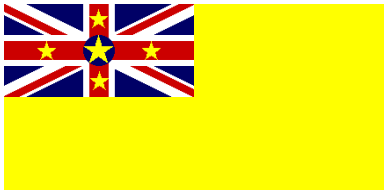
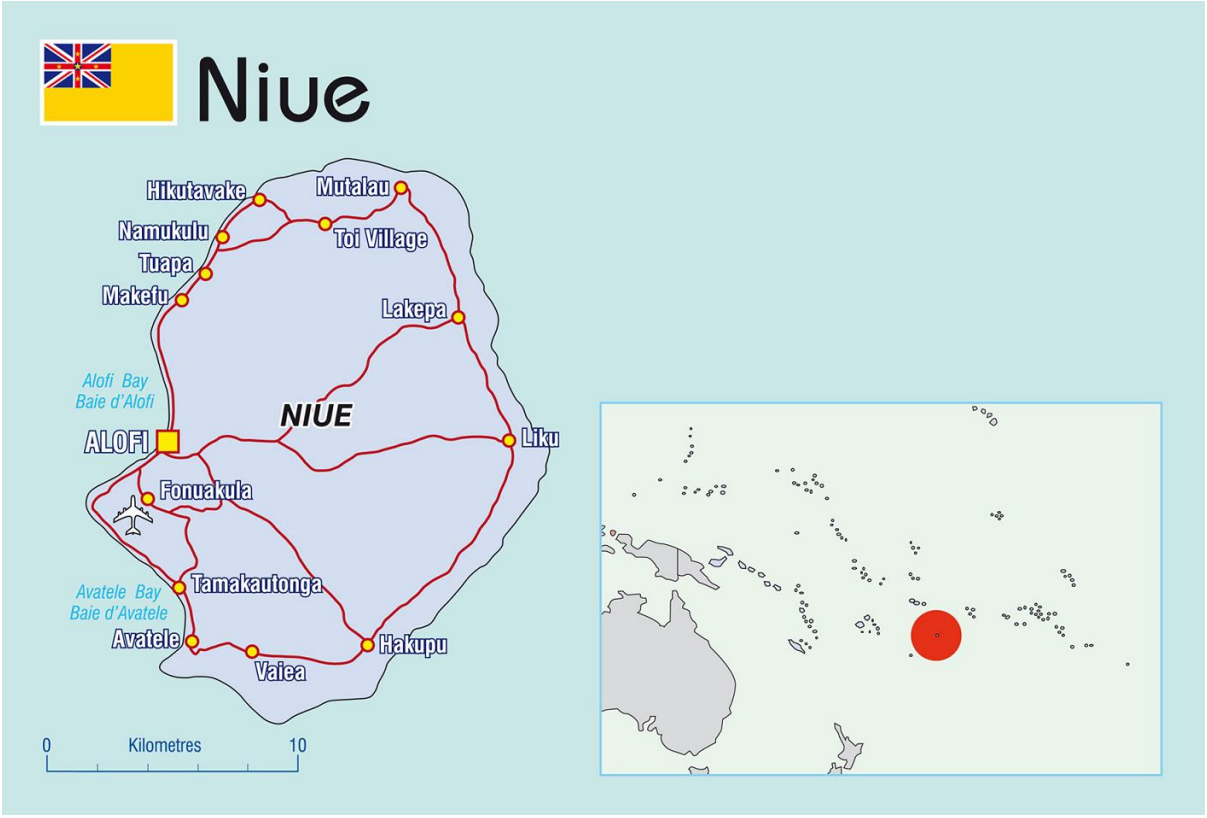
CLIMATE CHANGE PROFILE



NIUE

GLOBAL CLIMATE CHANGE ALLIANCE: PACIFIC SMALL ISLAND STATES PROJECT


Niue
Hikutavake
Mutalau
Namukulu
Toi Village
Tuapa
Makefu
Lakepa
Alofi Bay
Baie d'Alofi
NIUE
ALOFI
Liku
Fonuakula
Tamakautonga
Avatele Bay
Baie d'Avatele
Avatele
Hakupu
Vaiea
0
Kilometres
10

