

SAMOA: NAPA PROJECT PROFILE

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SAMOA

NAPA PRIORITY PROJECT 1

PROJECT PROFILE 1: SECURING COMMUNITY WATER RESOURCES PROJECT

TO IMPROVE WATER QUALITY, ACCESSIBILITY AND AVAILABILITY (QUANTITY) OF COMMUNITIES

The water resources of Samoa have encountered many disastrous and difficult situations as a direct result of climate change. Dry and drought periods result in water shortages while heavy rains bring flooding. Furthermore, sea level rise increases the possibilities of seawater intrusion into underground water aquifers. Extreme events such as cyclones and flash flooding have become prominent events, which have had major effects on the Samoa Water Authority's service. All these events tend to disrupt the service and result in major problems of deteriorating water quality.

The findings from the community consultations conducted by the Ministry of Natural Resources, Environment & Meteorology (MNREM) and the National Climate Change Country Team (NCCCT) during the preparation processes concluded that developing a set of adaptive activities in response to the vulnerability of water resource is of high importance to communities. Such activities would improve daily access and improve water quality and availability and help to minimize the impacts of climate change.

RATIONALE

Impacts of climate change and climate variability on Samoa cause unreliability of water resources. Samoa would be better adapted to respond to these impacts if improvements are made to water supply and accessibility.

Communities should not continue to rely on unpredictable and untreated river supply as there is not always alternative storage services provided (example, water tanks). Alternative sustainable methods need to be sought to enable Samoa to sustain the resource and ensure safe consumption whilst minimizing the spread of water borne diseases.

DESCRIPTION

Key Objectives

1. Ensure good water quality is kept at an optimum level;
2. Ensure that water is easily accessible by all communities including all facets of society;
3. Ensure that water is available and sustainable in all communities especially those that are most in need and are facing hardship due to water problems.

Expected Outcomes

- Availability and accessibility to good quality water in communities;
- Improved quality of water in communities;
- Sustainable supply of water in communities;
- Sustain water resources;
- Village community coastal springs well maintained and highly protected;
- Sustainability of water for at least 3 to 6 months of drought periods;
- Ability of communities to store enough supply of good quality water.

Suggested Actions Required	Indicators / Expected Outputs	Potential Long Term Outcomes
Develop water purification programs for communities	Community-based Water Purification Management Plans;	Availability and accessibility to good quality water in communities;

	Water Purification Technology Transfer	Improved quality of water in communities;
Develop integrated watershed management programme with communities	District-based Watershed Management Plan & Strategies; Integrated Water Shed Management; Plans and Strategies for communities; Sustain and protected water resources	Sustainable supply of water; Improved quality of water; Sustained water resources.
Restore and protect coastal springs in the most vulnerable coastal communities	Community-based Coastal Spring Protection Program Plans.	Coastal springs well maintained and highly protected; Accessibility to clean and good quality water; Continuous supply of water in the communities.
Develop alternative water storage and water-use efficiency technology and programs in the communities	Existence of alternative water storage equipment and technology at end of project; Accessibility of alternative water storage equipment and technology transfer programs.	Sustainability of water for at least 3 to 6 months of drought periods; Ability of communities to store enough supply of good quality water

IMPLEMENTATION

Institutional Arrangement

Implementing Agency: Samoa Water Authority (SWA)

Coordinating Agency: Ministry of Natural Resources, Environment & Meteorology (MNREM)

The Samoa Water Authority (SWA), a government corporation, is the most suitable national agency to implement this project profile. It is proposed that SWA will undertake the identified activities in close collaboration with the communities that require urgent and immediate attention of their water resources.

The project will be coordinated by MNREM and evaluated and monitored by the National Climate Change Country Team Project Steering Committee. This Steering committee consists of executive level officers of each government ministry and private stakeholders who will oversee the articulation of funding received to implement these activities as well as other technical related matters.

Risks and Barriers

1. The SWA lacks the financial capacity to implement most of the future strategies which would otherwise assist in minimizing the effects of climate change;
2. Less recognition of water management and disaster in the National Disaster Management Plan
3. Lack of enforcement for existing regional and national plans and policies;
4. Lack of coordination and collaboration between various stakeholders who have a vested interest in proper water resource management;
5. No regulations that can control private extraction of groundwater either in customary land or privately owned lands;
6. Poor quality information on the availability and quantity of surface water and ground water.

Monitoring and Evaluation

- Evaluation and monitoring should be carried out on a regular basis particularly during the dry season (May to October);
- Village monitoring committees (VMC) working in close collaboration with Samoa Water Authority, the Ministry of Agriculture and MNREM;
- An independent evaluation assessment team is to be selected by the NCCCT steering committee.

COST

Indicative Budget

Proposed Funding (Technical Assistance): USD 505,000

Activity	Costs (USD)
Develop water purification programs for communities	120 500
Integrated watershed management programs	114 500
Restore coastal springs	120 000
Develop alternative storage programs & technology	150 000
TOTAL	505 000

The government will commit in-kind contributions in support of development projects that contribute to Samoa's development strategies, overall sustainable development goals and Millennium Development Goals.

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NAPA PRIORITY PROJECT 2

PROJECT PROFILE 2: REFORESTATION, REHABILITATION & COMMUNITY FORESTRY FIRE PREVENTION PROJECT

TO PROTECT, REHABILITATE, AND INCREASE RESILIENCE OF COASTAL LOWLAND AND INLAND FOREST RESOURCES

The forestry sector is highly vulnerable to droughts, as it is during these periods that the risk of forest fires increases markedly, particularly in the northwest region of Savaii (Asau and Aopo areas). Droughts are more common in Samoa during the dry season from May to October, and are more pronounced in the north-west region of Savaii. On record, the Asau area has experienced two forest fires in the last two decades that caused considerable damage to the forest ecosystem, in 1983 and 1998 with the one in 1983 being the more devastating. The droughts during 1983 and 1998 were most likely associated with the El Nino phenomena experienced during these years.

The Aopo area recently experienced a forest fire in October 2003, with an estimated area of damage exceeding 100km². A minor forest fire was observed in the same area in August, 2004. This confirms that the extent of areas vulnerable to drought and related forest fires extend further east from Asau. The risk of forest fires in northwest Savaii is expected to increase markedly in association to the increase in drought frequencies, due to climate change. It is likely that the vulnerability of northwest Upolu may also increase with the projected increase in El Nino frequencies.

Studies in the growth increments of species common in drought prone areas have been carried out and are monitored by the Forestry Division on an annual basis. It has been found that the growth rates of these species are slower compared to those common in the wetter areas.

The *Omalanthus nutans* (*mamala* in Samoan) forest species, an important indigenous medicinal plant and the focus of foreign scientific research for possessing qualities that may cure some forms of cancer as well as HIV/AIDS. As it lies in the drought prone region of Savaii, it becomes highly vulnerable to forest fires, and may face possible extinction if drought frequencies are to increase. The vulnerability of the forestry sector to tropical cyclones will increase with the projected increases in frequency relative to rising global temperatures.

RATIONALE

The impacts of coastal erosion from sea level rise and climate change and climate variability is causing the destruction of lowland coastal forest areas. The protection and sustainability of both coastal and inland forests resources is of utmost importance to the livelihood of the communities especially when more than 70% of Samoa's population settles on coastal areas. The coastal and inland forests offers protection during extreme climate variations but more importantly prevents further coastal erosion and loss of land. The land and cultural value of many of the vulnerable communities will be maintained and will sustain the social welfare of many of the coastal communities over a longer period, and in turn contribute to normalizing the naturally and human affected environment.

