field in supporting climate change risk management.

Output 1.3 Establishment of provincial and community level food banks to overcome periods of climate related disruptions

Food banks in the case of this project are deliberate plantings and collections of food crops that can be maintained over long periods and harvested for food or planting material in times of climate-induced severe food shortages. This output will be achieved through the review of germplasm collections in Solomon Islands and the identification of field and tree crops that can store for long in the soil and can be used to support communities during extended periods of abnormal weather events. This type of intervention has not yet been implemented in the country and will build on the work of provincial disaster officers and MAL and NGO field staff. A field manual will be developed on selection and planting of climate resilient varieties of crops and also on valuation and economics of storing such crops. A database including location details, types and quantities of crops grown and contact addresses of farmers etc will be developed and provided to direct the NDMO to source food and planting materials from such locations during times of disaster for supply to affected communities.

Communities and farmers will be given awareness sessions on the importance of climate change risk management. Farmers will be assisted with tools, planting materials, manuals for the establishment and/or expansion of areas in sensitive parts of windward and leeward side of the main islands targeted by the project with crop varieties identified earlier in pp 15.

Output 1.4 Strengthening capacity for processing and storage of root and tree crops

Despite the large quantities of root crops grown in the country there is little if not no processing and value adding being undertaken. Common root crop staples such as sweet potato do not have long storage life in the soil and short storage duration after harvesting while cassava (*Manihot esculenta*) and taro (*Colocasia esculenta*) need to be cooked or frozen immediately after harvesting. Processing technologies used in Africa, South-East Asia and South America are yet to be tried in Solomon Islands to enable processing of locally grown root crops. Cassava and taro flour and chips and breadfruit (*Artocarpus altilis*) chips are potential products that can be stored over longer periods of time and used to address growing demand and can be stored for times of prolonged rainfall and unexpected extreme events such as usual cyclones. MAL has built a small food processing building but has been unable to procure equipment due to limited government funding. SNR has also runs training in food processing but do not have the equipment. The AF project will support MAL and SNR to procure food processing equipment for use in agriculture development programs. Selected women from targeted vulnerable regions will undergo training in maintenance and upkeep of equipment and small business management, and upon successful completion be provided with processing equipment. Production and financial guidelines developed for processing enterprises including a cost recovery and replacement cost provision will ensure sustainability of the enterprises. The processing operations will be monitored using a Technology Assessment method and findings on technical and financial

performance documented and made available for others in the country and regionally to promote their use as an approach to improving longer term storage and value adding of local root crops. Traditional food processing and preservation methods will also be promoted and documented in the training programs e.g. the processing of breadfruit, taro and sago palm.

The project will also ensure that the improved production, processing and storage approaches and technologies are not only technically sound, but financially sustainable. Short courses in operating small processing businesses will be developed by the School of Natural Resources in collaboration with the School of Finance of the Solomon Islands College of Higher Education. Local expertise will be utilized and resources provided so that target beneficiaries can be trained in the processing technology and business aspects of the operation. This training will be a prerequisite before support is provided for procurement and delivery of equipment. A technology development grant will be made available to the School of Industrial Development of the College of Higher Education to procure materials and motors needed to construct the processing equipment and sell to other users. This activity will enable the national trade training institution to begin developing appropriate technology that can support processing of root crops in the country.

Output 1.5 Government officers NGO field staff and communities trained in the use of climate information in decision making processes

SIMS will be assisted to design and develop training packages for use with communities and field staff on use of climate information for agriculture development planning. Communities involved with Outputs 1.1 (Climate resilient crop and aquaculture, development and implementation of integrated land use plans at the community level targeting 3 regions and at least 9 communities in the country that are vulnerable to climate hazards and risk), and 1.2 (Climate change resilient crop and aquaculture production techniques and systems introduced at community level) will also be supported in this area. This will be the first time for such type of training to be carried out in the country and will pave the way for SIMS to also start planning to support other sectors through tailored information packages. A cropping calendar, that reflects changing patterns of rainfall, will be developed and made available to the public. This includes more reliable information to guide the timing of planting and harvesting of different crop varieties in different localities. This will be a joint work of MAL and SIMS. A climate and land vulnerability map will also be produced through this collaboration and will guide land use planning and used during training with communities.

The challenge to address climate change brings with it the requirements for different skills. Under this output selected nationals working with the implementing partners e.g. MAL, MECDM, SNR, NGOs, will be provided the opportunity to undergo further specialized training in advanced farming systems, V&A assessments, agro-meteorology, agro-forestry, organic agriculture, soils management and aquaculture research and development techniques that will enable the implementing partner and responsible parties to enhance human resource and institutional capacity to support climate change adaptation and risk reduction work in the country.

COMPONENT 2 - OUTCOME, OUTPUTS AND ACTIVITIES

Component 2 Institutional strengthening to support climate resilient policy frameworks for the agriculture sector.

Outcome 2 Adjusted national and sub-national policies related to governing agriculture in the context of a range of climate change futures

Output 2.1 Integration of climate and disaster risks into national and provincial Agriculture and Livestock sector policy, other relevant policies, strategies and related instruments and coordination mechanisms.

Under this output a range of activities will be undertaken to strengthen the enabling environment for integrating climate change into agriculture development and related sectors at the national and provincial levels. Resources will be utilized to implement a set of activities that lead to the strengthening technical capacities within the Ministry of Agriculture as well as relevant departments of the Environment Ministry to define and formulate policies and mechanisms that integrate climate change adaptation needs into existing disaster risk reduction and disaster management objectives of the National Agriculture and Livestock Sector Policy. Activities will centre on supporting the explicit consideration of climate change risks into other relevant national policies, strategies and programmes related to agriculture and agro-forestry. In addition, the project will establish an effective mechanism to foster coordination and coherency in planning for climate change risk management between relevant national and sub-national level institutions.

A national workshop will be undertaken on integration of climate risks into planning and budgeting for the agriculture sector which will bring together senior officials and field staff at the national and provincial level to identify practical measures to address mainstreaming of climate change in the agriculture sector and how to establish and maintain effective integrated coordination mechanisms at the national and provincial levels. Recommendations from the workshop will be implemented with support from project funds.

Gender considerations will also be integrated through a dedicated training package for policy makers and field personnel. Gender analysis, mainstreaming and development of gender disaggregated data will be covered in a workshop using UNDP Community-Based Adaptation (CBA) guidelines. This will enable policy makers and technical officers to undertake gendered V&A assessments and design adaptation interventions and monitor their impact on men and women in the country.

Output 2.2 Capacity of Solomon Islands Meteorological Services (SIMS) strengthened to produce enhanced weather and climate information services tailored to the agriculture sector and land resources management

Under this output a strategy will be defined and implemented to enhance agro-meteorological services in the country and reinforce the need for such services in light of managing the uncertainties of climate change. SIMS will be supported to expand its coverage of weather monitoring and reporting throughout the country, building on the five established manual stations that are currently in place but inadequate to support provision of reliable agro-meteorological information. Two Automatic Weather Stations (AWS) will be procured and installed at locations in the targeted regions and at least two voluntary manual weather stations will be established in each targeted region. The strategic location of the weather stations will greatly enhance SIMS ability to generate and analyze data to support its services to the agriculture sector. The experiences gained from this project will enable SIMS to tailor and expand its services to other important growth sectors in the country such as fisheries, tourism and forestry. SIMS officers will undergo training in agro-meteorology and making projections of climate that is usable for planning purposes in key sectors such as agriculture. Training activities will be implemented for stakeholders in the agriculture sector on how to use the information products generated in farm and land management decisions.

Output 2.3 Capacity of CCD of MECDM, MAL and SNR enhanced to support land use planning and integration of climate considerations into field operations

The responsibility and mandate for supporting agriculture land use planning in Solomon Islands rests with the Land Use Section of the MAL Planning Division. The Division currently has no modern land use planning technology. Recently, GIS hardware and software was acquired under the GEF-funded

Sustainable Land Management Project. In addition to this small improvement the Division needs to be guided by a land use policy that is sensitized to anticipated climate change risks. The development of this land use policy requires expert technical assistance and operational funds including undertaking community based participatory land use planning activities. The AF project will support the engagement of a Land Use Planning expert and consultations to develop a land use planning policy that integrates climate change risks and adaptation measures. MAL has begun seeking assistance from the Secretariat of the Pacific Commission (SPC) for this activity. Officers from MAL and other Ministries, NGOs and Training Institutions will be trained in land use planning approaches to support an exercise that will be carried out in one of the target regions of the project using a participatory approach. This activity will complement land use planning activities under Output 1.1.

Due to the severe shortage of staff in the Land Use Planning section of MAL the project will be recruiting a senior officer at the level of Principal Planning Officer in the public service structure. This officer shall be one of the two technical officers engaged under the project to increase the number of technical officers available, in order to provide effective support for the delivery of outputs under Outcome 1, especially considering the establishment of integrated and climate-sensitive land-use plans, facilitating the introduction of climate-resilient farming techniques. MAL has made a commitment which can be established under a project MOU, to pick up the costs of the Land Use Planning Officer after the AF project ends.

Solomon Islands does not have a suitable venue for GIS training needed for effective land use planning. To address this need the AF project will support SNR to house a GIS training laboratory and to equip it with necessary hardware, software and audio-visual equipment. The laboratory will be used to train field staff during the project and will continue to be used post-project as the main training venue for GIS and related computer based training to support other sectors such as protected area planning, urban planning, forest assessments, landscape planning, V&A assessments etc. This aligns well with SNR's designation as the Environment Education Centre and two SNR staff have already begun training in GIS. The course will have a ready audience with the Diploma in Agriculture students requiring such skills and will be available to government and NGO field staff in the coming years. A business plan will be established for the laboratory which will derive income for its upkeep from student's fees, workshop fees and services provided to the national and provincial governments, NGOs and individuals. The training facility will also support work in Protected Areas planning, Sustainable Land Management and forest carbon and ecosystem assessments under REDD+.

The CCD of MECDM has a very important role in guiding, coordinating and monitoring the extent to which communities, governments, organizations and the nation as a whole adapts to the predicted impacts of climate change. Apart from the Director of CCD, the two other officers are already heavily involved with coordinating mitigation programs and communications. The AF project will recruit an Adaptation Officer who, at the same level with the Land Use Planning Officer, plan, design and facilitate V&A assessments under the project, support communities with planning and implementation of adaptation activities, develop a database of adaptation tools, compiling adaptation case studies, developing training materials in community based V&A assessments and coordinating a network of adaptation practitioners to be established by the project. CCD will be supported to design and implement community based V&A assessment training for field staff and communities and document traditional coping strategies.

B. COMPONENT 3 - OUTCOME, OUTPUTS AND ACTIVITIES

Component 3 Climate change adaptation specific knowledge production, sharing and dissemination

Outcome 3 Fostered the generation and diffusion of knowledge on adapting to climate change in a systematic manner at the community and regional level.