Contents

Abbreviations

ADB	Asian Development Bank
AWS	Automatic Weather Station
CCA	Climate Change Adaptation
DRR	Disaster Risk Reduction
DRM	Disaster Risk Management
DOE	Department of Environment
GCCA: PSIS	Global Climate Change Alliance: Pacific Small Island States Project
GDP	Gross Domestic Product
GEF	Global Environment Facility
JNAP	Joint National Action Plan (for Climate Change Adaptation and Disaster Risk Management)
NCCCT	National Climate Change Country Team
NDMCC	Niue Department of Meteorology and Climate Change
NEMS	National Environment Management Strategy
NNSP	Niue National Strategic Plan 2009-2013
PEFA	Public Expenditure and Financial Accountability Assessment
SOE	State of the Environment Report
SPC	Secretariat of the Pacific Community
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

OBJECTIVE OF THE CLIMATE CHANGE PROFILE

This second version of the climate change profile for Niue has been prepared as part of the Secretariat of the Pacific Community's (SPC) Global Climate Change Alliance: Pacific Small Islands States (GCCA: PSIS) project. The goal of the GCCA: PSIS project is to support the governments of nine small Pacific Island states, namely Cook Islands, Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Niue, Palau, Tonga and Tuvalu, in their efforts to tackle the adverse effects of climate change. The purpose of the project is to promote long-term strategies and approaches to adaptation planning and pave the way for more effective and coordinated aid delivery on climate change, including the delivery of streamlined adaptation finance, at the national and regional level.

This climate change profile is specific in nature and seeks to inform the GCCA: PSIS project as well as the larger SPC climate change support team. It commences with a section on the country's background, including geography, economy, financial management and aid delivery. This is followed by a section focusing on the country's response to climate change, including climate change projections, institutional arrangements, ongoing adaptation activities and climate change priorities. The profile is a work in progress and will be revised and enhanced as the project develops.

COUNTRY BACKGROUND

Country Information[i]	
Geographic coordinates	Lat. 19° S, Long. 169° W
Total land area	259 km^2
Length of coastline	64km
Exclusive economic zone	390,000 km^2
Resident population (2010)	1,479
Average annual growth rate	-2.3%
Urban/rural population distribution (2006 est.)	36/64%
Population density (2006)	6 per km^2
Access to improved water supply	100% of population
Improved sanitation facilities	100% of households
Infant mortality rate (2002-2006 est.)	7.8
Human development index	0.823[1]

Introduction

Niue is the world's largest and highest single coral atoll with a land area of 259 km^2. It is situated in the southwest Pacific Ocean (19°S, 169°W) about 2,400km northeast of New Zealand. It is approximately 480 km east of Tonga, 930 km west of Rarotonga and 660 km southeast of Samoa. Within its exclusive economic zone (EEZ) of 39,000 km^2, Niue has two reef atolls, Antiope and Beveridge, visible only at low tide, from which commercial fishing is banned. Niue's marine region hosts a number of seamounts re-known for its high value fisheries productivity.

Niue is characterised by three terraces; the rim of the lower terrace averages 28 m above sea level, with the upper rim averaging 69 m above sea level. The slopes of the terraces are

[1] The human development index (HDI) is a comparative measure of life expectancy, literacy, education, and standards of living for countries worldwide. It is a standard means of measuring well-being, especially child welfare. It is used to distinguish whether the country is a developed, a developing or an under-developed country, and also to measure the impact of economic policies on the quality of life. The HDI score indicates that Niue is in the high human development category.

rough, with jagged coral outcrops. The island has a rugged, rocky coastline, featuring steep cliffs, caves, deep chasms and blowholes. The reef is continuous, and is breached at one small area opposite the Alofi wharf.[ii]

There are 14 villages scattered around the island's coast, one of which Alofi is the capital. Most villages are within walking distance of each other, especially the western coastal villages. A coastal road passes through all villages; it is sealed within each village and along the west and south coast (Figure 1).There are also two major cross-island roads, both of which are sealed.

There is no natural harbour. The open roadstead in Alofi Bay lies on the sheltered west coast, in the lee of the prevailing easterly trade winds, and has a wharf, which accommodates smaller vessels with other cargo being transferred by lighters. There is a 2,335 m runway which receives a once weekly flight from Auckland.