Forest fires associated with droughts induced by climate change and exacerbated by human activity are more common in Samoa in its dry season from May to October particularly the northwest part of Savaii. This hazard is identified as major barrier to forest growth (as it slows down rejuvenation and reforestation processes) and possibly extirpates vital indigenous plants (particularly the *Omalanthus nutans*) that are useful for medicinal purposes.

The current fire fighting system has limited resources (e.g., number of fire trucks and stations, water supply, appropriate equipment, and manpower). One way of preventing the occurrence and mitigating the adverse impacts of forest fires is to develop a community-based forest fire plan and implement its deliverables. The plan must be developed by the identified vulnerable communities with the assistance and guidance of the Fire Services, Ministry of

Agriculture, Samoa Water Authority and Ministry of Natural Resources Environment & Meteorology. The plan should provide for prevention, mitigation, preparedness, response and recovery including Standard Operational Procedures.

DESCRIPTION

Key Objectives

1. Strengthen and increase resilience of forest fire-prone areas;
2. Development and strengthening of the operational response capabilities of the surrounding communities in preventing, mitigating, preparedness for, responding to and recovering from forest fire emergencies;
4. Development of community-based forest fire plans that encompass all necessary actions and resources for implementation of preventative measures, mitigation, preparedness, response and recovery activities;
5. Strengthening early warning and advisory monitoring systems in the communities;
6. Community participation, coordination and resource mobilization;
7. Enhancement of community awareness of protecting and reforesting coastal lowland areas and inland forest areas of communities.

Expected Outcomes

- Strengthened and enhanced operational response capabilities of vulnerable local communities;
- Minimized probability of forest fires;
- Increased rehabilitation time span of species (after a forest fire) without immediate disturbance/disruption;
- Sustainable forest growth to ensure continuous availability of carbon dioxide sinks and supply of forest resources for community as well as nation-wide livelihood

Suggested Actions Required	Indicators / Expected Outputs	Potential Long Term Outcomes
Develop a community-based forest fire plan; Develop a community-based forest fire implementation Strategy; Encourage and promote fire-tolerant plant species.	Community-based Forest Fire Plan; Community-based Forest Fire Implementation Strategy exists in communities; Increased growth rate of forest species; Increased rehabilitation time span of species (after a forest fire) without immediate disturbance/disruption; Community-based educational and awareness programmes of forest fires and reforesting; and Protection of the different types of forest areas and resources	Strengthened and enhanced operational response capabilities of vulnerable communities; Minimized probability of forest fires; Sustainable forest growth to ensure continuous availability of CO2 sinks and supply of forest resources for community as well as nation-wide livelihood; Increased knowledge of combating drought-related forest fires and awareness of reforesting, protecting both coastal lowland forest and inland forest resources in community.

IMPLEMENTATION

Institutional Arrangement

Implementing Agencies: Ministry of Agriculture, Fire Services, Samoa Water Authority.

Coordinating Agency: Ministry of Natural Resources, Environment & Meteorology in close collaboration with identified vulnerable communities.

Risks and Barriers

- Willingness of the communities to accept, adopt and adapt;
- Availability of local experts to conduct the programme;
- High costs associated with programme;

- Availability of necessary resources (equipments);
- Availability of data on historical forest fires (assists in developing the programme and also the operational response plans).

Monitoring and Evaluation

- Evaluation and monitoring should be carried out on a regular basis particularly during the dry season (May to October);
- Monitoring – Identified Vulnerable Communities (these communities need to setup monitoring committees) in collaboration with Ministry of Agriculture and Ministry of Natural Resources, Environment and Meteorology;
- It should be carried out by the relevant institutions or agencies identified under institutional arrangements.

COST

Indicative Budget

Proposed Funding (Technical Assistance): USD 417 500

Activity	Costs (USD)
Community-based forest fire plan	137 500
Community-based Forest Fire implementation strategy	140 000
Awareness & Promotion program for reforesting fire-tolerant plant species	140 000
TOTAL	417 500

The government will commit in-kind contributions in support of development projects that contribute to Samoa’s development strategies, overall sustainable development goals and Millennium Development Goals.

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NAPA PRIORITY PROJECT 3

PROJECT PROFILE 3: CLIMATE HEALTH COOPERATION PROGRAM PROJECT

TO INSTITUTE COORDINATION OF CLIMATE-HEALTH PARTNERSHIP PROGRAMS AND EMERGENCY MEASURES TO RESPOND TO CLIMATE CHANGE AND EXTREME EVENTS

Key health concerns for Samoa include vector-borne diseases, diarrhoea and other water-borne diseases, acute respiratory infections, malnutrition and loss of life to extreme climatic events such as tropical cyclones, floods and drought.

Samoa's health sector is vulnerable to hazards like tropical cyclones, floods and droughts. Impacts of these hazards to health are evident in water borne, food borne, air borne, and vector borne diseases. Its vulnerability is a product of the water resources, particularly the poor water quality and stressed water quantity in the event of floods and drought. These climate vulnerabilities affect agriculture and food security issues, fisheries and forest degradations. These hazards also cause injuries, illness, and loss of lives.

Climate-related diseases including food and water borne diseases, vector borne diseases and airborne diseases remain in the top ten causes of morbidity in Samoa. There have been several outbreaks of typhoid fever and dengue fever in recent years.

Many vector-borne diseases are weather sensitive and small changes in the weather can dramatically trigger disease transmission. For example, dengue fever and filariasis are carried by the domesticated mosquito *Aedes aegypti*. This mosquito thrives in urban environments and breeds in areas that hold water. This explains some of the indirect effects climate change can have on disease as disruption of regular supplies of water lead to changes in water storage practices. This was the case with the outbreak of dengue fever in 2001 in Samoa. Cholera is not endemic in Samoa as only between 1 and 13 cases reported per year. However, there is some evidence that rising sea surface temperatures may increase the risk of cholera spreading (refer to SR, 2004).

Water borne diseases such as typhoid become more problematic with flooding and contamination of surface water in sewage, and it remains very high in Samoa with up to 693 cases reported per year. The last major outbreak of this disease was in the early 1990's.

Drought conditions (as evident in Samoa in the past years) has been linked to increased concentrations of pathogens in surface water and increased morbidity and mortality from a combination of diarrhoea and dehydration cases with symptoms ranging from acute dehydrating diarrhoea (cholera), prolonged febrile illness with abdominal symptoms (typhoid fever), acute bloody diarrhoea (dysentery – 5 to 15 cases per year) to chronic diarrhoea. Droughts and increasing heat waves also cause influenza, eye and skin infections (such as skin cancer) and also diseases of the respiratory system.

RATIONALE

The establishment of 'climate & health' awareness, training, database and research programs amongst the wider community through health and medical specialists will enable Samoa to strengthen its early response rate to any outbreak of diseases relating to changes in climate.

The establishment of partnerships between meteorology and health specialists will in turn improve the well-being and livelihood of communities by setting up an early-warning surveillance system program that will enable communities to adapt to potential outbreaks of diseases. This partnership will improve the awareness and capacity building of health and medical specialists on global environmental issues and the use of climate-forecast information

through a networked database sharing information mainly between the two stakeholders with access by all stakeholders as well.