Output 3.1 Lessons learned and best practices are generated (case studies, photo stories, short videos, posters, brochures, etc) and distributed to other communities, civil society, policy makers in government and globally through appropriate mechanisms.

It is to be expected that a lot of information, experiences and lessons learnt will be generated out of this AF project as well as other projects being implemented in the country targeting adaptation needs. A communication strategy will be developed at the beginning of the project to establish a strategic and integrated approach to communicating findings of the project. This activity will benefit MECDM and the country further as the strategy will be used to guide the communication of climate change issues, adaptation and mitigation response measures and other related subjects. An expert will be engaged to develop the strategy through a consultative approach and following its launching, training will be conducted for implementing partners on its use. The menu of communication media and tools include use of websites, participatory videos, posters, DVDs, radio and television programs and compilation of case studies and lessons learnt into booklets for public dissemination. The project will also include activities aimed at sharing knowledge on adaptation practices and technologies through regional global platforms and events and a web-site will be developed for the School of Natural Resources to support and enhance its role as the national Environment and Climate Change Education Centre.

Project brochures on climate change resilient agriculture techniques, good practice and lessons learnt will be produced and public awareness programs will be implemented using findings from the project. These will be used as tools in disseminating critical information to other communities, civil society and policy makers in government and globally. Appropriate mechanisms for sharing information such as the Adaptation Learning Mechanism (ALM) will be utilized for this purpose. Activities will also be undertaken to ensure that communities/stakeholders actively participate in a Pacific knowledge platform/ALM to dialogue with peers and policymakers on a range of relevant topics including formulating and implementing effective adaptation policies, setting up planning processes for climate change risk management and tracking and documenting vulnerability reduction. It is expected that the project will be a source of vital information on climate change adaptation in a user-friendly way to all relevant local communities, agricultural stakeholders and authorities.

Direct sharing of experiences will be supported involving look and learn study visits to other countries in the Asia-Pacific region. Video documentary of the demonstration plots will enable communities in other islands and regions to view and learn from the practices used and replicate them in their own settings. Tailor made policy briefings will be developed for presentation to senior government officials and policy makers and a publication will be developed, launched and distributed on approaches and technologies to enhance resilience of the agriculture sector in Solomon Islands.

Output 3.2 Training materials developed incorporating climate change issues and used for training of field staff and students.

The project will generate teaching materials on climate change and approaches and methods to enhance the resilience of the agriculture sector against climate risks and hazards, and a new training module for field staff as well as high school leavers attending the Certificate courses in Agriculture and Environmental Studies offered by the School of Natural Resources of the Solomon Islands College of Higher Education (SICHE). The selected project sites will become teaching laboratories and the project will enable students to travel to the sites and work with communities and families and obtain practical

hands on experience. The training materials will be made available to other training institutions in the country and the region and will contribute to expanding the knowledge base about

■ **Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities.**

More than 80% of people in Solomon Islands rely on the natural environment and agriculture production systems for their food, water and shelter. In the area of food security this informal sector is valued at 200% more than the total annual value of export crops and annual root crop production alone was conservatively valued at the equivalent in rice costs of 1.189 billion Solomon dollars (USD 132,111,000) at 2008 prices (estimate by Pacific Horizon Ltd, 2008). The local price for rice has since doubled and there is a growing fear that the over-reliance on rice imports will become an economic burden for the country with diseconomies of scale. The AF project will contribute to strengthening the resilience of this food production base by: 1) Enabling around 125,000 people or 20,800 households to benefit from sustained ecosystem services due to integrated land use planning and sustaining their production through resilient farming systems. This will also result in on-going cost savings to the government of around SBD 14,645 per household annually² (62% of total household costs in rural areas) or a total of SBD 304.6M (USD 35.84M) per year.

The integrated land use planning approach together with improved farming systems management including agro-forestry and organic agriculture will contribute significantly to enhancing ecosystem resilience and environmental sustainability. The value of the subsistence and smallholder food production system to the nation, as earlier highlighted, is an indication of the base value of ecosystem services that needs to be protected. A decline in soil productivity, disturbances to catchments and watersheds will cost the government and people of Solomon Islands significantly and failure to integrate and plan for climate change now can be potentially disastrous for the country. As an example, reduced food production by 10% due to poor management of land and water resources, declining ecosystem resilience and increasing frequency of extreme events will cost the government around USD 3.58M annually. Other externalities as a result of this phenomenon include rising cost of controlling urban crime due to increased migration into the capital city, increased costs of medical services due to poor nutrition and increased cost of supporting squatter settlements in peri-urban areas of the capital city.


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2) Reducing reliance on imported food during times of climate change related disasters. The NDMO estimates that cost of imported food relief supplies to areas affected by very high rainfall and flash flooding is around 15 million Solomon Dollars (USD 1.7M) per year and is increasing. The national government has had to meet this cost as donors do not fund food relief for Solomon Islands. It will be difficult for the government to cope with this if the trend worsens. 3) The improved farming systems and productivity will provide renewed interest amongst family members in about 9,160 households to put more time and effort into their improved farming systems and minimize outward migration from villages due to low productivity of land. About 50 women will benefit from the implementation of food processing equipments increasing family income and availability of processed local root crops. The new technology will process about 8 tonnes per month of cassava flour. The production from four units can substitute imported wheat flour at a ratio of 1:3 (wheat:cassava) and make import cost savings as well as generate local revenue totaling about USD SBD 56,922 per year. An increase in the number of processing enterprises will significantly raise local production and storage capacity.

² Figures obtained from Solomon Islands Household Income and Expenditure Survey 2005/06. The costs for most items would have doubled by 2009/2010.

The project will help draw public attention and action to root crop production and promote growing of local food as an adaptation measure. The project will also assist at least 30 communities plan for better land use and water resource management that will contribute to environmental protection and enhance ecosystems resilience. Socially the project will encourage communities to place more importance on valuing and caring for land in a cooperative and collaborative manner that can help build social capital and minimize urban drift. Isolated and vulnerable communities as well as those living in very difficult environmental and socio-economic conditions will be assisted to increase food security and livelihoods. Facilitated participatory V&A assessments followed by land use and farming systems planning will empower communities to take control of their own situations and address their vulnerabilities. Targeted support for about 150 women in root crop processing activities will empower women in the country and enable them to contribute strongly to enhancing resilience. The integrated multi-stakeholder approach will build unity and stronger collaborative planning between national and provincial governments. As a second tier level of government provincial governments will be empowered to begin an integrated approach to planning for future climate change risks.

The AF project will strengthen and build social capital in Solomon Islands, an important contributing factor to enhancing adaptation and resilience. This will be through promoting and facilitating inter and intra community participatory approaches to plan and manage land resources and strengthening networking and coordination between communities and governments. The population of 510,000 people in the country will benefit from having increased knowledge and awareness on the impacts of climate change in the agriculture sector through nation-wide print, radio and audio-visual awareness raising programs and products. The AF project will catalyze action in provinces and communities that are not directly involved in the project by sharing experiences, methods and lessons learnt. More than 500 personnel from government, NGOs, women's groups and communities will benefit from training in subjects such as; climate change, V&A assessments, land use planning, small scale processing, business management, farming systems approaches, soil management, integrated aquaculture systems and agro-meteorology. These people will form the critical mass of experts necessary to train others and continue promoting and raising awareness in the future.

 **Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.**

The proposed interventions outlined in this project concept are based on the NAPA that is the result of a thorough in-country consultation and analytical process which used multi-criteria analysis to determine those responses which are critical for the Islands. A number of alternative responses were considered during this stage to strengthen adaptive capacity to climate change and the most cost-effective were articulated in the NAPA. As such, the concept is deemed to be in line with cost-effectiveness criteria. Moreover, the project, once designed, will build on existing baseline programmes of line agencies, and harness existing delivery mechanisms such as Solomon Islands' Small Grants Programme, where necessary

The cost effectiveness of the activities under this AF project is justified in that it will facilitate mainstreaming of climate change, through building capacities of policy makers and government officers at national, provincial and local levels, in order to create an enabling environment for the implementation and maintaining of the community-level adaptation measures. The activities will bring about improved and sustained coordination and give rise to synergies through coordinated and collaborative actions. A business as usual scenario will not achieve this and other donor projects addressing agriculture and food security have not incorporated activities that promote an integrated and multi-government approach to addressing climate change risks and hazards. The None of the

provincial governments and Ministries in the country have started integrating climate change into their policy instruments, strategies and programs and many legislators and policy makers are not familiar with the growing threat of climate change and its implications for sustainable development in the country. The alternative is to assume that the government and NGOs will be able to support the needed land use changes and introduce the climate-resilient farming practices with current institutional capacities and structures, but without systemic change and an enabling and supportive institutional and policy environment, those measures will not be sustainable in the future and remain limited to a few sites, without having the chance to replicate and upscale.

Project resources will be used to engage and build capacity of field officers and extension services for the delivery and coordination of on-the ground activities that can be sustained in the longer term. The cost-effectiveness of this approach is that it will build on the existing extension services with field presence, good knowledge and experience of working with local communities, make use of the available local logistics support and site knowledge that provincial and local governments can provide e.g. local access and transport, . The alternative approach is to hire an extensive staff of field coordinators, which will be more expensive, and less effective given the need to familiarize with local situation and build on good relation with local communities.

MAL has very weak capacity to support resource owners with land use planning. The cost effectiveness of the projects capacity building activity is that land use planning will not only be enhanced but also be able to integrate climate change considerations. Capacities built will enable MAL to continue to mainstream climate change into land use planning after the end of the project. At the moment there are no projects or plans by the government to address land use planning and also utilize the expertise available within NGOs and the private sector. The alternative to having the project support government with this important function is to encourage communities to use services from the private sector. This will not be possible because communities cannot afford the fees charged by the private sector who also do not have the critical mass of experts across a multi-disciplinary field particularly in agriculture land use. NGOs do not have GIS and agriculture land use capacity and will not be able to address this need. Finally, there is the option of continuing with the status quo where no such service is being provided with no chance of integrating climate change considerations into land use planning. It would be irresponsible for the Solomon Islands government to continue this way and subject its people to further exposure and risks linked to climate change. The costs of neglecting the smallholder food production base is something the government will never be able to afford.