There is no surface water on Niue, but artesian bores tap a subterranean reservoir of fresh water for domestic, commercial and agricultural purposes. Current land clearing and farming practices and an inadequate waste disposal system pose a potential threat to the present water quality.

Government

Niue is a self-governing country in free association with New Zealand. Under this arrangement, the New Zealand Government, in consultation with Niue, retains responsibility for external affairs, including defence. People from Niue are citizens of New Zealand, although Niue has assumed greater responsibility for its own foreign affairs since 1994, and has begun to establish formal diplomatic relations with sovereign states. Niue is recognised as a 'non-member state' by the United Nations, implying recognition of full treaty-making capacity. It is also a full member of the Pacific Islands Forum.

Niue is a parliamentary representative democracy, where the premier is the head of government. The constitution vests executive authority in the Crown, currently Her Majesty Queen Elizabeth II, and specifies that in everyday practice this authority is exercised by the premier of Niue and a cabinet of three other ministers. The premier and ministers are members of the Niue Legislative Assembly *(Fono Ekepule)*, the nation's legislature. The assembly consists of 20 democratically elected members, 14 of whom are elected by village constituencies and six by all registered voters in all constituencies. The members of the legislative assembly elect a speaker who then calls for nominations for premier; the candidate with the most votes from the 20 members is elected to lead the government. The premier selects three other members to form a cabinet of ministers, the effective executive arm of government. The other two organs of government, following the Westminster model, are the legislative assembly and the judiciary. The judiciary is independent of the executive and the legislature.

General elections take place every three years, most recently on 7 May 2011. Political parties do not play an important role in politics.

Oversight of the 7 listed department portfolios is distributed amongst the three cabinet ministers. Each minister is responsible for a number of departments, and also oversees state corporations and agencies.

Local governments are established under the provisions of the Village Council Act, 1967. Each of the 14 villages has a council that elects its chairman. The village council serves a three-year term. The villages also serve as electoral districts so that each village is also

represented in the Niue Legislative Assembly. The capital, Alofi, consists of the villages of Alofi North and Alofi South.

Following Cyclone Heta in January 2004, many government buildings were relocated to less exposed sites inland.

Table 1: Government ministries, state corporations and agencies

Premier's Department: Legislative, Cabinet services, Corporate Services, Crown Law Office, External Affairs, Project Management Unit, Economic Development Planning & Statistics Unit, Private Sector, Trade.
Finance, Customs & Revenue, and Government Assets Taxation, Infrastructure Department : Transport, Niue Public Service Commission, Police and National Security, Immigration and Population, Civil Aviation, Niue Tourism, Niue Post & Telecommunication/ ICT, Niue Development Bank.
Agriculture, Forestry & Fishery Department: Administrative Services/ Niue Training & Development Unit.
Education Department
Public Works Department : Civil Division, Quarry, Water, Building, Mechanical, Niue Power Corporation, Justice, Lands & Survey, Bulk Fuel.
Community Affairs Department: Village Councils, NGO, Woman Affairs, Social Welfare, Niue Broadcasting Corporation.
Health Department

National and sector policies and strategies

In 1993, the Government of Niue developed its National Environmental Management Strategy (NEMS), highlighting the importance of linking economic growth and environmental management in the development of the country. The scope of NEMS was broad and included the development of appropriate environmental legislation, and implementation of environmental management, training and awareness programmes. The Niue State of the Environment Report (SOE) was prepared as a component of NEMS and provided a comprehensive reference document. It summarised the extent of knowledge in relation to the environment of Niue in areas such as terrestrial environment, marine resources, cultural and archaeological resources and socio-economic environment; it also outlined the environmental challenges facing Niue. Ultimately, SOE provided a vehicle to enhance the decision-making process.

The Government of Niue demonstrated its commitment to Agenda 21 by adopting international legal instruments, which were strengthened by the adoption of regional agreements. Despite the pressure placed on a limited workforce, Niue has achieved various stages of implementation of the various agreements.

A national assessment was undertaken for the World Summit on Sustainable Development in 2002. This assessment includes a sectoral review, which was adopted through a series of collective consultations and concerted efforts by the government and civil society. By involving essential stakeholders, government reaffirms the realisation that resource owners

and users should play a direct role in how these resources should be used in a sustainable manner. Essential sectors identified have been prioritised for appropriate action in the future.