Samoa will improve the quality of health care services by providing affordable and sustainable health technology that will enable early response and treatment of the communities and public at large to injuries and or illnesses sustained due to relative impacts of climate change and climate variability.

DESCRIPTION

Key Objectives

1. Strengthen partnerships between climate/meteorology specialists and health/medical specialists;
2. Development of a user friendly Climate and Health application database to be fused into the Health Information System (HIS), and the Community Health Nursing Information System (CHNIS);
3. Establish a Climate & Health Institute for training and research to develop staff awareness, understanding and application of climate information and climate related technology.

Expected Outcomes

- Climate and health prioritized in national policies and existing frameworks;
- Increased institutional capacity for climate and health cooperation program;
- Increased individual capacities such as climate-epidemiologists for health and climate services;
- Increased knowledge and skill of climatologists on analysis of early warning on climate and health related diseases;
- Establish, update, and as accurate as possible, comprehensive database for analyzing climate and health information and application across sectors especially village communities;
- Improved ability of health and medical specialists to implement early health and immune services to community in relation to climate forecasts and predictions;
- Improved ability to predict or establish early warning systems and services to public and village communities on any outbreaks in relation to climate changes;
- Advanced health care services for community at large.

Suggested Actions Required	Indicators / Expected Outputs	Potential Long-Term Outcomes
Develop an institute for housing research & training for public health medical staff on application of climate information and climate related technology	A Climate and Health Institute exists at the Ministry of Health for training and research of climate and health science in Samoa	Increased institutional capacity for climate and health cooperation program; Increase individual capacities such as climate-epidemiologists for health
Strengthen awareness of health and medical specialists on climate sensitive information relating to health	Trained and sensitized climatologists and climate scientists to the health effects of climate variability and climate change	Increase knowledge and skill of climatologists on analysis of early warning on climate and health related diseases
Training and sensitizing climate and meteorology specialists to the health effects of climate variability and climate change		Increase knowledge base of medical specialists on climate and public health relations for Samoa
Collect better health, meteorological, environmental, and socio-economic data at appropriate local, regional, and temporal scales for research, program planning, and advocacy	Established and improve data standards and quality criteria to facilitate the better integration of data sets across sectors	Well established, updated and accurate as possible, database for analyzing climate and health information and their application across sectors especially village communities
Develop early response health services to outbreak of water-borne and vectorborne diseases and other climate	Health services early response incorporated into national early warning system	Ability of health and medical specialists to implement early health and immune services to community in relation to

related health problems		climate forecasts and predictions
Develop basic entomological research that contemplates climate change impacts and effective prevention measures	Improved health, meteorological, environmental, and socio-economic data at appropriate local, regional, and temporal scales for research, program planning, and advocacy	Ability to predict or establish early warning systems and services to public and village communities on any outbreaks in relation to climate changes
Develop health surveillance systems to allow assessment of the impact of climate variability and climate change on health		
Improve the quality of public health care services and availability of affordable health technology	Improved services and available health technology	Advanced health care services on public and community at large
Assess costs and benefits of intervention options	Costs and benefits monitoring and evaluation	Accountability and transparency

IMPLEMENTATION

Institutional Arrangements

Implementing Agencies: Ministry of Health (MOH) & Ministry of Natural Resources, Environment and Meteorology (MNREM)

Coordinating Agency: Ministry of Natural Resources, Environment & Meteorology (MNREM)

The Ministries of Health and Natural Resources, Environment & Meteorology are the most suitable national agencies to implement this project profile. It is proposed that MOH and MNREM will undertake the above mentioned activities in close collaboration with the communities that require urgent and immediate attention of their health services.

The project will be coordinated by MNREM and evaluated and monitored by the National Climate Change Country Team. This Steering committee consists of executive level officers of each government ministry and private stakeholders who will oversee the articulation of funding received to implement these activities as well as other technical related matters (refer to figure 2 of NAPA)

Risks and Barriers

- High costs to sustain and accomplish the planned activities;
- Level of capacity of the local communities with regards to the importance of the project to their lives;
- Limited human and capital resources to carry out the planned activities;
- Lack of baseline information on climate change to accurately notify the public of diseases for public health planning and monitoring;
- Lack of baseline information on climate change to support strategic and operational planning and policy development to early health response.

Evaluation and Monitoring

- Monitor and evaluate the effectiveness of the training and research activities;
- Improved health database to establish correlation of health & climate related issues;
- Improved early warning surveillance system response to potential disease outbreaks.

COST

Indicative Budget

Proposed Funding (Technical Assistance): USD 620,000

Activity	Costs (USD)
Develop national policy on climate & health	25 000
Develop research & training unit (institution)	85 000
Collection of data and information on climate & health	65 000
Develop climate health application database	110 000
Develop early response health services program to outbreaks of diseases, etc	150 000
Develop entomological research	32 500
Develop health surveillance systems	100 000
Improve quality of public health care services and implement health care technology	52 500
TOTAL	620 000

The government will commit in-kind contributions in support of development projects that contribute to Samoa's development strategies, overall sustainable development goals and Millennium Development Goals.

SAMOA

NAPA PRIORITY PROJECT 4

PROJECT PROFILE 4: CLIMATE EARLY WARNING SYSTEM PROJECT

TO IMPLEMENT EFFECTIVE EARLY WARNING SYSTEMS AND EMERGENCY RESPONSE MEASURES TO CLIMATE AND EXTREME EVENTS

Projections on future climatic patterns for tropical regions are unclear due to their high correlation with natural hazards. A future warm climate will likely have implications for future populations if the intensity and frequency of such natural disasters (including tropical cyclones, droughts, and flashfloods) increases as well.

Tropical cyclones Ofa (1990) and Val (1991) were 50- and 100-year events and caused a total of \$440 million of damages four times the GDP and 23 fatalities. Prior to this, El Nino related droughts in 1983-84 and 1997-98 resulted in water shortages and widespread fires in dry native forest areas. Early warning systems can help relevant sectors and the community as a whole to take steps to minimize damage caused by extreme climatic events.

RATIONALE

Without the appropriate systems in place, the impacts of climate change on vulnerable sectors and communities are to a large extent unforeseen, and the frequency and intensity of climate related hazards unpredictable. Therefore, an effective early-warning system must be put in place immediately, to respond to the threat of each hazard and to ensure vulnerable sectors and communities have the information they require.

The implementation of effective early warning systems would significantly assist Samoa to carry out appropriate and sustainable sectoral and community activities to adapt to and hence minimize adverse impacts of climate change.

DESCRIPTION

Key Objectives

1. To upgrade technical early warning systems and associated technical capabilities to monitor and warn against climate and extreme events;
2. To build sectoral and public capabilities to understand and use climate and early warning hazard information.