MAL and SNR are starting to promote food processing and preservation and their involvement in tailoring technologies and practices to address the need to process and store food in case of extreme climatic events and climate change can be cost effective as it will now be part of their normal core business. Women are the main players in food processing at the community level and there is currently no facility to support women to acquire equipment. The one-off grant facility will also provide with business models developed, training undertaken for women and sustainability monitored. The alternative for rural women is to borrow funds from commercial banks, which is very difficult for a relatively new initiative such as mechanized processing enterprises. Findings from the activity will be relayed to financial institutions at the end of the project for on-going support. The AF project will support the School of Natural Resources establish a GIS training laboratory for on-going use by students, researchers and field staff. At the moment there is no such facility in the country and the alternative option to obtaining such services is either to purchase overseas or use services provided by staff of Ministry of Forestry and Ministry of Lands and Housing. This approach has already proven difficult for the public, students and field staff in other Ministries and NGOs as it is not always easy for government officers with GIS skills to provide services given their busy workloads. A dedicated GIS learning centre is the best approach.

The alternative to strengthen the resilience of local crop production, processing and storage techniques to counteract climate-related disturbances in food supply is to increase the importing of food. This is unaffordable for large part of the population, given economic conditions, and remoteness of some areas. This programme will support local small businesses (crop processing and storage), which will not only provide cost effective local supply of food, but will also enhance livelihood diversification, providing alternative income sources. The proposed cultivation techniques and varieties are based on practices and experience of organizations working on the ground, such as the Kastom Gaden NGO.

The project activities will catalyze the efforts of MAL and KGA to promote and establish crop diversification and improve farming systems using tailored climate information services and expert advice from the Meteorological Services on weather and future climate trends to guide their production planning. Agriculture development at the macro and micro levels will now benefit from support of Meteorological services and this will have the potential of minimizing losses due to planning for extreme events and also maximize production due to timing of plantings based on weather forecasts. Finding an alternative approach to strengthening agro-meteorology , let alone strengthening main functions of SIMS will continue to be very difficult. AusAID and other donors have been supporting regional type activities in meteorology (such as the Pacific Climate Science Support Programme), but there is a need to customize regional systems to national circumstances, and support SIMS with provision of equipment. On the part of the government, the on-going austerity measures and competition from other sectors is making it very difficult to fund new equipment for meteorology. The option of maintaining the status quo cannot be acceptable and will contribute to the vulnerability of food production systems in the country. None of the weather stations are located in the windward side of the main islands where people are more vulnerable. There is therefore no workable alternative approach to improving the capacity of SIMS to gather, process data and disseminate information products to users.

Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

This project is based on the Solomon Islands NAPA and also addresses the findings of the Solomon Islands Initial National Communications to the UNFCCC and emerging adaptation issues identified under the Second National Communication. It is an important vehicle for implementing the current National Coalition for Reform and Advancement (NCRA) Government policy statements on environment and climate change particular Policy Statement 5.1.8 (d): “Devise appropriate control mechanisms to control, reduce and monitor adverse effects of climate change on the environment and people”. It is in line with and supports the implementation of the National Agriculture and Livestock Policy and Solomon Islands Organic Farming Policy and will contribute to the Provincial Government Development Planning process and provide the opportunity for integration of climate change adaptation measures.

Linkages will be established with planned and ongoing national adaptation projects, such as the GEF/LDC-Fund project on Disaster Risk Reduction and CC Adaptation dealing with coastal infrastructure and water supply (to be implemented by the World Bank), and the Pacific Adaptation on CC national demo in Ontong Java (implemented by UNDP), the regional Community-based Adaptation Programme under the GEF/Small Grants Programme, the Vulnerability and Adaptation component of the Second National Communications, as well as environmental projects in other areas (such as the GEF-funded Integrated Water Resources Management Project, the on-farm taro project aiming at conserving

agro-biodiversity, or the Sustainable Land Use Management Project). Activities targeting sustainable land use practices will also contribute strongly to implementing Solomon Islands National Action Program (NAP) under the UNCCD. The project will ensure that lessons and new knowledge is shared and compiled for distribution at the national, regional and international levels.

The project will serve to review and strengthen existing national policy frameworks, such as the National Economic Recovery, Reform, and Development Plan (2003), the National Agriculture and Livestock Sector Policy (2008-2020), or the Ministry of Environment, Conservation and Meteorology (MECM) Corporate Plan (2008-2010) through better integrating climate risks and resilience considerations. Building on existing government institutions at the different levels, the project will foster inter-ministerial and sectoral coordination on climate change adaptation issues, such as the function of the Climate Change Country Team with broad-based representation from government, NGOs and private sector interests.

Recent consultations at the provincial and community level to develop the National Climate Change Policy has revealed that provincial governments recognize the threat of climate change and are very eager to be involved and start to take a learning by doing approach in the areas of adaptation and mitigation. The project will link in with the UNDP-funded Provincial Government Strengthening Project (PGSP) and the World Bank-AusAID funded Rural Development Program (RDP) to mainstream climate change into provincial government planning and decision-making systems and is fully in line with the national governments policy of decentralization and empowering provincial governments. Support for women's involvement and gender analysis

The project will explore and create synergies with country support programmes of regional organizations. It will link in with the partnership arrangement between SPC and the Solomon Islands Government to establish a land use policy, enhance smallholder production and promote food processing. Solomon Islands has endorsed the Pacific Framework for Action on Climate Change (PIFACC) coordinated by SPREP and this project will contribute significantly to its implementation at the national level particularly in addressing the actions pertaining to adaptation. The project will make good use of the technical expertise provided by SOPAC in remote sensing and land use planning and seek co-financing from the Pacific Forum Secretariat to look into large scale root crop processing ventures that can enhance food preservation and storage in the country as an adaptation measure.

 **Describe how the project / programme meets relevant national technical standards, where applicable.**

The project will be consistent with all national social and environmental safeguards and standards. As a UNDP supported project, all project activities must be in keeping with national and UN standards. Where required the national EIA requirements will be used and complied with and guidelines for organic farming as articulated in the National Organic Policy will be followed. While there are no land use policy or guidelines in place the project will ensure that land use and farming systems planning and practice is culturally appropriate and is in line with best practice. Internationally recognized principle of gender equity will be addressed through use of gender analysis tools during design stage of the project and individual activities.

Nationally developed V&A and DRR assessment tools/guidelines will be used and refined during the course of the project and documented for use during project evaluation. Participatory community-based consultation processes will ensure that project interventions are accepted and owned by communities and clearly understood outputs or targets are established. Guidelines established by the Water Division of the

Ministry of Mines and Energy will be used when designing water catchment and storage activities on artificial islands and activities implemented near rivers and streams will be in compliance with the Rivers Waters Act (1973). Establishment of new AWS and voluntary weather stations shall meet the requirements of the SIMS and minimum standards of the WMO.

AF project activities will be subject to a UNDP appraisal process, which will ensure compliance with national standards and further confirmed or revised during project inception.

■ **Describe if there is duplication of project / programme with other funding sources, if any. The project will be developed and implemented to create synergies with and implement complementary actions to the following projects and initiatives:**

This project will not duplicate any current work done in the country. The closest complementary project is the UNDP/GEF Pacific Adaptation to Climate Change (PACC) project which targets the low lying outer islands of Solomon Islands with a different and unique setting and vulnerability complex particularly in relation to sea level rise and salt water inundation. The AF project is targeting the vulnerable regions of the larger islands where the population density is highest and people are already experiencing low crop production levels and disturbances from abnormal weather conditions.

There is, however, many opportunities to link up with other complementary development projects and create synergies. The CCD has been involved in a number of initiatives including the development of the NAPA (2007), development of the Solomon Islands component of the GEF PACC and GEF-AusAID-USAID-World Bank CTI project (2009), implementation of the SNC (2008 – 2010) and the development of a concept paper seeking support from the GEF for a full size project to strengthen resilience of coastal infrastructure and develop flood alleviation strategies targeting the western part of the island of Guadalcanal. Recently project design discussions have also been held with the EU (adaptation), UNDP (REDD and on accessing GEF5 resources), ADB (CDM capacity building), World Bank (Renewable Energy) and the Australian Government Department of Climate Change and Energy Efficiency (adaptation). The Meteorology Division of MECM is also involved in the Pacific Climate Change Science Program (PCCSP) which will provide assistance in the area of climate change modeling and scenario development.

In July 2010 the Cabinet of the previous CNURA government passed a resolution to have the NDMO be part of the MECM. This is in recognition of the paradigm shift from disaster risk management (DRM) to disaster risk reduction and an initial step in the process of integrating climate change adaptation and disaster risk reduction. This decision has now been gazette by the new NCRA government which is an important step towards maximizing opportunities for the realization of synergies.

This project will link strongly with a number of projects and initiatives which are currently or about to be implemented in the country. A joint V&A methodology approach for land and marine sectors is to be developed in collaboration with the World Fish Centre under the CTI, the PACC project and an initiative undertaken by an international NGO, Live and Learn, which is developing a guide for V&A assessments. Together these projects will build a tool kit of adaptation methods and approaches tailored to Solomon Islands situation and which can be adapted for use in other countries. There will be no duplication of effort as each of the project will be addressing a niche area in adaptation work.

The CTI project addresses marine and fisheries sectors while the Live and Learn approach is limited to development of a manual and will not involve field work. The PACC project is targeting small atoll and small island situations and will be more closely linked to the V&A work in the marine and fisheries sector given the situation on atolls and small islands where land resources management and marine resources management are strongly interlinked.

Partnership will also be established with a V&A assessment approach being planned for the Roviana lagoon in the Western Province and supported by the Department of Climate Change and Energy Efficiency of the Government of Australia as part of the Australian Government's International Climate Change Adaptation Initiative (ICCAI) through the Pacific Adaptation Strategy Assistance Program (PASAP). PASAP will trial an approach bringing together the twin elements of *traditional* and *scientific* understandings to assess the vulnerability of remote traditional communities to the impact of climate change on the marine and terrestrial natural resources they rely on for food and other key requirements.

The following are other projects implementing V&A methods as well as resource management approaches that this project will build linkages with:

- The NAPA project funded from the LDC-Fund project on Disaster Risk Reduction and CC Adaptation dealing with coastal infrastructure and water supply – synergies with water supply enhancement and climate-proofing of water-sector related policies
- GEF-funded Integrated Water Resources Management Project – lessons learnt on water management techniques will be applied in the community demos, to enhance water supply for both household and agricultural irrigation purposes.
- The regional Community-based Adaptation Programme under the Small Grants Programme – funds for this programme only allows around 2 community projects, which is very limited considering the huge national demand. This project will be coordinated closely with these CBA project in order to ensure cross-fertilization of experiences through the vulnerability assessment, adaptation planning and implementation phases
- The SPC Joint Country Programme Strategy in its priority area 5: economic and productive sectors, capacity building on food security issues – this project will coordinate closely with SPC in the delivery of the training activities and add on by integrating climate risk and resilience considerations into the support areas.