The Environment Act 2003 provided a mechanism for the development of environmental policy and law, and established an Environment Department. The vision for protection of the environment is sustainable use and management of Niue's natural environment for present and future generations, with the aim to utilise the abundant natural resources in a way that not only maximises the economic benefit but also ensures that future generations will be able to enjoy them to the full. It emphasises that all residents of Niue are responsible for the management and sustainable use of the environment. Environmental impact assessments are compulsory for all development programmes.

Niue has a number of strategies that facilitate development in the various sectors underpinned by *Niue ke Monuina — A Prosperous Niue: Niue National Strategic Plan 2009–2013* (NNSP)[iii] which provides a vision for the people of Niue: 'The objective is to build a sustainable future that meets our economic and social needs while preserving environmental integrity, social stability and the Niue culture.' The achievement of the vision is aided by six national development goals/pillars, each with specific strategic initiatives, activities and targets that will be implemented and achieved during the plan period. The six development goals are as follows.

1) Financial stability – Ensure that sufficient financial resources are secured, and responsible fiscal management is prudent, sustainable and supports healthy development strategies.
2) Governance – Ensure that good governance reflects the principles of transparency and accountability that is practised at all levels.
3) Economic development – Maximise benefits from Niue's resources in a sustainable manner; focusing on private sector development; targeting tourism, agriculture and fisheries; supported by safe, reliable and affordable healthy infrastructure.
4) Social – Enjoy a harmonious and healthy lifestyle in a thriving, educated and safe community that has access to a wide range of good quality social services and healthy development opportunities.
5) Environment – Sustainable use and management of Niue's natural resources and environment for present and future generations.
6) *Taoga Niue* – Promote, preserve and strengthen Niuean cultural heritage, language, values and identity.

The critical importance of financial stability and environmental integrity feature in the current plan period. It is also the directive of the government that all sectors need to develop their strategies and policies in line with the development objectives outlined in the NNSP.

Niue's Joint National Action Plan (JNAP) (April 2012) for climate change adaptation and disaster risk management provides a three year plan of action to address existing gaps relating to vulnerability to climate change impacts and natural disasters. Niue's JNAP process identified five priority areas which form the goals in the implementation matrix: strong and effective institutional basis for Disaster Risk Reduction and Climate Change Adaptation (DRR/CCA); strong public awareness of the cause and effects of climate change, climate variability and disasters; strengthened livelihoods, community resilience, natural resources and assets; capacity to adapt renewable energy technologies and improve energy efficiencies; strengthened disaster preparedness for effective response.

Economy

The economy of Niue suffers from many binding constraints, including its size, geographic isolation, few resources, and a small population. Government expenditure regularly exceeds revenue, and the shortfall is made up by critically needed grants from New Zealand used to pay wages to public employees. The agricultural sector consists mainly of subsistence gardening, although some cash crops are grown for export. Industry consists primarily of taro, noni, honey and vanilla beans. Past industries in the 1970s and 1980s included small factories to process passion-fruit, lime oil, honey and coconut cream. The sale of postage stamps to foreign collectors is an important source of revenue. The island in recent years has suffered a serious loss of population because of emigration to New Zealand. Efforts to increase the gross domestic product (GDP) include the promotion of tourism and financial services, although the International Banking Repeal Act of 2002 resulted in the termination of all offshore banking licenses. Economic aid from New Zealand in FY 08/09 was USD 5.7 million.

The government's long-term policy for economic development and financial stability is to encourage national self-reliance. In the short- and medium-term, the government aims to maximise available funds to invest in high priority areas. One of the strategies is to target development of eco-tourism and the expansion of export products such as vanilla and noni. In 2006, non-market (government) earnings made up most of GDP. The private sector contributes 20% of total GDP. Niue imports four times more than it exports; the five major import items are food, mineral products, vehicles, home appliances, and steel building items. Imports of building materials and machinery increased following the 2004 cyclone. Niue also earns revenue from fishing in its exclusive economic zone.