Expected Outcomes

- Improved local position forecasting and capability;
- Improved warning relay to remote communities, more accurate real time feedback and relevant local forecasts;
- Improved 3 month lead outlooks on drought probabilities, improved input into resource management systems (water, forestry, agriculture, energy);
- Improved timely warnings, monitoring and identification of flood prone areas

Suggested Actions Required	Indicators / Expected Outputs	Potential Long-Term Outcomes
Increase resilience of village communities from tropical cyclones	Improved local position forecasting and capabilities; Improved early warning relay to remote communities; More accurate real time feedback and relevant local forecasts.	Advanced early warning relay for remote village communities; Improved accuracy of feedback and local forecasting

Increase Resilience of village communities from drought	Improved 3 month lead outlooks on drought probabilities; Improved input into resource management systems (water, forestry, agriculture, energy)	Advanced early warning on drought probabilities by three months; Ample preparation for water shortages by communities; Ample preparation for operational users such as the resource management systems
Increase resilience of village communities from flooding associated with heavy rainfall, TCs and storm surges	Improved timely warnings; Monitoring and identification of flood prone areas.	Early and timely warnings on flooding; Ability to identify flood prone areas with emphasis on highly vulnerable communities; Continuous monitoring and evaluation.

IMPLEMENTATION

Institutional Arrangements

Implementing Agency: MNREM

Coordinating Agency: MNREM, Steering Committee

Associated Agencies: MNREM, MWTI, SPA, SSC, SWA, EPC, SamoaTel, PUMA, MOH, NDMO, communities, NGOs, Red Cross Society

Risks & Barriers

- Long term maintenance of equipment or technical tools procured through external assistance is difficult and expensive and there might not be a budget allocation for this purpose;
- Limited access to information relating to inputs for use in the early warning systems such as expensive satellite and GIS products;
- High training costs;
- Availability of the required skilled human resources;
- Existence of institutional arrangements for incorporation of new activities and operational expenses.

Evaluation and Monitoring

Key Indicators:

- Early warning system(s) with self-testing capabilities;
- Reduced cost of damage to life-line infrastructure and other properties;
- Reduced number of fatalities;
- Evaluation and monitoring will be done through a project steering committee which will be chaired by Ministry of Agriculture.

COST

Early warning systems require sophisticated technology and tools, which are expensive to implement (e.g. Doppler radar that improves flash flood and tropical cyclone position forecasts). It is envisioned that for most early warning systems, a large portion of the cost will be sought through bilateral and multilateral aid projects.

Indicative Budget

Proposed Funding (Technical Assistance): USD 4.0 million

Activity	Costs (USD)
TROPICAL CYCLONES: Establish and install infra-red weather radar, real time high-	4 000 000

resolution satellite imagery, weather radio frequencies for public and mariners, meteorological research	
DROUGHT: Strengthen high-resolution GIS climate layers for Map Server, automated climate stations, applied climate research	250 000
FLOODING: Develop research and installation of infra-red weather radar, high-resolution satellite imagery, telemetric rainfall and river gauges	250 000
TOTAL	4 500 000

The government will commit in-kind contributions in support of development projects that contribute to Samoa's development strategies, overall sustainable development goals and Millennium Development Goals.

SAMOA

NAPA PRIORITY PROJECT 5

PROJECT PROFILE 5: AGRICULTURE & FOOD SECURITY SUSTAINABILITY PROJECT TO MAINTAIN ECONOMICALLY SUBSISTENT AGRICULTURE AND SUSTAIN FOOD SECURITY IN COMMUNITIES

The main agricultural and food security objectives in the PICs including Samoa are to increase domestic production and productivity, through modern technologies, and reduce dependence on food imports. In particular, emphasis is on diversification, including fruits and vegetables, to develop high value export markets and, domestically, to improve the diet and nutritional status of the population. Accordingly, improving efficient production, strengthening technology transfer and developing capacity in trade and policy, especially in a changing global environment, are seen as crucial areas in enhancing food security, market development and economic growth (FAO RPFS 2003).

Agriculture, forestry and fishing generated about 20% of GDP in 2002. The principal cash crops are coconut and taro (the country's primary staple food). Breadfruit, yams, maize, passion fruit and mangoes are cultivated as food crops. Pigs, cattle, poultry and goats are raised, mainly for local consumption. The livestock sector appears to have a less direct vulnerability to tropical cyclones with larger animals (cattle and horses) tending to find shelter unaided in windbreaks and laying to ground to minimize exposure. Direct impacts on poultry depend upon the shelter provided by the farmer. Seasonal variation will impact on pastures with a long-term possibility of altering quality and growth of the feed exposing farmers to expensive substitutes.

RATIONALE

Agriculture and hence food security are identified as highly vulnerable sectors for Samoa. Widespread agriculture damage caused great losses for both subsistence and commercial agriculture. Crops with low tolerance levels to climate hazards were the most threatened, including banana one of Samoa's staple crops. Pest diseases were spread by strong winds, for example, the spread of taro crop disaster of the 1990s linked to higher frequency of wind distributed disease (taro leaf blight spores). Sales of taro provided 58% of all domestic earnings in 1993, but an outbreak of the taro leaf blight devastated crop in 1994 and reduced exports to almost nil in that year and subsequent years.

By investing in stable all year round crops and vegetable farming programs instigated at the community level, Samoa will be better able to adapt and afford crops in times of extreme climatic events. Furthermore by developing alternative farming systems that improve productivity and simultaneously protect soil and water resources, of the ability to survive prolonged periods of drought and famine is substantially increased. Thus, the further development of community plantation programs and inspection management for staple and resistant crops will strengthen food security. Introducing such methods would enable the implementation team to build the local capacity of farmers in communities and provide opportunities to share and increase knowledge of agricultural and climate change issues. The availability of alternative farming methods and systems in communities will help support this management program across all communities.

DESCRIPTION

Key Objectives

1. Develop an economically sustainable agricultural sector that is community-based;
2. Ensure an inspection management plan and program for community-based plantations are strengthened to maintain and secure food supply and food nutrition;
3. Ensure availability and accessibility of alternative farming systems;
4. Improve productivity of farms and plantations and at the same time reduce soil erosion and protect water resources.

Expected Outcomes

- Sustained security of food regardless of weather conditions;
- Improved management of village plantations;
- Improved variety of resistant crops available across community plantations;
- Variety of vegetable farming in communities / households.

Suggested Actions Required	Indicators / Expected Outputs	Potential Long-Term Outcomes
Initiate investment program on annual crops and home vegetable farming at a community level	Established community plantations of stable and resistant all year round crops across vulnerable communities; Improved management committee for inspection management program for plantations; Existence and availability of alternative farming methods and systems in communities.	Sustained security of food regardless of weather conditions; Improved management of village plantations; Improved variety of resistant crops available across community plantations; Variety of vegetable farming in communities / households MOA, communities, business communities, NGOS.
Further develop an inspection management program for the plantation program		
Develop alternative farming systems that improves productivity and protects soil and water resources		
Promote cultivation and consumption of crops less affected by and immune to extreme events such as TCs, flooding, etc. (example: Umala survives cyclone impacts well)		
Promote sustainable aquaculture of native species		

Institutional Arrangements

Implementing Agency: Ministry of Agriculture in close collaboration with communities

Coordinating Agencies: Ministry of Natural Resources, Environment & Meteorology (MNREM)

The Ministry of Agriculture is the most suitable national agency to implement this project profile. It is proposed that MOA will undertake the above mentioned activities in close collaboration with the communities.

Risks and Barriers

- High costs are a potential barrier for the sustainability of some of the existing coping activities identified, particularly if transferred to the rural farmer. An example is the safeguarding of some cash crop trees from pests using tree covering and other current netting techniques. These are expensive coping strategies for rural farmers to implement without assistance;
- Lack of technical knowledge of climate change impacts on the agricultural sector and food security;
- The lack of technical knowledge at the sectoral level with regards to climate change and its future implications is a possible barrier to the formulation of relevant and effective policies, strategies and activities;
- Possible overlapping jurisdictions regarding natural resource management and use in policies between the Ministry of Agriculture and the Ministry of Natural Resources, Environment and Meteorology;
- Lack of key information to support action, strategy and policy formulation.