This project will complement and build on the work being progressed within MAL under the Rural Development Project (RDP). The RDP project supports participatory research and extension work but does not integrate climate considerations. The limited number of extension staff in the province does not allow much scaling up of food security related work as much of their time is also taken up promoting production of cash crops such as cocoa and coconuts and supporting research work. The AF project will support collaborative work between MAL, NGOs and training institutions and gradually establish a wider network of practitioners in V&A assessment in the agriculture and food security sector

Activities to strengthen capacity of SIMS will also link closely with the AusAID project that is building capacity of SIMS to use the Seasonal Climate Outlook for Pacific Island Countries (SCOPIC software) and enhance capacity for climate prediction through the Pacific Islands Climate Prediction Project (PICPP). Jointly these initiatives will lead to a broader coverage of sectors supported by SIMS which augers well for strengthening adaptation capacity in the future.

■ If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

Learning by doing and knowledge management is a crucial component of this project. During and after the AF project Solomon Islanders will know more about climate change and its likely impacts on the agriculture sector, know about the range of measures to enhance resilience of the agriculture sector to maintain food security and understand as well as be familiar with the importance of undertaking land use planning that integrates climate risks.

Recognizing the importance of knowledge management (KM) to enhance impacts and facilitate replication, this initiative integrates various KM related actions. Lessons will be documented by project staff with the support of the Chief Technical Advisor. These will be disseminated through a number of appropriate means to various target audience and be guided by a project communication strategy. For example: 1) Radio and TV programmes, leaflets and posters will target the public with special attention to audio-visual presentations in DVDs using english and local creole language; 2) training modules generated from project case studies and on-the-ground application of adaptation measures will be used well after the project ends by young Solomon Islanders studying agriculture, forestry and environmental studies at the School of Natural Resources; 3) Guidelines and manuals for V&A assessments, land use planning, design of integrated crop-aquaculture systems, root crop processing will be made available to field workers, communities and the network of rural training centres in the country; 4) Websites for the School of Natural Resources and MAL will have links targeting development professionals, teachers and school children; and 4) provincial and national level workshops will be held to facilitate peer-to-peer exchange of knowledge. Web-based platforms such as the Adaptation Learning Mechanism at www.adaptationlearning.net will be accessed to share information and also promoted within the country. The capturing and analyzing of experience and lessons learnt will be systematically applied throughout the project cycle (e.g. from the detailed vulnerability assessment through the adaptation planning and implementation that will underpin the design of the project as articulated in the final project proposal).

The project will also assist members of other communities in the country to visit the project sites and observe the technologies used and modified farming systems. This will be part of the extension services work in the country and will stimulate learning and sharing of practices. Towards the end of the project a national workshop will be convened to review the new knowledge and technologies used, mainstreaming and coordination practices implemented and to develop a strategy for on-going replication and improvement for on-going use in similar future projects both in Solomon Islands as well as elsewhere in the Pacific and beyond.

The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to support the diffusion of lessons learned. The project will

■ Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation.

The project process will be building on and serve to strengthen existing inter-ministerial coordination mechanisms. Consultations during the project preparatory phase has involved, among others, the following national agencies and organizations:

- Ministry of Environment, Conservation and Meteorology (MECM) and its Climate Change Division,
- Ministry of Agriculture and Livestock
- Ministry of Women, Youth and Sports
- Ministry of Provincial Government
- Solomon Islands Meteorological Service (SIMS),
- Environmental Health Division of the Ministry of Health and Medical Services
- National Disaster Management Office
- Malaita, Choiseul, Isabel, Western, Guadalcanal Provincial Governments
- Provincial Agriculture Extension Divisions

Other national stakeholders, donor partners and potential implementing partners include:

- UNDP
- Kastom Gaden Association of Solomon Islands
- School of Natural Resources of the Solomon Islands College of Higher Education
- Nut Growers Association of Solomon Islands
- Solomon Islands Red Cross
- Oxfam International
- Save the Children (Solomon Islands)
- Rural Development Program of Solomon Islands
- AusAID Community Sector Program

Consultations included one to one meetings as well as a National Inception Workshop followed by a series of consultation meetings by the Technical Working Group assigned to assist with the design of the project.

Information obtained for the design of the project pertaining to needs and vulnerable areas of the country have been obtained from past consultations that led to the development of the NAPA, draft Climate Change Policy, Second National Communication, State of Environment Report, National Agriculture and Livestock Sector Policy and the UNCCD National Action Program (NAP).

■ Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

Smallholder farming and food production systems and the ecosystem services that support them are the foundation of food security and rural livelihoods in Solomon Islands and the single most important socio-economic safety net for more than 90% of the population. Even without climate change these systems are already under threat from intensive land use and on-going use of inadequate technology. Climate variability and extreme events are already weakening this safety net and, as shown in this proposal, can potentially cost the country significant amounts of money on imported food if not addressed. As an LDC the capacity to scale up efforts to revitalize and strengthen resilience of rural based farming systems to support the growing population as well as adapt to predicted climate change is very limited if not absent. The Solomon Islands government therefore welcomes this AF project as an essential and timely intervention which is fully additional in terms of the planned activities, expected outputs and outcomes.

Component 1 - Community Based Adaptation initiatives implemented in at least 30 Communities across at least 3 regions in the Solomon Islands

Baseline situation

The National Agriculture and Livestock policy and the NAPA both recognize the need for increased efforts to ensure that rural farming and food production systems are resilient in light of growing populations and climate change risks. While the messages and intent are clear the reality is that within the bounds of its very limited resources, implementing new approaches will continue to be nigh impossible. MAL does not have the capacity to engage its limited number of field staff with almost no operational funding to begin assisting vulnerable communities adapt to climate change. The focus of extension services and research continues to be on cash crop production and, where time and resources permit, attention is given to increasing food production. An added reason for the limited attention to climate change adaptation is due to the fact that senior agriculture officers, policy makers and field staff are not well aware of future climate change risks and implications on the agriculture sector. All

field staff do not know how to undertake V&A assessments and seldom if at all obtain agro-meteorological information and advice from their colleagues in meteorological services. Technical expertise for community based land use planning is almost lacking even without considering planning land use for adaptation to climate change. In areas where there is either very high or low rainfall there are very limited alternative technologies and cropping practices available to farmers to enhance resilience of their farming systems. In an attempt to support government address rural food production the local NGO, Kastom Gaden Association, has established a program to promote growing of local varieties and organic farming but have yet to integrate climate change adaptation measures.

Additionality (adaptation cost reasoning)

AF funds will be used to expand on, and complement existing baseline programmes and projects, and will be aligned with development priorities of the country and target communities. This project will address the shorter and longer term climate risks that jeopardize food security and related development objectives, its activities will be additional to the ongoing development programmes and activities intended to boost rural production and income. The AF project will give rise to stronger collaboration and integration of work carried out by agriculture extension and research officers, land use planners, meteorologists, policy makers, trainers and communities in an approach to address climate change risks. Furthermore the AF project is enabling, for the first time in the country, a vertically and horizontally integrated approach to address climate change risks involving many stakeholders at different levels. The neglected areas of germplasm collection, enhancing food processing and storage are now given prominence as important adaptation measures. New technologies such as integrated root crop,-vegetable and aquaculture systems will be implemented for use in areas requiring careful management of water resources to support production.

The project management structure will guarantee that climate considerations will begin to be practically integrated into national and provincial government agencies' planning and decision making processes and into the work of agriculture field staff. Without this project all this will not be possible with each agency implementing their own separate activities in a business as usual fashion. The approaches taken will generate new knowledge and achieve synergies and learning experiences that can be used to guide adaptation planning in other vulnerable sectors identified in the NAPA such as coastal infrastructure and water resources. The project will encourage strategic longer term integrated planning for resilience in the agriculture food production sector, an approach that would not be easy to implement without this project.

Component 2. Institutional strengthening to support climate resilient policy frameworks for the agriculture sector

Baseline

For an LDC such as Solomon Islands a supportive enabling environment, strong institutional capacity and effective integrated approach is essential for addressing the cross-cutting nature of climate change. In the area of agriculture and food production there is now an initial attempt by the government to recognize climate change as a threat to agriculture production and food security. Policy intentions remain in documents while concerned government ministries and other national partners continue with their traditional roles to focus on their most immediate sector annual work plans and strategies that have yet to consider climate change risks. There is no existing mechanism to bring together different actors to strategically plan for resilience of the agriculture and food production sector and coordinate an integrated approach except the PACC project which is targeting the small outlying islands. Some initial work on rapid V&A assessments have been carried out and the NDMO is beginning to promote and support disaster risk reduction measures in a number of communities and institutions and a recent government decision to have the NDMO be part of the MECDM will enable stronger practical integration of DRR and CCA.

The very weak capacity of implementing partners in this project does not allow them to firstly begin to address climate change in their work and to actively participate in an integrated team approach. SIMS currently does not have the capacity to expand its services to provide agro-meteorological information products to users in the agriculture sector. SIMS' capacity is hampered by equipment limitations, limited capacity of its officers and limited funding to commit to improving data management. Requests submitted to the Ministry of Finance for expanding the capacity of SIMS has not been considered favorably with senior officials not understanding well the importance of the services provided and the imperative of planning for climate change. The WMO focuses its capacity building on training personnel and the support from the Australian Government tends to be more regional in scope. Without this project it will not be possible for SIMS to branch into the area of agro-meteorological and begin supporting more than 85% of the country's population in isolated rural areas who rely on agriculture for their food and livelihood. Capacity for land use planning is almost non-existent and the recognition that climate change risks can have detrimental effects of crop production has raised the profile and importance of land use planning. The School of Natural Resources

Additionality (adaptation cost reasoning)

The AF project will strengthen the enabling environment needed to support integration of climate change into sector policies, strategies and policy instruments. This will be done through a practical integrated team approach where coordination mechanisms will be strengthened and policy makers and staff of government agencies, NGOs and training institutions will improve their knowledge of climate change and use information on weather trends and future climate change scenarios to plan for enhancing resilience of the agriculture sector. Small steps are now being taken and the Ministry of Agriculture and Livestock (MAL) National Agriculture Policy (2009) has recognized the need to address climate change and disaster risk reduction but there is no capacity within the Ministry to move from policy to action. This situation is now starting to be addressed through the Pacific Adaptation to Climate Change (PACC) project targeting small outer islands of Ontong Java, Sikaiana and Fenualoa in the Reef Islands. The Second National Communications project, AusAID regional adaptation projects are assisting Solomon Islands generate downscaled models for various regions in the country and sectors. The AF project will enable the use of these to plan land use and farming systems. At the end of this project SIMS will be better equipped to provide agro-meteorological services and collaborate more effectively with other partners.