Economic Information[iv]

GDP per capita (2006 est.)	NZ$12,156.00
Real GDP growth (2009 est.)	0.1%
Inflation rate (2010 est.)	5.4%
Unemployment rate (2006 est.)	0.9%

Financial management

Niue has been operating both trade and operational budget deficits for many years. These are offset by recurrent funding from New Zealand, which is mostly used to subsidise the public service payrolls. A number of fiscal and taxation reforms were recently introduced to increase internal revenue. A consumption tax was introduced and changes were also made to income tax and some import duties. These tax reforms were fully implemented only in February 2009. Independent assessment of Niue's performance in public financial management is relatively limited. There have been no Asian Development Bank (ADB) or Public Expenditure and Financial Accountability (PEFA) assessments undertaken. However, from the budget information that is available, the public financial management systems appear to be functioning to a limited extent. There is comprehensiveness in budget documentation and reporting, and this is clearly reflected in the recent (e.g. 2006–2007 and 2008–2009) budget reports.

Some departments comply with their budget ceilings and reporting requirements, and their sector plans clearly reflect the national priorities outlined in the NNSP. However, the overall challenge for public financial management is how it can function to maintain budget credibility. Public financial management is guided by the NNSP, Revenue Treasury Rules 1960, Treasury Instructions, and the Public Revenues Act 1969. Financial priorities reflect key social and economic projects envisaged in the NNSP. Fiscal policies are targeted

towards implementation of the key pillar pertaining to financial stability. For example, the introduction of the Consumption Tax Act in 2009 levied a 12.5% tax on goods and services, and the benefits are slowly materialising.

Income tax has been lowered and import taxes have been reduced, except for those on tobacco and alcohol. Secondary income tax was also lowered from 35% to 10%, a move aimed at stimulating labour productivity. The new financial management information system Greentree should gradually improve financial management and reporting. Work on this was preceded by a review of the chart of accounts, and together these reforms mark a significant step in terms of improving public financial management systems. Two thirds of the government budget is funded by tax and other (non-tax) revenues, with the remaining third being funded by donor contributions, mainly from New Zealand.

The Niue International Trust Fund also plays an important role in terms of fiscal stability. The NITF fund was established in 2006 with assistance from New Zealand and Australia, and its revenue is expected to be generated after 2014.

While some progress has been made with Niue's public financial management system, e.g. with the level of compliance with policies (e.g. NNSP) and credibility of the budget, reporting and budget compliance remain limited.

Direct budget support

Niue receives direct budget support from New Zealand as part of its obligations under the constitution for economic and administrative purposes. Through budget support, New Zealand provides 57% of Niue's recurrent budget and provides around two-thirds of the remainder of aid received by Niue.[v] There has been a shift in focus for Niue in recent times, with budget support from New Zealand being geared towards increasing social and economic activity through investment in economic development initiatives such as tourism. This change was brought about by the Government of New Zealand.

The aid relationship between Niue and New Zealand is strengthened further by a joint commitment between New Zealand and Niue 2011–2014, where both parties are committed to working towards enhancing economic development, improving public financial management systems, improving governance, improving environment and infrastructure, and ensuring social development consistent with Niue culture. The foregoing development outcomes are closely aligned with the Niue 2015 vision (*Niue ke Monuina* – A Prosperous Niue).

Aid management

A peer review of Niue's national development planning, public financial and aid management systems and processes was undertaken in June 2011, as part of the Compact on Strengthening Development Coordination in the Pacific, agreed to by Forum Leaders and key development partners in 2009. The peer review team reviewed and made recommendations on a number of salient issues relating to improving systems and processes for development planning, public financial and aid management.

At present, there is no aid management policy *per se* as aid is channelled through a variety of mechanisms, including budget support, programme support, technical assistance, contributions to the Niue International Trust Fund and projects. Some aid resources are held by donors in trust within Niue as in the case of New Zealand with its special trust fund to fund tourism infrastructure. Additionally, a large number of projects, with the associated monitoring and reporting burden, are managed by a small number of departments, making disproportionate demands on Niue's public service.

The peer review found that the cost of managing external assistance within public sector resources is unsustainable, and is made worse by the fact that there is no centralised mechanism for aid coordination. Thus, in line with the objective of NNSP — to set up an aid coordination unit for internal and external aid harmonisation — and based on the findings of the peer review, it was recommended that an aid management unit be established, whose first task is to develop an aid management policy as in Nauru, Samoa and Tuvalu.