Evaluation and Monitoring

The Project Steering Committee to evaluate and monitor climate change and adaptation strategies for the sector with focus on the following areas:

- Community based agriculture;
- Alternative farming methods.

COST

Indicative Budget

Proposed Funding (Technical Assistance) USD 320,000

Activity	Costs (USD)
Initiate investment program on annual crops and home vegetable farming at community levels	120 000
Develop an inspection management program for the plantation program	80 000
Develop alternative farming systems	70 000
Promote cultivation and consumption of crops	25 000
Promote sustainable aquaculture of native species	25 000
TOTAL	320 000

The government will commit in-kind contributions in support of development projects that contribute to Samoa's development strategies, overall sustainable development goals and Millennium Development Goals.

SAMOA

NAPA PRIORITY PROJECT 6

PROJECT PROFILE 6: ZONING & STRATEGIC MANAGEMENT PLANNING PROJECT

IMPLEMENT ZONING AND STRATEGIC MANAGEMENT PLANNING

Apia, the capital of Samoa centers all utility services and operations. The 2001 Population census claimed that 22% of the total population resides in the Apia Urban Area. Its coastal location makes infrastructure and government assets vulnerable to storm tides and strong northerly winds which are dominant in the event of tropical cyclones.

The implications of urban growth in Apia and its adjoining areas will continue to rise without an integrated strategic response, and its growth corridor to North West Upolu will be pressured to accommodate such growth. These patterns of growth will lead to continued pressure on resources of Apia as well as continued economic, social and environmental change within the wider regions of the country. In this context, the unplanned expansion of Apia cannot be ignored as urban environmental problems continue to rise. The range of issues predominant includes:

- Domestic and industrial waste disposal;
- Overcrowding and privacy issues associated with sitting new houses;
- Flooding caused by building on flood prone and poorly drained lands;
- Dead animals such as cattle and dogs;
- Reclamation of coastal lands and destruction of mangroves;
- Septic tank effluent flowing into the groundwater and coastal ecosystems;
- Urban catchments impacts on water quality and land resources.

The *Planning and Urban Management Act 2004* (the “PUM Act”) has provided legal grounds to implement an integrated system of urban management and planning for sustainable development and environmental management. It considers a holistic approach to achieving the planning and The Apia urban area is rapidly growing, dominating the settlement pattern in Samoa with over 350 smaller rural villages supporting it (ADB/GoS, 2001). The more prevalent type of urban development occurs along coastal areas that can be serviced by existing infrastructures (roads).

Villages are growing rapidly in the hinterland, stretching to the extent of their village boundaries. As a result, villages now form one linear strip of urban development between Apia and Faleolo. The same pattern is also evident in Salelologa on the south-eastern Savai’i but on a considerably smaller scale. The benefits of being closest to national infrastructure that provide urban services or transportation, electricity, telecommunications, has led to a shift in village set-ups in the urban area. The disadvantage of this centralization of services in Apia and the preference to be along the coast for services and food security placed these infrastructure and communities in a very vulnerable situation to sea level and extreme weather events like Tropical cyclones.

RATIONALE

Apia urban area is where the greatest stresses on the environment are generated and pronounced. The changing context in which Apia and Samoa is evolving, places new pressures on all sectors engaged in urban management and regional development and the built and natural environments. The complexity and interrelationships of issues facing Samoa today lie far beyond the simple planning frameworks, but in recognizing the potential complex and interrelated impacts of climate change cross-sectoral planners need to address.

When the effects of land use practices are considered, the human impact on climate change may be greater than previously thought. If land use is a major factor in global warming, this raises difficulties for anyone attempting to deal with the issue, most land use questions are raised and resolved at the local level, while climate issues are often discussed at both national and international institutions.

Current land use practices are altering the climate in ways comparable to the greenhouse effect produced by carbon dioxide gas released into the atmosphere. One major component is the construction of concrete urban buildings, which store heat during the day and release it at night the well-known "urban-heat-island" effect. Retained heat from concrete buildings and streets increases night time temperatures, though it results in a slight decrease in maximum temperatures.

The implications for local land use planning, is an important aspect that must be considered to understanding climate variability and change at the local scale. It would be useful to examine specific locations to observe if they are being influenced by local land use changes (e.g. buildings, parking lots). Hence the need for clear delineation between land use activities and the use of performance standards is required to ensure that activities have minor impacts on the urban and rural environments.

Table 1: Planning and Development Management Tools

GOALS	DEVELOPMENT MANAGEMENT TOOLS					
	Urban Growth Boundary (UGB)	Zoning	Sustainable Management Plans	National Building Code 1992	Draft EIA Regulations 1998	Coastal Hazard Zone
Environment To increase and strengthen adaptive capacity		√	√		√	√
Urban Intensification Improved urban center, promoting attractive design and heritage	√	√	√	√	√	√
Strong and Healthy Communities Community and villages that meets its needs		√	√	√		√

The importance of development tools identified as zoning in Table 1, is a way the government can control the physical development of land and identifies the permissible use(s) for each individual property.

Zoning typically specifies the areas in which residential, industrial, recreational or commercial activities may develop. For example, a residential zone might allow only single-family homes as opposed to apartment complexes. On the other hand, a commercial zone might be zoned to permit only certain commercial or industrial uses in one area, but permit a mix of housing and businesses in another location. Zoning will be more appropriately addressed in the Sustainable Management Plan which may have a combination of statutory and non-statutory guidance that determine what development standards and terms for land use activities are permitted in an area.

PUMA will have to consider developments (eg structures) which are:

- Adaptable, flexible and movable;
- Performance criteria may have to demonstrate ability to respond to changing sea levels;
- The availability of water;
- Resilience to extreme storm events and elevated extreme temperatures for extended periods.

DESCRIPTION

Key Objectives

To implement a phased and flexible approach to the adaptation of development tools to address the impacts of climate change;

1. To integrate climate change policies and methods into all Sustainable Management Plans (SMPs) at national, regional, district and site specific levels;

- To mainstream climate change policy into the planning and urban management agency’s plans, policies and development assessment reports.

Expected Outcomes

- National or regional SMPs that advocate improved built and natural environment via the implementation of development management tools identified;
- Achieve sustainable development;
- Increased resilience of built and natural environment to expected climate change and sea level rise;
- Strengthen and increase awareness amongst planners, communities, service providers, politicians and division and policy makers;
- Integration of climate change factors into development consent processes and environmental impacts assessments

Suggested Actions Required	Indicators / Expected Outputs	Potential Long-term Outcomes
Develop a detailed sustainable management plan and implementation of action plan	National, District and Local Sustainable Management Plan Buffering mechanisms; Reviewed and updated existing regulation and policies.	National or Regional Sustainable Management Plans that advocate improved built and natural environment via the implementation of development management tools identified; Adaptation to climate change are mainstreamed into development management tools of PUMA; Help achieve sustainable development goals.
Develop priorities for plan and policy development		
Identify priority for urban improvement and urban development		

IMPLEMENTATION

Institutional Arrangement

Implementing Agency: MNREM

Coordinating Agency: MNREM, Project Steering Committee (Advisory Committee) An Advisory Committee shall be responsible for discussing and making decisions and recommendations on issues and subjects including, but not necessarily limited to:

- Inputs on the best ways to improve on Sustainable Management Plans;
- Advise on the possible ways to engage broad-based consultation and awareness;
- Assist with consultations of project profile;
- Review of project profile as circumstances changes.