Capacity for land use planning and adaptation planning in the agriculture sector will be significantly enhanced and extension and research staff will have the required training in V&A, gender analysis and participatory land use planning to support communities. Community organizations and households will have a better understanding of future climate change risks and will benefit from investments provided by the AF project to build on their existing limited resources. This will enable them to plan and re-design their farming systems and apply new technologies for processing and storing food and efficiently using water with the aim of enhancing resilience. The AF project will also enable a national training institution, the School of Natural Resources, to integrate climate change into training programs and use modern planning technology such as GIS for training and support for field work. The almost forgotten wealth of agro-biodiversity will be regain prominence as the AF project will promote conservation and utilization of indigenous and introduced agro-biodiversity and establish collections of food crops that store longer, for use during times of disasters and increased demand. Collectively the menu of interventions will be the first important steps for Solomon Islands to move beyond business as usual and start learning to adapt to the future impact of climate change.

Component 3. Climate Change Adaptation specific knowledge production, sharing and dissemination

Baseline

Information and knowledge management is one of the weakest aspects of institutional capacity in

Solomon Islands as found by the National Capacity Self Assessment (SIG, 2007), State of Environment Report (SIG, 2008), Institutional Capacity Assessment for addressing climate change in Melanesia (Wickham et al, 2009) and the need continues to be echoed in the consultations to develop the Second National Communication and Climate Change Policy. A lot of data and information is being generated or brought in the country through many development programs and activities. These can be found in individuals laptops, office desktops or stacked away on shelves. None of the government ministries are actively sharing information and strengthening KM systems although a number have websites to post reports and other documents. Climate change adaptation is a new development field requiring a communication strategy with measurable outcomes in terms of raised knowledge and awareness and change in practices. To date communication activities involved awareness raising on the causes of global warming and climate change, experiences felt by various islanders in the country, MEA negotiation outcomes and strategies or actions implemented by other countries. These are relayed intermittently in awareness sessions coinciding with events such as World Meteorology Day and World Environment Day. A lot of rural development experiences, technology development activities and case studies of best practices are not communicated to the public or made available for use by training institutions, field workers and students. Information sharing mechanisms exist such as the Adaptation Learning Mechanism (ALM), Pacific Environment Information Network (PEIN), Solomon Islands National Agriculture Information Service (SoNAIS), Peoples First rural e-mail network which can be used to disseminate information.

Additionality (Adaptation cost reasoning)

Adaptation activities are incipient in the country, through a few ongoing projects (e.g. PACC, SGP-CBA), which does not allow a systematic capturing, analysis and dissemination of good practices. This project puts emphasis on adaptation knowledge management activities, currently non-existent in the country that will build capacities and facilitate broader KM applications, benefitting wider audiences and processes. A communication strategy will be developed by the project to guide communication activities in a strategic and wide-reaching approach. Communication tools will include radio programs, leaflets and brochures, web-sites, DVD productions and TV shows. Information management within MAL, MECDM and School of Natural Resources will be strengthened as models for other partners to emulate and together will provide the critical mass of KM processes and products needed to raise awareness and promote adaptation actions by government and stakeholders. The project will also enable lessons learnt and guidelines developed to be made available in a form that can be used by trainers and students.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation.

The Government of Solomon Islands will execute the project with the support of UNDP under the National Implementation Modality. The Ministry of Environment, Climate Change, Disaster Management, and Meteorology (MECDM) will be the executing institution responsible for ensuring that the objectives and components of the project are delivered as will be detailed in the Project Document. The duration of the project will be four years. Implementation of the project will be carried out under the general guidance of the Project Steering Committee (PSC), specifically formed for this purpose. The project structure will be constituted by a Project Director and a Project Coordinator. The Project Director will be the Permanent Secretary of MECMD (or person designated by him) and will be responsible for orienting and advising the Project Coordinator on Government policy and priorities. The Project Director will also be responsible for maintaining regular communication with the National Climate Change Country Team which will be endorsed by the Cabinet as a national policy consultation on Climate Change related issues, and ensuring that their interests are addressed and communicated effectively. In addition to this, MECMD will define Letters of Agreement with relevant counterparts for support in

project execution of specific components including the Ministry of Agriculture and Livestock (MAL), School of Natural Resource, Solomon Islands College of Higher Education (SNR-SICHE), Provincial Government, and NGOs such as Kastom Garden and Nut Growers Association of Solomon Islands.

MECDM will prepare an Annual Work Plan that incorporates project activities and results to be delivered through it. The Plan will define the execution time frame for each activity and the responsible parties for its implementation. The first Work Plan will be finalized and incorporated into the Project Document within 30 days of its signature. The participation of project counterparts will be essential for the success of the planning phase, during which the Annual Work Plan will be prepared.

For its part, UNDP will provide support to the Director and the Coordinator of the project, in order to maximize its reach and impact as well as the quality of its products. Moreover, UNDP will assist MECDM to disburse the fund through the Project Implementation Unit which will be dedicated to the Project in keeping with its key principles of transparency, competitiveness, efficiency and economy. The financial management and accountability for the resources allocated, as well as other activities related to the execution of Project activities, will be undertaken by Project Implementation Unit under the supervision of the UNDP Honiara Sub-Office and Fiji Multi-Country Office. UNDP will undertake the monitoring of the Project and of evaluation activities, taking into account from the outset local capacities for administering the project, capacity limitations and requirements, as well as the effectiveness and efficiency of communications between ministries and other institutions that are relevant to the project.

UNDP would be fully accountable for the effective implementation of this project. As a Multilateral Implementing Entity, UNDP is responsible for providing a number of key general management and specialized technical support services. These services are provided through UNDP's global network of country, regional and headquarters offices and units and include assistance in; project formulation and appraisal; determination of execution modality and local capacity assessment; briefing and de-briefing of project staff and consultants; general oversight and monitoring, including participation in project reviews; receipt, allocation and reporting to the donor of financial resources; thematic and technical backstopping; provision of systems, IT infrastructure, branding, and knowledge transfer; research and development; participation in policy negotiations; policy advisory services; programme identification and development; identifying, accessing, combining and sequencing financing; troubleshooting; identification and consolidation of learning; and training and capacity building.

As outlined in UNDP's application to the Adaptation Fund Board for accreditation as a Multilateral Implementing Entity, UNDP employs a number of project execution modalities determined on country demand, the specificities of an intervention, and a country context. Under the national execution modality proposed to be used for this project, UNDP selects a government entity as the Execution Entity based on relevant capacity assessments performed by UNDP. Please note that UNDP uses slightly different terminology to that used by the operational policies and guidelines of the Adaptation Fund. In UNDP terminology, the "executing entity" is referred to as the "Implementing Partner" in countries which have adopted harmonized operational modalities and the "Executing Entity" in countries which have not yet done so. The Executing Entity is the institutional entity entrusted with and fully accountable to UNDP for successfully managing and delivering project outputs. It is responsible to UNDP for activities including: the preparation and implementation of project work plans and annual audit plans; preparation and operation of project budgets and budget revisions; disbursement and administration of funds; recruitment of national and international consultants and project personnel; financial and progress reporting; and monitoring and evaluation. As stated above, however, UNDP retains ultimate accountability for the effective implementation of the project.

Describe the measures for financial and project / programme risk management.

7.3 Risks and mitigation measures

The following Table 7.3A presents the risks that may affect implementation of the project and achievement of outputs and outcomes. Each area of risk is accompanied by potential mitigation measures.

Table 7.3A – Project Risks and Mitigation Measures

Risk	Level	Mitigation measures	Responsibility
Delays in project inception impact on achieving project outputs and outcomes and reduce scope to deliver program as outlined in proposal	M	Develop detailed inception work plan to guide inception phase	SIG and UNDP
Poor collaboration between project partners	M	Inception workshop to clarify roles and responsibilities and establish and implement project stakeholder collaboration and team building activities	PMU
Weak cooperation by communities at proposed sites	M	Seek and confirm community commitment during early stage of project and build ownership	PMU, MAL, MECM
Land disputes amongst community members affect land use planning exercise	M	Zone or region selection process for land use planning to involve consultations with communities to secure commitment and minimized disputes	PMU, MAL, MECM, Provincial governments, Community leaders
Limited human resources in SIG agencies to contribute to the activities.	M	Secure participation of officers during project inception phase and use two positions to be recruited in the project (Land Use and Adaptation officer) to provide technical backstopping. Project monitoring process to identify such problems at the early stage and PMU to arrange for alternative measures including use of NGOs and community members	PMU, MAL, MECM
A series of unusually adverse climatic conditions does not damage adaptation measures being implemented, or weaken the interest of key stakeholders to addressing adaptation issues.	L	Schedule project activities to avoid and/or respond to such occurrences.	PMU
The techniques and technologies developed are not gender sensitive – i.e. they increase inequity between men and women or change the social roles of men and women in a way that reduces self reliance.	M	Conduct training on gender analysis for project team and use guidelines during selection of technologies	PMU, PAED

Risk	Level	Mitigation measures	Responsibility
The selection of project sites do not follow the established criteria and are derailed due to political processes and influences.	M	Selection criteria and decisions of the PMU and Steering committee are clearly communicated	SIG and UNDP
The government is not supportive, politically and financially, to a cross-sectoral and integrated approach to the management of climate risks and opportunities.	L	Formalize MOU at beginning of project to set out mutual obligations for project implementation	PMU

B. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

Project monitoring and evaluation will be conducted in accordance with established UNDP procedures by the project team with the support of UNDP Staff. The Logical Framework for the project will provide performance and impact outcome level indicators along with their corresponding means of verification. These will form the basis on which the project's Monitoring and Evaluation system will be built. The Table below outlines the monitoring and evaluation activities and budget allocations:

Type of M&E Activity	Schedule	Responsibility	Total Budget (USD)
Inception workshop	Within 1st month in 1 st Year of Project	Project Coordinator UNDP-CO	5,000
Inception report	2 nd month in the 1 st Yr of Project	Project Coordinator Local consultant UNDP-CO	2,000
Quarterly reports	Every quarter annually	PMU	0
Six monthly technical monitoring report	Every six months	PMU Local consultant	12,000
Meetings of National Project Steering Committee	Immediately following inception workshop and thereon every six months	PMU	1,000
Meetings of Provincial Climate Change Steering Committee	Immediately following inception workshop and thereon every six months	PMU	1,000
Meeting of National Climate Change Country Team	Annually at the end of 12 months	PMU UNDP-CO	200
Mid-Term Evaluation	Half way through project implementation	PMU, UNDP-CO External consultant	20,000
Final Project Evaluation	At end of Project	PMU, UNDP-CO External consultant	30,000
Project Terminal Report	During last quarter of final year of project	PMU	0
Annual audits	At end of each year	PMU, UNDP-CO	12,000
TOTAL ESTIMATED M&E COSTS			63,200

Notes accompanying the Project M&E Table:

- A Chief Technical Advisor with expertise on climate change adaptation and agriculture development will be engaged to provide technical monitoring of the project. This will involve assessing as well as providing technical advice on the V&A work and design of adaptation options.
- Provincial level Climate Change Steering Committee will be established to begin the process of integrating and coordinating climate change work and also to monitor progress of the AF project. The Provincial Climate Change Steering Committee shall report to the Provincial Executive and its TOR and membership will be finalized during the inception workshop.