RESPONSE TO CLIMATE CHANGE

Activities in response to climate change began in Niue after the ratification of the United Nations Framework Convention on Climate Change (UNFCCC) on February 28 1999, five years after the entry into force of the UNFCCC on March 21 1994. Awareness on climate change and sea-level rise issues began with the preparation of its initial national communication under the UNFCCC between 1998 and 2001. The preparation provided the avenue for discussing climate change issues and also undertaking some capacity building and awareness on climate change in Niue.

Current and future climate

Current climate

Niue has a tropical maritime climate, with a seasonal range of about 4^{o}C between the warmest and coolest months. There are two distinct seasons in Niue: the hot or wet season from December to March and the cool dry season from April to November. The average annual rainfall is approximately 2,180 mm, but it can vary from 810 mm to 3,300 mm. The bulk of rainfall is concentrated in the hot season and is often delivered in torrential downpours; it accounts for 68% of the total annual rainfall. The cool season is characterised by warm, sunny days and cool nights, with temperatures averaging 24^{0}C. The annual average temperature does not vary greatly throughout the year due to the influence of the sea on a small low-lying island. The annual rainfall pattern is erratic, with very dry or very wet months possible at any time of the year.

Cyclones strike Niue at irregular intervals, the most recent one being Cyclone Heta in January 2004, which caused devastation to people, properties, government and industry, infrastructure, agriculture and the economy with an estimated damage cost of more than USD 60 million (or NZD 89.1 million). Since 1863, when records began, more than 30 tropical cyclones have affected Niue with a frequency of one severe cyclone within 2–15 years.

Droughts occur from time to time, affecting agriculture, particularly, as there is no irrigation system. Year-to-year variability is often strongly influenced by the El Niño Southern Oscillation. The rate of sea-level rise since 1993 measured by satellite is 5 mm per year.

Expected future climate of Niue[vi]

Projections for all emission scenarios show that temperatures will continue to rise in Niue, as will sea level. (see Table 2). The increase in temperature will result in an increase in the number of hot days and warm nights and an increase in the average annual and seasonal rainfall over the entire course of the 21st century.

Projected increases in rainfall are consistent with the expected intensification of the South Pacific Convergence Zone, the Intertropical Convergence Zone and the West Pacific Monsoon. However, not all model results show consistent results, giving rise to some

uncertainly in rainfall projections. Less frequent droughts are projected for Niue over this century.

Projections of sea-level rise under the high emissions scenario (A2) indicate that, by 2030, Niue will have experienced sea-level rise in the range of 6 cm to 27 cm. Ocean acidification is likely to continue throughout the current century in waters around Niue.

Table 2: Climate change projections for Niue for 2030 and 2055 under the high emissions scenario (A2).

Climate Variable	Expected Change	Projected Change by 2030 (A2)	Projected Change 2055 (A2)	Confidence Level
Annual surface temperature	Average air temperature will increase	+0.3 to +1.1°C	+0.9 to +1.7°C	Moderate
Maximum temperature (1 in 20 year event)	More very hot days	NA	+0.9 to +2.1°C	Low
Minimum temperature (1 in 20 year event)	Fewer cool nights	NA	–0.2 to +3.2°C	Low
Annual total rainfall (%)	Annual rainfall will increase	–7 to +17%	–10 to +24%	Moderate
Wet season rainfall (%)	Wet season rainfall will increase	–8 to +18%	_6 to +24%	Moderate
Dry season rainfall (%)	Dry season rainfall will increase	–8 to +18%	–12 to +22%	Low
Sea-surface temperature (°C)	Sea surface temperature will increase	+0.3 to +1.1°C	+0.9 to +1.7°C	Moderate
Annual maximum acidification (aragonite saturation)	Ocean acidification will continue to increase	+2.3 to +2.7 Ωar	+2.9 to +3.1 Ωar	Moderate
Mean sea level (cm)	Sea level will continue to rise	+6 to +27 cm	+10 to +50 cm	Moderate

Institutional arrangements for climate change

The preparation of the initial national communication of Niue to the UNFCCC provided a platform for the creation of a national climate change country team (NCCCT), which provided oversight for the implementation of the project. The NCCCT included technical working groups, which carried out the various tasks and activities relating to the preparation of the communication, which was completed and submitted to the UNFCCC secretariat in 2001. The preparation of the second national communication commenced in 2006, essentially following the country team approach and institutional arrangements similar to those used for

the first national communication. The main agency responsible for the two projects is the Niue Department of Meteorology and Climate Change (NDMCC) which is also the UNFCCC Focal Point for the country. Thus all climate change-enabling activities, including the top-up phase and technology needs assessment, have been facilitated by and coordinated through NDMCC and NCCCT.