The reporting relationship is seen as the Advisory Committee is a sub-committee of the Planning and Urban Management Board (“the Board”) and the Chairperson shall report to the Board.

Risks & Barriers

- Customary land tenure system;
- Land market adaptation;
- Costs to consultation and preparation;
- Property rights are controlled;
- Fear of compensation;
- High land values;
- Lack of key stakeholder support;
- The data used is accurate and reliable;
- Government commitment;
- Resources are available;
- PUMA commits to implement and monitor SMPs;
- Improved SMPs will reduce the impacts on climate change.

Monitoring and Evaluation

Baseline data need to be gathered on the elements listed below in which may become land use indicators. These are as follows:

- Land use patterns;
- Urban population growth ;
- Open space in urban areas;
- Agricultural land loss;
- Impervious surfaces;
- Number of trees on public property;
- Trees lost or gained from residential or commercial development;
- Percentage of natural forest;
- Percent of new residential, commercial and industrial lots;
- Open land lost to development in square km;
- Acres of cropland that have been converted to developed land;
- Size and distribution of significant wetlands;
- New septic tank;
- Noise complaints received by PUMA.

COST

Indicative Budget

Proposed Funding (Technical Assistance): USD 400,000

Activity	Costs (USD)
Develop a detailed sustainable management plan and implementation of action plan	200 000
Develop priorities for plan and policy development	100 000
Identify priority for urban improvement and urban development	50 000
Review existing regulation and policies to allow integration of adaptation to climate change into development management tools	50 000
TOTAL	400 000

The government will commit in-kind contributions in support of development projects that contribute to Samoa's development strategies, overall sustainable development goals and Millennium Development Goals.

SAMOA

NAPA PRIORITY PROJECT 7

PROJECT PROFILE 7: IMPLEMENT COASTAL INFRASTRUCTURE MANAGEMENT PLANS FOR HIGHLY VULNERABLE DISTRICTS PROJECT

TO IMPLEMENT COASTAL INFRASTRUCTURE MANAGEMENT PLANS FOR HIGHLY VULNERABLE DISTRICTS

Infrastructure development is critical for private sector development. More importantly, the provision of services such as water, electricity, road transport, shipping services and telephone communication, is considered an effective vehicle for redistribution of national wealth. Consistent with the theme of ensuring that the community shares the benefits of development, infrastructure development will be rigorously pursued to ensure that it will benefit all Samoans. Currently, a high proportion of Samoa is serviced by tar-sealed road systems; a well developed shipping service linking both islands; 80% of country has access to potable water; and telephone systems that extend to the rural areas (refer to Annex II, Synthesis Report 2004).

Samoa is prone to frequent cyclones, and Cyclones Ofa and Val in 1990 and 1991 respectively, which were 50- and 100-year events, caused a total of \$440 million of damages (four times the GDP) and 23 fatalities. Most of the damage affected infrastructure, communication and electricity. Coastal and waterway erosion also pose risks to communities and infrastructure in the coastal zone. Activities such as land reclamation and wall construction, sand-mining, discharge of water disturb natural currents and deposition processes, potentially exposing parts of the coast to greater risk. Risk exposure will continue to rise if economic and social activities are allowed to expand uncontrolled into areas subject to natural hazards (IDA IAM PAD 1999).

MNREM in collaboration with other government ministries has developed plans (Infrastructure Asset Management Project, IAMP) for Samoa that identify location of key infrastructure and asset and aim to maximize protection of government assets. The information collected during the IAMP focused on preparing CIM Plans for 15 districts of Samoa. The remaining 28 districts is to be implemented under the Second Infrastructure Asset Management Project (SIAM-2) beginning early 2005.¹ Of the 15 districts each has a detailed CIM Plan and implementation guideline.

Under the auspices of the Infrastructure Asset Management Project, an assessment of Coastal Hazard Zones for Samoa was conducted by the MNREM through consultancy services in 2000. This activity produced Coastal Hazard Zone (CHZ) maps, along with creating a Coastal Hazard Database (CHDB) and Coastal Sensitivity Indices (CSI) for the entire 573km coastline of Samoa. The project identified strategic and planned actions required for creating sustainable coastal communities. A key fact found during this assessment was that a 0.49 rise in global sea-level above 1900 levels by 2100 is likely to result in an enhancement of existing beach erosion rates by about 3-22m for sheltered lagoon beaches and 10-23m for open-exposed beaches. This is indicative of how climate change will affect Samoa in the immediate future particularly during the months of November to March typically coined the “cyclone season”.

RATIONALE

This project profile is consistent with Samoa’s national Coastal Infrastructure Management Strategy (CIM Strategy, January 2001). The strategy has as its central vision “Resilience – Coastal Infrastructure and Communities Resilient to Natural Hazards”.

¹ For more information see <http://www.MNREM.gov.ws/projects/siam-2/info.htm> under the sub-heading “Coastal Infrastructure Management (CIM) Plans”.

“To be resilient is to be adaptive, responsive and quick to recover so that communities are environmentally, socially and economically sustainable” (CIM Strategy, January 2001).

As there are 15 CIM Plans for 15 Districts, this project profile focuses on implementing CIM Plans for districts that have been identified as ‘highly vulnerable’ as measured by a high Coastal Sensitivity Index (CSI).

DESCRIPTION

Key Objectives

1. To review the best solutions identified in the CIM strategy implementation guidelines for action improving resilience in highly vulnerable districts;
2. To implement urgent CIM plan activities in highly vulnerable areas;
3. To use educational programs to improve the districts awareness of coastal hazard risks; and
4. To enable the community and infrastructure providers to reduce coastal risks in the district.

Expected Outcomes

- An improved coastal environment;
- Established lifeline services outside the Coastal Hazard Zones (CHZs);
- Residential developments raised and mitigating flooding hazards;
- Availability of sand sources for domestic use;
- Improve condition of roads;
- Incremental relocation of community and government assets outside the CHZs;
- Strong sense of community responsibility and ownership for coastal processes and coastal management.

Suggested Actions Required	Indicators / Expected Outputs	Potential Long-term Outcomes
To undertake all appropriate actions identified in the CIM plans for highly vulnerable districts;	Effective management of coastal zones in vulnerable areas in the District with the use of planning solutions and hard-structural solutions; Protected coastal infrastructure; A trend of inland retreat or relocation; New individual and community development build foundations are at a level that takes into account the Coastal Flooding Hazard Zone in the area of buildings; Training and skills transfer to counterparts and the community.	An improved coastal environment; Established District clinic outside the CHZ; Residential developments are raised and mitigated from flooding hazards; Sustainable source of sand is available for domestic use; Better condition of local roads; Incremental relocation of community and Government assets outside the CHZs; Strong sense of community responsibility for coastal processes and to coastal management.
To inspect current status of culverts and where necessary an upgrading of culverts and drains;		
To implement education programme;		
To identify road maintenance, investigate constructing new inland road with consultation with villages on final route;		
To prepare an EIA for the propose road;		
To develop wetland monument plans		
To work collaboratively with telecommunication providers for provisions of underground telephone services and expansion of mobile telephone network;		
To work collaboratively with EPC for provision of underground electrical lines and expansion of electric power service;		
To identify a new site for relocation of districts hospitals and or clinics outside of the hazard zones;		
To ensure control of commercial sand mining and enforcement of permit infringements.		