■ PROJECT BUDGET

1 Project Budget Summary by Outputs and main Activities

Project Components, Outputs, Activities and Tentative Budget

Component 1 Community based adaptation initiatives implemented in at least 30 communities across at least 3 regions in Solomon Islands

Outcome 1 Adaptive capacity of communities enhanced to climate change risks in agriculture sector in the three regions of Solomon Islands

Output	Activities	Implementing entities	Cost estimate
1.1 Development and implementation of integrated land use plans at the community level targeting 3 regions and at least 30 communities in the country that are vulnerable to climate hazards and risks.	• Consultation workshops and conference to review status of land use planning in Solomon Islands and integrate climate change considerations to guide land use planning approach	MECM, MAL	52,000
	• Procure equipment, services, imagery and software for land use planning with communities in targeted vulnerable areas	MAL	620,000
	• Strengthen capacity for Land Use Planning within MAL	MAL	158,000
	• Conduct workshop to develop and test methodology for land use planning	NSO/MAL	40,000
	• Conduct land use planning with at least 9 communities in the three selected regions	MAL	240,000
	• Compile and analyse findings and produce land use maps and guidelines	MAL	240,000
	• Conduct follow up workshop with communities to present maps and guidelines	MAL , MECDM	40,000
			Sub-Total
1.2 Climate change resilient farming and aquaculture production, techniques and systems introduced at community level	• V&A Assessment training and workshop and finalize regions and sites	MAL MECDM	48,000
	• Conduct research, procure equipment and implement food preservation techniques with farmers	MAL	120,000
	• Region and site V&A training	MAL	60,000
	• Conduct on-farm training on soil management techniques in at least two sites in each of the 9 provinces targeting selected vulnerable areas and develop manual for use by field staff and	Kastom Gaden	80,000

	<p>communities</p> <ul style="list-style-type: none"> • Conduct on-farm demonstrations of crop diversification and improved farming systems to enhance resilience of food production systems and strengthen network of MAL Extension and Kastom Gaden contact farmers to include isolated and vulnerable areas • Implement integrated aqua-culture and agriculture & livestock production system in four sites to manage water resources and enhance resilience to fluctuations in rainfall • Undertake look and learn visits of a team of farmers, Kastom Gaden, MAL, ARTC to other countries to observe improved agro-forestry, permaculture and integrated aqua culture and agriculture • Establish network of nut and fruit tree growers targeting selected vulnerable locations and support at least 30 farming families or communities with germplasm improvement program to enhance resilience and develop field guide 	<p>MAL Kastom Gaden</p> <p>SNR</p> <p>MAL, SNR</p> <p>NGASI</p>	<p>185,000 185,000</p> <p>200,000</p> <p>80,000</p> <p>120,000</p>
		Sub-Total	1,078,000
1.3 Establishment of provincial and community level food banks to overcome periods of climate related disruptions	<ul style="list-style-type: none"> • Review status of germplasm collection in Solomon Islands and indigenous and introduced agro-biodiversity available for use in areas experiencing climatic stresses • Develop, print and disseminate field manual on identification and establishment of food banks in targeted vulnerable areas • Conduct at least one workshop per province on establishment of food banks in targeted areas and support communities establish food banks in targeted areas 	<p>Research, Extension, Kastom Gaden</p> <p>Research, Extension, Kastom Gaden</p> <p>Research, Extension, MAL, Kastom Gaden</p>	<p>12,000</p> <p>30,000</p> <p>30,000</p>
		Sub-Total	72,000
1.4 Strengthening capacity for processing and storage of root crops and tree crops	<ul style="list-style-type: none"> • Procure equipment and conduct research and training in food processing • Establish and manage grant facility for procurement of food processing equipment • Implement training to support grant recipients with implementation and management of food processing operations including business management training 	<p>MAL, SNR</p> <p>SNR</p> <p>SNR</p>	<p>157,000</p> <p>253,000</p> <p>70,000</p>
		Sub-Total	480,000

Output	Activities	Implementing entities	Cost estimate
1.5 Government Officers, NGO field staff and communities are trained on the use of climate information in decision making processes	<ul style="list-style-type: none"> Design and develop training package for communities and field staff on use of climate information Conduct at least 18 training workshops in all 9 provinces on use of climate information including design and develop cropping calendar incorporating traditional knowledge and science Revise and develop soil suitability and crop selection manual incorporating climate and weather parameters Certificate courses for field staff and post graduate research scholarships and short course opportunities for technical officers provided to build capacity of Solomon Islanders in addressing climate change risks and hazards in relation to food security and water resources management 	SIMS	50,000
		SIMS	50,000
		MAL	20,000
		SNR	360,000
		Sub-Total	480,000
		COMPONENT TOTAL	3,500,000

3.2 COMPONENT 2 - OUTCOME, OUTPUTS AND ACTIVITIES

Component 2 Institutional strengthening to support climate resilient policy frameworks for the agriculture sector.

Outcome 2 Adjusted national and sub-national policies related to governing agriculture in the context of a range of climate change futures

Output	Activities	Implementing entities	Cost estimate
2.1 Integration of climate and disaster risks into the national and provincial agriculture and livestock sector policy, other relevant policies and strategies and related instruments and coordination mechanisms	<ul style="list-style-type: none"> Review national legislations pertaining to agriculture sector and recommend provisions that integrate climate change considerations Review national climate change coordination mechanism and conduct workshop for coordination bodies on mainstreaming climate change Conduct national workshop to mainstream climate change into agriculture and aquaculture related policies and develop mainstreaming guidelines Conduct workshop on gender, climate change and food security and develop guidelines Conduct climate change mainstreaming workshops in four provinces and establish coordination mechanisms Review provincial government policies and ordinances in the areas of agriculture and water resources and incorporate climate change adaptation considerations 	MAL	35,000
		MECM	10,000
		MECM	15,000
		MECM, MAL, MOF	40,000
		MECM	40,000
		MECM, AGC, MPG	10,000

		Sub-Total	150,000
2.2 Capacity of Solomon Islands Meteorological Services Strengthened to produce enhanced weather and climate information services tailored to agriculture sector and land resources management	<ul style="list-style-type: none"> • Conduct workshop to establish a national strategy to enhance agro-meteorological services in Solomon Islands • Train SIMS officers in agro-meteorology • Procure equipment and establish AWS and voluntary recoding stations at targeted sites across the regions covered in this project. • Conduct training for MAL staff on use of AWS and voluntary manual weather reporting • Strengthen data management and agro-meteorology information dissemination system within SIMS 	SIMS	6,000
		SIMS	30,000
		SIMS	200,000
		SIMS	39,000
		SIMS	85,000
		Sub-Total	360,000
2.3 Capacity of CCD, MAL of MECDM and SNR enhanced to support integration of climate risks into land use planning and the agriculture sector.	<ul style="list-style-type: none"> • Strengthen capacity of Climate Change Division within MECDM to coordinate, guide and support V&A program at the national, provincial and community • Enhance capacity of SNR to provide GIS services to the agriculture sector and land resources management in Solomon Islands through improved facilities, staff development and conducting of training workshops 	MECDM CCD	110,000
		SNR	130,000
		Sub-Total	240,000
		COMPONENT TOTAL	750,000

3.3 COMPONENT 3 - OUTCOME, OUTPUTS AND ACTIVITIES

Component 3 Climate change adaptation specific knowledge production, sharing and dissemination

Outcome 3 Fostered the generation and diffusion of knowledge on adapting to climate change in a systematic manner at the community and regional level.

Output	Activities	Implementing entities	Cost estimate
3.1 Lessons learned and best practices generated (case studies, photo stories, short videos, posters etc) and distributed to other communities, civil society, policy makers, in government and globally through appropriate mechanisms.	<ul style="list-style-type: none"> • Conduct workshop and develop communication strategy for the project • Hold training workshops on how to implement the communication strategy • Develop communication tools and products and implement communication and knowledge management strategy and activities including targeted training activities. • 	MAL, MECM	8,000
		MAL, MECM, SNR	20,000
		MAL, MECM, SNR	262,000

		Sub-Total	290,000
3.2 Training materials developed incorporating climate change issues and used for training of field staff and students.	<ul style="list-style-type: none"> • Conduct national workshop to review and identify opportunities to integrate climate change and food security into School of Natural Resources certificate courses • Design and develop resource materials for School of natural resources and extension staff on climate change and food security 	SNR	15,000
		SNR, MECM, MAL, KGA,	45,000
		Sub-Total	60,000
		COMPONENT TOTAL	350,000

Project Execution

Output	Activities	Implementing entities	Cost estimate
4.1 PMU established and operational	<ul style="list-style-type: none"> • Project staff • Procure office furniture, equipment and stationary • PMU operation costs 		321,800
			40,000
			115,000
		Sub-Total	436,800
4.3 Project monitoring and evaluation	<ul style="list-style-type: none"> • Details presented in Separate Section 		63,200
		Sub-Total	63,200
TOTAL PROJECT EXECUTION COSTS			500,000

■ D: Strategic Results Framework

Project Strategy	Indicator	Baseline	Target at end of Project	Sources of verification	Assumptions
Objective Increased level of resilience of community-based food production systems in the agriculture sector in Solomon Islands against hazards and risks related to climate variability and climate change	No. of enabling policy instruments and coordination mechanisms in the agriculture and food security sector reviewed and integrating climate change hazards and risks.	National policy instruments, coordination mechanisms and institutions in the agriculture and food security sector do not address climate related risks and hazards.	At least four national and provincial level policy instruments, and coordination mechanisms addressing the agriculture sector and food security have integrated climate change risks and hazards	National policy documents Ministry Corporate and Strategic Plans Provincial government development plans Project monitoring and evaluation reports	Political stability is maintained Strong coordination amongst climate change stakeholders in the country Political will and commitment by senior government officials to integrate climate change in agriculture and food security
	No. of land use and agriculture production systems, ecosystems, communities and households in coastal areas and highlands in Solomon Islands able to maintain or increase food production and food security and cope with climate variability and change.	Communities, and agriculture food production systems in coastal areas and highlands of Solomon Islands are exposed to future climate related risks and hazards, have weak coping capacity and have not started building resilience.	By the end of the project at least 30 communities in at least 3 regions of coastal areas and highlands have integrated climate change risks into their land use plans and farming systems and have improved methods of food production and processing and are experiencing increased and sustained levels of food security.	Project reports Field reports from project personnel Land use plans developed Agro-meteorology tools developed to support land use and farming systems planning	Strong community leadership, cooperation and support for project activities. Weather is favorable to implement project activities in the various islands Agriculture staff are committed to supporting the project
Project Strategy	Indicator	Baseline	Target	Sources of verification	Assumptions
Outcome 1 Adaptive capacity of communities enhanced to climate change risks in agriculture sector in three regions	No. of integrated land use plans for targeted vulnerable coastal areas and highlands of the big volcanic islands incorporating climate change considerations	No integrated land use planning undertaken and climate change considerations are yet to be factored into land use plans across the different geographic regions in Solomon Islands especially those that are more vulnerable to	By the end of the project, at least 2 integrated land use plans are developed for coastal areas and highlands that integrate climate change related risks and hazards and used to guide sustainable, climate-resilient land-use and agriculture	V&A assessment reports. Integrated land use plans Government Annual Reports Project Monitoring and Evaluation Reports Provincial government	Appropriate staff members are selected for training by their host agencies. Very low staff turnover resulting in sustained capacity of government and partner institutions. MAL and MECM