While climate change-enabling activities are facilitated and coordinated by the NDMCC, all other environmental programmes and projects are managed and coordinated by the Department of Environment (DOE) which also serves as the Operational Focal Point of the Global Environmental Facility. As such, it manages many of the United Nations Development Programme – Global Environment Facility (UNDP-GEF)-funded projects and programmes in Niue, including the Pacific Adaptation to Climate Change project on water resources. Additionally, DOE developed in 2009 the policy: *National Climate Change Policy: A safer, more resilient Niue to impacts of climate change and towards achieving sustainable livelihood,* in line with the NNSP. The development of the national policy was spearheaded by the DOE, which is responsible for coordinating the implementation of the policy.

Implementation of climate change activities in Niue is carried out by a number of different organisations. Such arrangements pose potential problems for coordination and jurisdiction. However, under the JNAP, the Department of Environment and other key stakeholders will coordinate and facilitate adaptation activities in Niue.

Ongoing climate change adaptation activities

A number of climate change adaptation activities are ongoing in Niue:

Title, year	Project description, country focus and agencies responsible
1. Pacific Adaptation to Climate Change 2008-2013.	Project focus on water resources: improving water supply and rainwater harvesting in consideration of cyclone and drought impacts. Agencies responsible: Department of Environment, NDP-GEF-funded.
2. Integrated water resources management (IWRM): 2008-2013.	Niue's IWRM Demonstration Project entitled "*Using Integrated Land Use, Water Supply and Wastewater Management as a Protection Model for the Alofi Town Groundwater Supply and Near-shore Reef Fishery*". Using integrated land use, water supply and wastewater management as a protection model for Alofi Town groundwater supply and near shore fishery. Agencies responsible: Water Division (PWD), Niue Met Office, Department of Environment, Justice Lands and Survey. UNDP-GEF-funded.
3. Pacific-Australia Climate Change Science and Adaptation Planning project (PACCSAP). 2009–2013.	To support the government of Niue develop improved climate change projections and adaptation planning activities. Niue and 14 other Pacific countries are part of this AUD 32 million project. Agencies responsible: Department of Meteorology and Climate Change.

Title, year	Project description, country focus and agencies responsible
4. Development of joint national action plan for climate change adaptation and disaster risk management. 2011-2012 (This JNAP is still under review by Government)	JNAP provides a three year plan of action to address existing gaps relating to vulnerability to climate change impacts and disasters. Key goals: Strong and effective institutional basis for disaster risk reduction / climate change adaptation; strong public awareness and improved understanding of the causes and effects of climate change, climate variability and disasters; strengthened livelihoods, community resilience, natural resources and assets; strengthened capacity to adapt renewable energy technologies and improve energy efficiency; strengthened disaster preparedness for effective response. Agencies responsible: Department of Environment, Department of Meteorology and Climate Change, Department of Public Works, supported by SPC and SPREP.
5. Global Climate Change Alliance: Pacific Small Island States (GCCA: PSIS) 2012-2014.	Project promote long-term strategies and approaches to adaptation planning and pave the way for more effective and coordinated aid delivery on climate change, including the delivery of streamlined adaptation finance, at the national and regional level. Euro11.4 million funded by EU and the main focus in Niue is to provide 5,000 litre rainwater tanks to each of the 214 households in the villages of Tuapa, Alofi North and Alofi South. The project will complement and upscale the existing Rainwater Harvesting Project funded by the Global Environment Facility and AusAID. Agencies responsible: Department of Environment, supported by Secretariat of the Pacific Community.
6. EU-Global Climate Change Alliance-USP Project. 2011-2014.	To develop and strengthen the Pacific ACP countries' capacity to adapt to the impacts of climate change. Through training of local, national and regional experts on climate change and adaptation and the development and implementation of sustainable strategies for community adaptation, based on improved understanding of impacts of climate change and variability in the Pacific region. Euro 8 million funded by EU and implemented through USP. The main focus in Niue is on community engagement and community-based adaptation activities.