IMPLEMENTATION

Institutional Arrangement

Implementing Agency: MNREM, MWTI

Coordinating Agency: MNREM

The Ministry of Natural Resources, Environment & Meteorology to be the implementing agency with cross-sectoral collaborative involvement with Ministry of Works, Transportation, and Infrastructure and other Government corporations. The District CIM Plan Committee (consisting of village representatives) and Government shall be responsible for making decisions and recommendations on issues and subjects including, but not necessarily limited to:

- Inputs on the best ways to improve coastal resilience;
- Advise on the possible ways to engage broad-based awareness;
- Assist with consultations of project profile; and
- Review of project profile as circumstances changes.

Risks & Barriers

- Lack of District ownership of the project;
- Isolation of the District;
- Political will and commitment;
- Tropical cyclones or extreme climatic events;
- Lack of Engineers within the Ministry to supervise and manage contracts;
- Lack technical skills on contract management for works and services;
- Rock seawalls tend to be preferred by communities for their perceived protection, but they have high physical and visual impact on the beach environment and can be counterproductive;
- Rock Seawalls build by villagers lack design standards and were easily affected by waves during the cyclone.;
- Land ownership and tenure issues;
- Communities preference for coastal location to access marine resources;
- Lack of collaboration between sectors involved.

Evaluation and Monitoring

- Work undertaken must reflect a balance between community needs / outcomes and strengthened resilience of the coastal environment;
- Five yearly CIM Plan review;
- Project status review monthly;
- Established CIM committee in highly vulnerable communities and districts.

COST

Indicative Budget

Proposed Funding (Technical Assistance): USD 450,000

Activity	Costs (USD)
To undertake all appropriate actions identified in the CIM plans for highly vulnerable districts;	150 000
To implement education programme;	100 000

To work collaboratively with telecommunication providers for provisions of underground telephone services and expansion of mobile telephone network;	50 000
To work collaboratively with EPC for provision of underground electrical lines and expansion of electric power service;	50 000
To identify a new site for relocation of districts hospitals and or clinics outside of the hazard zones;	100 000
TOTAL	450 000

The government will commit in-kind contributions in support of development projects that contribute to Samoa's development strategies, overall sustainable development goals and Millennium Development Goals.

SAMOA

NAPA PRIORITY PROJECT 8

PROJECT PROFILE 8: ESTABLISHING CONSERVATION PROGRAMS IN HIGHLY VULNERABLE MARINE & TERRESTRIAL AREAS OF COMMUNITIES PROJECT

TO ESTABLISH AND OR STRENGTHEN COMMUNITY-BASED CONSERVATION PROGRAMS FOR THE PROTECTION OF HIGHLY VULNERABLE TERRESTRIAL AND MARINE BIODIVERSITY

The islands are defenseless against the devastating natural disasters, including cyclones, tidal waves, sea level rise and volcanic eruptions. A significant cyclone can wipe out an entire ecosystem in a short time by generating catastrophic waves, torrential rains, and winds up to 240 kilometers an hour. Biodiversity habitats are prone to tropical cyclones, forest fires in the situation of drought and human induced deforestation activities.

In general as stated in Samoa's Biodiversity Strategy and Action Plan (NBSAP, 2001) the 'status of wildlife' in Samoa after severe cyclones like Ofa and Val was 'quite critical', most likely many of the species were predicted to 'survive albeit in very reduced numbers' (ibid., 2001) with some being severely 'threatened in the long-term should additional pressures such as hunting be at unsustainable levels' (ibid., 2001). It was generally then recommended from the assessments of the NBSAP report that the 'best solution is to ensure there is sufficient habitat which will provide some surviving refuges' (ibid., 2001) for wildlife fauna in particular the birds and fruit-eating bats.

Recent studies shows that most of the coast line of Samoa's major islands are of gradual sloping low-lying areas settled by more than 70% of the country's population are highly vulnerable to tropical cyclone induced waves causing coastal flooding, erosion and landslides (First National Communication Report, 1999).

The impact on marine resources has been great. The intense wave activity of storms overturned much of the coral near shore and severely damaged corals to depth of up to 10 meters (30ft). More recently a mass of coral bleaching event affected most of the coral in the Samoan archipelago and scientist's now associate coral bleaching with global warming. Corals, as the main habitat for marine fish life, live at or between 18 – 28 degrees Celsius therefore a slight increase in temperature of the water causes bleaching. There had been evidence of coral bleaching in Samoa during strong La Nina episodes.

RATIONALE

The identification of conservation areas in highly vulnerable marine and terrestrial areas of communities is urgent and must be addressed immediately. Compounding biodiversity, the pockets of vulnerable marine and terrestrial areas of communities must be protected in order to treasure its biodiversity, safeguard the sustainability of natural resources and environment of the communities. This will ensure an increasing adaptation capacity of the communities, mainly the livelihood resources.

A collaborative effort between the communities and the implementing and coordinating agencies will improve sustainable biodiversity management considering climate change and climate variability. Furthermore, conservation will be given to priority conservation sites for priority species protection. A continued commitment by the communities along with the implementing agency to establish a biodiversity inventory assessment of the ecological status of key priority sites key fauna and flora species for conservation as well as the pressures affecting the sustainability of the site and its biodiversity content will ensure the project impacts can be measured and further adaptation initiatives can be formulated to better adapt at the community level.

DESCRIPTION

Key Objectives

1. Strengthen sustainable biodiversity management plan of action in the communities;
2. Strengthen high priority conservation areas in communities;
3. Develop and update data base inventory for assessment, monitoring and evaluation works;

4. Develop a systemic awareness programme to advance and maintain traditional and modern biodiversity management plans and practices.

Expected Outcomes

- Existence of a sustainable biodiversity management plan in the communities at end of the project;
- Existence of high priority conservation areas identified and marked in communities;
- An inventory database located and accessible for assessment, monitoring and evaluation works;
- A systematic programme of educational and practical learning in which communities engage in improving their knowledge, skills and commitment to better biodiversity management practices.

Suggested Actions Required	Indicators / Expected Outputs	Potential Long-term Outcomes
Develop community-based sustainable biodiversity management plans	A community-based sustainable biodiversity management plan that allows the community to better manage its biodiversity resources of priority concern; Display of priority Conservation Areas identified for each community; An inventory of the communities biodiversity allowing assessment to identify priority areas for further conservation and protection.	Existence of a sustainable biodiversity management plan in the communities at end of project;
Identify and establish priority conservation areas for priority species protection (both marine and terrestrial)		Existence of high priority conservation areas identified marked in communities for public notice ongoing after project;
Develop a community-based biodiversity inventory		A database inventory located and accessible within the community for assessment and monitoring and evaluation works.
Develop effective capacity building programmes for communities with conservation area programmes		

IMPLEMENTATION

Institutional Arrangements

Implementing Agencies: MNREM and MOA in close collaboration with communities

Coordinating Agency: Project Steering Committee (acting advisory committee)

MNREM is the most suitable national agency to implement this project profile. It is proposed that MNREM will undertake the above mentioned activities in close collaboration with the communities that require urgent and immediate attention of conserving their biodiversity.