Project Strategy	Indicator	Baseline	Target at end of Project	Sources of verification	Assumptions
		climate risks	development	reports Record of community meetings Project baseline assessment report	continue to support adaptation in the agriculture and food production sector and to apply and maintain adaptive capacity built during the project
	No. of officials, technical experts and field staff across government, NGO and training institutions able to plan, design and facilitate vulnerability and adaptation (V&A) assessments in the agriculture food production sector	Officials, technical experts and field staff of Government, NGOs, private sector and training institutions have limited capacity and not been trained to plan, design and facilitate V&A assessments in the agriculture food production sector.	By the end of the 2 nd year at least 200 personnel from government, NGO and training institutions have been trained and are involved in planning and facilitating V&A assessments for the agriculture sector.	V&A Assessment training reports Community based V&A Assessment reports. Project monitoring and evaluation reports	MAL senior officials committed to incorporating climate change considerations in annual and strategic plans and budgeting processes Communities are willing and committed to actively participate in the project No political interference in selection of regions and project sites
	No. and types of agriculture and food security adaptation initiatives designed and implemented in at least four targeted regions, 30 communities and selected sites and contributing to enhanced resilience of agriculture sector and food security in Solomon Islands	Smallholder farming systems are not able to cope with declining soil fertility and limited agriculture, processing and food security adaption options and strategies available in the country	By the end of the project at least 30 community and/or household based farming and food production, processing and storage systems are established, incorporating climate change related risks and hazards	V&A assessment reports Annual report of Government, institutions and NGOs Farming systems plans developed by households Field reports from project sites	

Project Strategy	Indicator	Baseline	Target at end of Project	Sources of verification	Assumptions
<p>Outcome 1</p> <p>Adaptive capacity of communities enhanced to climate change risks in agriculture sector in three regions</p>	<p>No. and types of agriculture and food security adaptation initiatives designed and implemented in at least four targeted regions, 30 communities and selected sites and contributing to enhanced resilience of agriculture sector and food security in Solomon Islands</p>	<p>Smallholder farming systems are not able to cope with declining soil fertility and limited agriculture, processing and food security adaption options and strategies available in the country</p>	<p>Research into root crop processing undertaken and at least four small scale root crop processing facilities established and operated by women</p> <p>A national, provincial and local agro-biodiversity and food bank strategy established and implemented in at least one site per target region.</p> <p>At least 20 families on man-made artificial islands provided with water storage tanks, roofing iron and low-cost bucket drip irrigation systems to support small scale vegetable production.</p>	<p>Procurement records</p> <p>Business plans for root crop processing facilities</p> <p>Project reports</p> <p>Technology evaluation report</p> <p>V&A assessment report.</p> <p>Agro-biodiversity strategy documents</p> <p>Evaluation report on food banks at end of project</p> <p>Integrated aquaculture-food crop production system design document</p> <p>Procurement records</p> <p>Technology evaluation report</p>	<p>Technology is appropriate for small scale production</p> <p>Sufficient supplies of root crops for production of flour and chips</p> <p>Landowners are willing to establish or expand their areas for agro-biodiversity collections and food banks.</p> <p>MAL and Kastom Gaden field staff collaborating and assisting farmers</p> <p>Land is available to implement the integrated system</p> <p>School of Natural Resources committed to establishing and maintaining the learning system</p> <p>There is reliable transport to the artificial islands.</p> <p>Families contribute to cost of guttering and establishment of grow boxes.</p>

Project Strategy	Indicator	Baseline	Target	Sources of verification	Assumptions
Outcome 2 Institutions and enabling environment strengthened for effective implementation of policy instruments and actions to integrate climate risks into agriculture and food security	No. of national and provincial level policies, strategies, plans and coordinating mechanisms reviewed and incorporating climate change risks	Very few national policies taking climate risks into consideration, no policy instruments in place to guide and support communities and households address climate variability and change and coordinating mechanisms not addressing climate change considerations.	By the end of project climate change considerations are incorporated into the national long term development plan, at least three Ministry of Agriculture policy instruments, development planning processes and development plans of at least 4 provincial governments have integrated climate change risks.	Institutional capacity assessment reports Institutional strengthening reports Training reports Project monitoring and evaluation reports National policy documents	Strong strategic leadership and management within government and NGO agencies and national institutions. Senior officials and technical officers have the time to commit to planning and training activities.
	No. of weather stations established in the country, meeting WMO standards and contributing data to national weather service and early warning system	Only five manual weather stations in operation in the country with none located in the windward side of the main islands and in areas more prone to cyclones	At least 2 AWS and at least 12 voluntary weather stations established at strategic locations, meet WMO standards and contributing to nationwide monitoring and early warning system	Procurement records Site plans for establishment of AWS. Project progress reports Project evaluation report	Landowners allowing their land to be used to establish the AWS's. Voluntary weather recorders are committed and consistently recording data.
	System for managing weather data established within the SIMS and producing information products to various users	Historic and new weather data not analyzed and information generated and tailored for distribution to the agriculture sector and other related sectors.	A data management system established and producing monthly information products for the agriculture and other related sectors.	Procurement records Monthly newsletters Training materials Project reports	Government supports SIMS with recurrent budget to maintain the database Dedicated SIMS staff assigned to manage the database
	Capacity of land use planning division within MAL, Climate Change Division within MECDM and SNR to support communities integrate climate considerations into agriculture production and land-use planning strengthened compared to 2010 levels	Land use planning section of MAL does not have the technical capacity to support communities with land use planning as well as integrate climate change considerations into land use plans.	Human resources and technical capacity of MAL, CCD of MECDM to support communities with integration of climate change risks into land use planning, farming systems and agriculture production, processing and storage activities.	TA contract, TOR and reports Land use policy draft Land use planning guidelines Land use planning materials Project reports	TA availability Suitable land use planning officer recruited TA and head of land-use planning section collaborating effectively

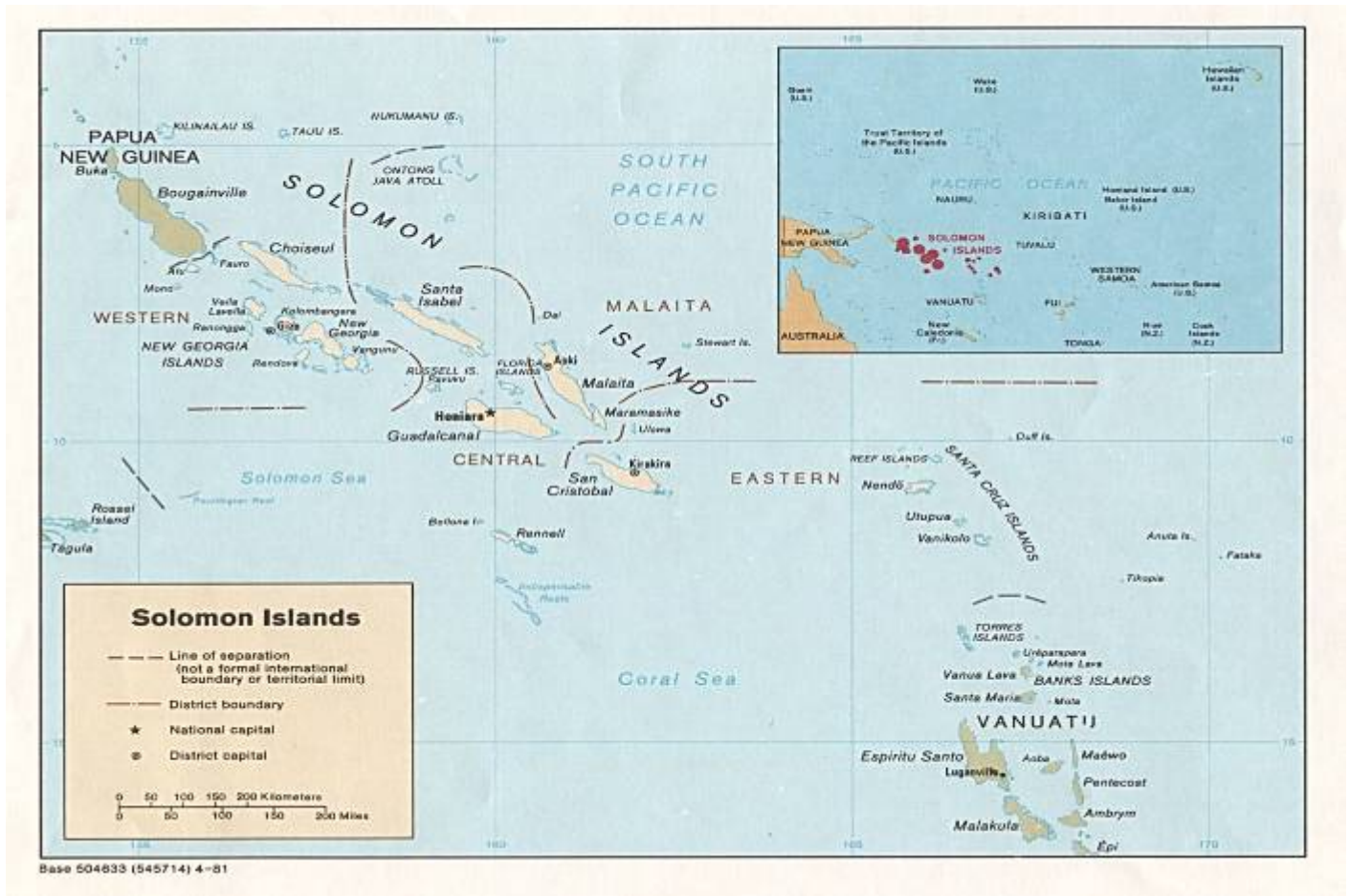
Project Strategy	Indicator	Baseline	Target	Sources of verification	Assumptions
Outcome 2 Institutions and enabling environment strengthened for effective implementation of policy instruments and actions to integrate climate risks into agriculture and food security	Capacity of land use planning division within MAL, Climate Change Division within MECDM and SNR to support communities integrate climate considerations into agriculture production and land-use planning strengthened compared to 2010 levels	<p>CCD has only three staff who already have heavy work loads and not able to support V&A and climate change mainstreaming into agriculture and other sectors.</p> <p>There is currently no research and training facility in the country for GIS and most government departments, NGOs and community based organizations do not have access to such training facility and opportunities in-country.</p>	<p>strengthened</p> <p>GIS laboratory established and capacity of SNR strengthened to provide training and land-use planning products for policy makers, field staff and communities.</p>	<p>Vacancy notice, TOR and annual report of adaptation officer</p> <p>Project reports</p> <p>Building extension plan</p> <p>Building contract</p> <p>Certification of completion</p> <p>Training program</p> <p>Evaluation of first training workshop</p>	<p>Suitably qualified personnel available in country for the job</p> <p>Person engaged is motivated and achieving performance targets</p> <p>Extension to building is completed on time</p> <p>School of Natural Resources contribution towards the building is secured</p>