The project will be coordinated by the Climate Change Unit of MNREM with close collaboration with the project steering committee. This Steering committee consists of executive level officers of each government ministry and private stakeholders who will oversee the articulation of funding received to implement these activities as well as other technical related matters

Monitoring and Evaluation

The Project Steering Committee will oversee the vulnerable and adaptation strategies executed by the implementing agency and monitor the results of the project in terms of:

- A sustainable biodiversity management plan of the communities exists and is practiced continually before and after seasons
- High priority conservation areas are well identified marked and displayed on public notice boards within critical areas of the community environment.
- 6 monthly update of village or community-based biodiversity inventory.

Risks and Barriers

- Inadequate Level of Available Resources. There is at present a great need for effective holistic approach towards education, awareness, and training to the capacity of villagers to commit to this work in integration with their other social and economic needs. In particular, the majority of the biodiversity related conservation work required should be carried out at the local community level. An extensive outlay of financial and human resources is therefore required.

- **Legislative Framework.** There is no legal basis provided for village communities establishment of protected or conservation areas.
- **Lack of Effective Information Management System.** Whilst numerous surveys have been undertaken in different fields, the results have not been able to be integrated. An integrative information management system would give people and communities much broader outlines of issues and problems in biodiversity conservation and in other areas of development.
- **Absence of Effective Institutional Arrangements in Local Communities.** This refers to both the quality and quantity of the governors, the governed and the governing structures at the village level. There are various resources needed to increase the capacity and scope of action of these elements of institutional arrangements or governance at the local levels in order to effectively incorporate in their decision- making processes biodiversity and other issues at the level of urgency now required from them.

COST

Indicative Budget

Proposed Funding (Technical Assistance): USD 350,000

Activity	Costs (USD)
Develop community-based sustainable biodiversity management plans	125 000
Identify and establish priority conservation areas for priority species protection (both marine and terrestrial)	75 000
Develop a community-based biodiversity inventory	100 000
Develop effective capacity building programmes for communities with conservation area programmes	50 000
TOTAL	350 000

The government will commit in-kind contributions in support of development projects that contribute to Samoa’s development strategies, overall sustainable development goals and Millennium Development Goals.

SAMOA

NAPA PRIORITY PROJECT 9

PROJECT PROFILE 9: SUSTAINABLE TOURISM ADAPTATION PROJECT

IMPLEMENT SUSTAINABLE TOURISM ADAPTATION PROGRAMS

Policy (NSTP) so that other sectors involved and communities have a constructive knowledge on procedures and protocols relative to the industry taking into account climate change and climate variability.

RATIONALE

The Samoa Tourism Development Plan 2002 – 2006 does not identify any strategy to cope with the climate issues despite tourism being an integral player in Samoa's economy. The survival and the success of the Tourism industry depend on other sectors such as water, health and electricity. The issue of Climate Change is affecting the Tourism Industry (for instance, the frequency of drought periods forces tourism businesses to close down because of poor and no water supply, running the risk of disease outbreaks that can seriously impair the industry); yet there are no strategies in place for the tourism industry to adapt to the adverse impacts of climate change.

The establishment of NSTP would benefit Samoa by:

- Initiating the establishment of regulatory compliancy procedures that prevents and protects the industry from un-environmentally friendly business practices that can be exacerbated by extreme climatic events;
- Developing and promoting climate adapting business strategies that will protect the industry from adverse impacts of climate change and climate variability;
- Establishing environmentally responsible practices to protect the natural environment including terrestrial and marine biodiversity;
- Developing awareness raising programs for staff on climate change issues and application of best environmental procedures that protect the marine environment;
- Developing eco tourism protocols as a mandatory requirement for all tourism business ventures;
- Increasing the capacity building of the industry in terms of sustainable development practices, climate-proof practices.

DESCRIPTION

Key Objectives

1. Increase capacity building and knowledge of local tourism business operators in communities on climate change and related impacts;
2. Put in place tourist environment policies in community-based tourist businesses;
3. Provide funding to implement counter-measures for climate change in the Tourism industry;
4. Promote and strengthen awareness on ecotourism and climate;
5. Set clear protocols and procedures to involve other sectors and communities in promoting environment protection and adaptation to climate extreme events within the local tourism industry.

Expected Outcomes

- Existence of national sustainable tourism policy;
- Awareness of community operators and tourists on climate change issues at all levels (locally and nationally);
- Proactive approach in tourist operations future plans, policies and actions;
- Ecological and ecotourism education program exists and strengthened;
- A sustained tourism industry.

Suggested Actions Required	Indicators / Expected Outputs	Potential Long-Term Outcomes
Develop a National Sustainable Tourism Policy (NSTP)	The establishment of a NSTP to increase capacity of community operators in the tourism industry and tourists for a robust understanding on CC and actions for way forward; Proactive measures on adaptation to impacts of climate change in business plans, development plans and activities; Promotion Program on ecological education or ecoliteracy in the tourist industry and national school curricula.	The industry and tourists act upon (compliant) and are aware of impacts of climate change and climate related issues relative to the industry; Tourism industry implement proactive adaptation measures to impacts of climate change; Communities are aware of ecological importance to reduce vulnerability in tourism industry; Samoa's Tourism Industry is Sustained.
Assess the impacts of coastal protection measures to the industry		
Translation of NSTP for community programmes and awareness activities		
Promote eco-literacy to strengthen awareness programmes of impacts of climate change to the tourism industry via a pilot project		
Carry out site inspections on tourist businesses on compliancy to policies and regulations		

IMPLEMENTATION

Institutional Arrangements

Implementing Agencies: STA, MNREM

Coordinating Agency: MNREM

Support Agencies: MOA, NGOs, Communities, Resorts, Hotels, Beach Fales etc

Risks and Barriers

The following highlight existing barriers to the development of the sector:

- Limited knowledge on climate change and related impacts;
- Lack of awareness activities on climate change;
- Lack of policies in other sector that promotes the tourism industry;
- Lack of funding available to implement counter-measures for climate change in the tourism industry;
- Uncertainty on projected trends of climate changes; and
- Absence of clear protocols and procedures to involve other sectors and communities in promoting the industry.

Monitoring and Evaluation

An advisory committee oversees the progress of the project and checks that:

- A Policy on environmental tourism is in place at all tourist operating businesses (including hotels, rental, tours and guides);
- An ongoing awareness programmes within the tourist business that encourage eco-literacy amongst tourist operators, employees and tourists;
- Coastal protection measures exist in tourist businesses located on coastal areas;
- Five yearly CIM Plan review;
- Project status review monthly.

COST

Indicative Budget

Proposed Funding (Technical Assistance): USD 250,000

Activity	Costs (USD)
Setting up of a tourism environmental policy for Samoa	100 000
Carry out a study on impacts of coastal protection measure to the tourism industry	50 000
Translation of NAPA document in the Samoa language for community programmes and awareness activities	50 000
Setting up of a pilot project in a secondary and or primary school to promote an ecological curriculum (eco-literacy), strengthening awareness programmes to the tourism sector about climate change and its consequences.	25 000
Making funds available for the tourism sector to implement site inspections on tourist businesses on compliancy to policies and regulations	25 000
TOTAL	250 000

The government will commit in-kind contributions in support of development projects that contribute to Samoa's development strategies, overall sustainable development goals and Millennium Development Goals.