Project Strategy	Indicator	Baseline	Target	Sources of verification	Assumptions
Outcome 3 Fostered the generation and diffusion of knowledge on adapting to climate change in a systemic manner at the community, national and regional level.	Communication strategy developed and No. of programmes and activities established relating to information management and dissemination supporting adaptation of agriculture and food security to climate change risks	Absence of a communication strategy and lack of information management system to support adaptation of the agriculture sector and food security to climate change risks.	By the end of the project a communication strategy is developed and information and lessons learnt are compiled and disseminated to local, national and regional stakeholders through at least 4 different mediums	<p>Web-sites</p> <p>Fact sheets</p> <p>Radio programs</p> <p>Television programs</p> <p>Project Technical reports</p> <p>Project monitoring and evaluation reports</p>	Government and NGOs provide on-going funding support to units responsible for information management and dissemination
	No. of programs and activities designed and implemented to share lessons learnt and raise awareness on climate	No existing nationwide program exists and there is a lack of expertise to	By the end of the project Solomon Islands is able to share its experiences on	<p>Documents on lessons learnt and case studies</p> <p>Project reports</p>	Locally available printing, video and audio production firms have the time to support the project

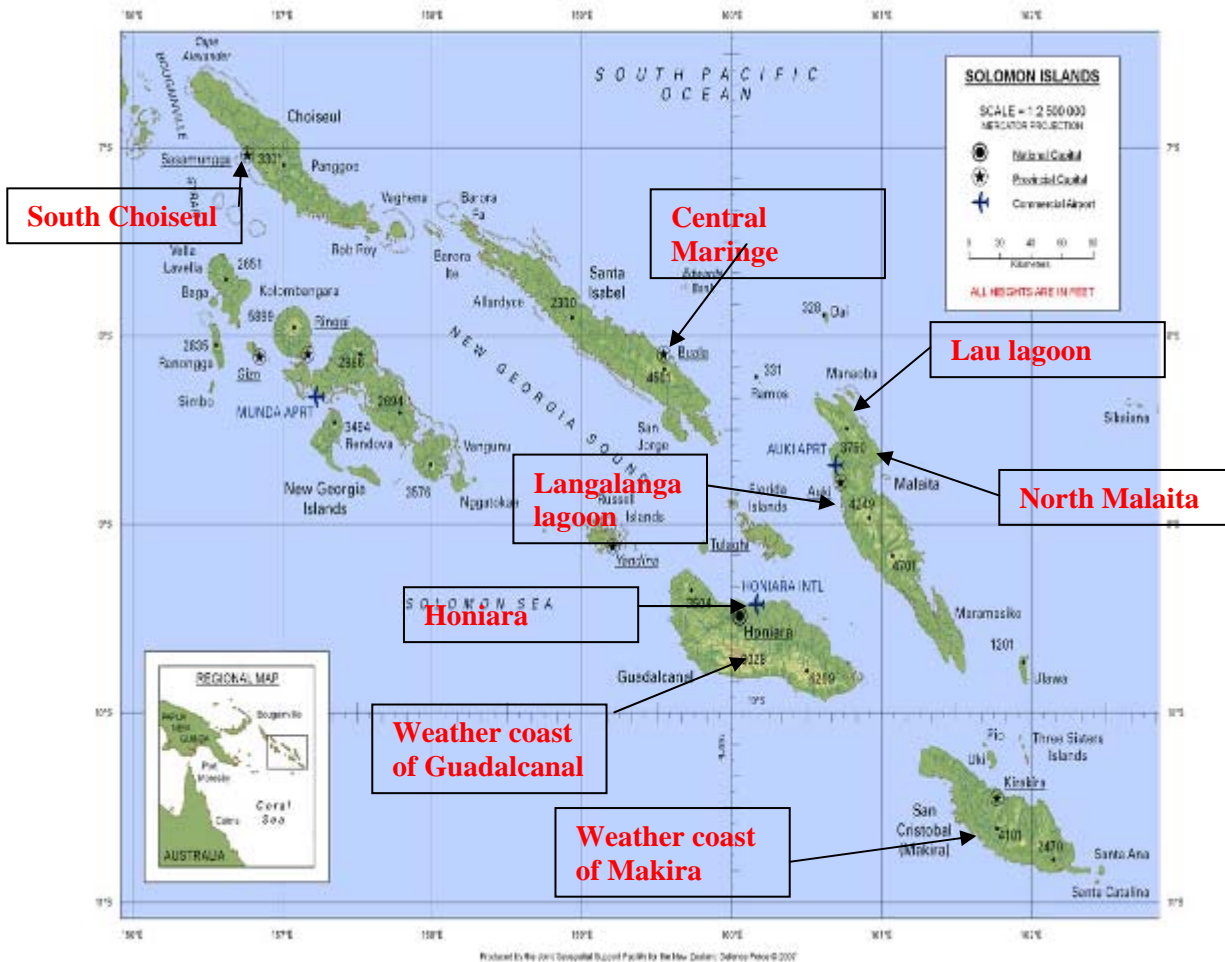
	change impacts on agriculture and food production	integrate climate and agriculture information for dissemination to public.	adaptation to climate change in the agriculture and food security sector with other countries in the Pacific and globally	E-mail exchanges with other countries	
	No. of documented case studies and lessons learnt used in the teaching of short courses as well as certificate and diploma courses in agriculture, forestry and environmental studies in the School of Natural Resources (SNR)	The School of Natural Resources do not have local case studies on climate change adaptation and agriculture for use in the range of courses on offer.	At least four case studies are documented and used in SNR training courses to promote and raise knowledge and understanding of young Solomon Islanders on climate change adaptation in the agriculture sector.	Case study documents Teaching materials Record of training activities where case studies are used	Case studies are completed and ready for use SNR lecturers take an interest in using the case studies

9.0 ANNEXES

Annex 1: Map of Solomon Islands



Annex 2: Location of targeted regions



PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT³



Solomon Islands Government

**Ministry Of Environment, Climate Change, Disaster Management & Meteorology
Post Office Box 21, Honiara, Solomon Islands**

19th October 2010

The Adaptation Fund Board
C/- Adaptation Fund Board Secretariat
E-mail: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Endorsement: Enhancing resilience of communities in Solomon Islands to the adverse effects of climate change in agriculture and food security

Greetings to the Adaptation Fund Board from Solomon Islands.

As the designated focal point for the Adaptation Fund Board within the Government of Solomon Islands I wish to conform that the above titled project is in accordance with the Solomon Islands National Adaptation Program of Action, the Strategic Plan of the Ministry of Environment, Climate Change, Disaster Management and Meteorology and the policies of the National Coalition for Reform and Advancement (NCRA) Government.

I am therefore pleased to formally endorse the above stated AF project to be implemented in Solomon Islands through UNDP as the Multilateral Implementing Entity (MIE) and the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM) as the National Executing Agency.

On behalf of the Government of Solomon Islands may I also take this opportunity to thank the Adaptation Fund Board for considering our proposal and supporting our adaptation strategies and actions through the project.

Sincerely,

**Mr Rence Sore
Permanent Secretary
Ministry of Environment, Climate Change, Disaster Management and Meteorology**

c.c. UNDP Country Office, Honiara – Solomon Islands



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⁶ Each Party shall designate and communicate to the Secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

B. IMPLEMENTING ENTITY CERTIFICATION *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

<p>I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.</p>	
 Yannick Glemarec Director Environmental Finance UNDP	
Date: October 23, 2010	Tel. and email+1-212-906-6843; yannick.glemarec@undp.org
Project Contact Person: Pradeep Kurukulasuriya	
Tel. And Email: +1-212-906-6843; pradeep.kurukulasuriya@undp.org	

ANNEX 3: UNDP Environmental Finance – Specialized Technical Services

Stage	Specialized Technical Services Provided
Identification, Sourcing and Screening of Ideas	Provide information on substantive issues and specialized funding opportunities (SOFs)
	Verify soundness and potential eligibility of identified idea
Feasibility Assessment / Due Diligence Review	Technical support: provide up-front guidance; sourcing of technical expertise; verification of technical reports and project conceptualization; guidance on SOF expectations and requirements
	Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against identified SOF
	Assist in identifying technical partners; Validate partner technical abilities.
	Obtain clearances – SOF
Development & Preparation	Technical support, backstopping and troubleshooting
	Technical support: sourcing of technical expertise; verification of technical reports and project conceptualization; guidance on SOF expectations and requirements
	Verify technical soundness, quality of preparation, and match with SOF expectations
	Negotiate and obtain clearances by SOF
	Respond to information requests, arrange revisions etc.
	Verify technical soundness, quality of preparation, and match with SOF expectations
Implementation	Technical and SOF Oversight and support
	Technical support in preparing TOR and verifying expertise for technical positions. Verification of technical validity / match with SOF expectations of inception report. Participate in Inception Workshop
	Technical information and support as needed
	Technical support, participation as necessary
	Advisory services as required
	Allocation of ASLs
	Technical support and troubleshooting, Support missions as necessary.
	Project visits – at least one technical support visit per year.
	Technical support, validation, quality assurance
	Return of unspent funds

Stage	Specialized Technical Services Provided
Evaluation and Reporting	Technical support, progress monitoring, validation, quality assurance
	Technical support, participation as necessary
	Technical support in preparing TOR and verifying expertise for technical positions. Verification of technical validity / match with SOF expectations of inception report. Participate in briefing / debriefing
	Technical analysis, compilation of lessons, validation of results
	Dissemination of technical findings

Service standards:

1. initial response to communication within 2 working days
2. full response to communication (with the exception of a response requiring travel) within 10 working days