National climate change priorities

The Government of Niue developed a climate change policy in response to the need for addressing climate change issues in a more coherent and whole-of-government manner in line with the NNSP. The DOE spearheaded the development of the policy, which was endorsed by government in 2009. The policy has as its goal: 'to promote understanding of and formulate appropriate responses to the causes and effects of climate change in support of national sustainable development objectives'. A number of objectives and associated strategies are outlined in the policy:

1) Awareness-raising – climate change communication strategy, awareness campaigns, climate change integration into school curricula, awareness-raising on specific topics.
2) Data collection, storage, sharing and application – database management, research, analysis and use for decision support, capacity building for analysis, interpretation, application and dissemination of data and information.
3) Adaptation – identify vulnerabilities and appropriate adaptation options, build capacity for adaptation, use appropriate adaptation technologies, including traditional knowledge.
4) Mitigation – renewable energy technology, energy efficiency, technology, and building capacity to update GHG inventories.
5) Governance and mainstreaming – mainstream climate change issues into development and budgetary processes.
6) Regional and international cooperation – effective implementation, participation and collaboration with regional and international partners, donors and development agencies.

An adaptation component of the climate change policy is being integrated with disaster risk management in a draft JNAP. This draft is currently under review (as of June 2013) and has not been endorsed by government as yet.

As with other Pacific Island countries, Niue has used the national communication process to identify climate change and adaptation priorities. For instance, a list of 44 adaptation activities has been identified during the preparation of the second national communication of Niue under the UNFCCC. These priorities relate to agriculture, fisheries, human health, settlement and infrastructure, coastal zones and tourism. The following activities have been identified through stocktaking climate change activities in Niue and consultations with the various stakeholders.[vii]

Understanding the impacts of climate change

- There is a need to better understand the impacts of climate change, including a better understanding of the socio-economic impacts. Thus socio-economic impact assessment will lead to the identification of effective adaptation options.
- Awareness of adverse impacts of climate change on food security, water resources management, and waste management and on the environment is lacking. More awareness-raising, development of user-friendly outreach and awareness materials and understanding of impacts of climate change are necessary.
- The impacts of climate change on forest and biodiversity are not well understood and needs to be improved; therefore it is imperative for such a study to be undertaken, either as part of project implementation or as a stand-alone research effort.
- A communication strategy needs to be expanded further to identify and include those that have been effective and efficient for improving understanding of climate change impacts and their linkages.

Awareness raising and education

- For non-governmental organisations (NGOs) to be effective in delivering and working on climate change issues, there needs to be capacity building and training of relevant NGOs to work on climate change issues effectively.
- Awareness-raising is needed – a climate change communication strategy, awareness campaigns, climate change integration into school curricula, awareness-raising on specific topics.
- Activities and outreach materials need to be developed and incorporated into national institutions for continuity beyond end of project implementation.
- More innovative and inclusive development of materials in Niuean language should be encouraged.

Information and data management

- Data collection, storage, sharing and application need to be improved – database management; research; analysis and use for decision support; capacity building for analysis, interpretation, application and dissemination of data and information. Partnerships with organisations such as CSIRO (Australia) and NIWA (New Zealand) could assist with building capacity at the national level.
- Improve and strengthen instruments for measuring and monitoring climate parameters. There is a greater need for installing four or more automatic weather stations in the western lower terraces, central, northern and eastern side of the island. There is also a need for a tide gauge. Niue has made numerous requests to have this but is yet to get it.

Adaptation and risk reduction activities

- Adaptation – identify vulnerabilities and appropriate adaptation options, build capacity for adaptation, use appropriate adaptation technologies including traditional knowledge with respect to coping with drought, water shirtages, food security and use of natural resources.
- Integrate climate change adaptation into food security, sustainable land management and sustainable livelihood strategies.
- Strengthen irrigation techniques and technology, particularly during prolonged droughts. Explore and conduct a cost-benefit analysis of such technologies and their effectiveness.
- Increase capacity of community-based water tanks and assess strategies and activities for prevention of losses from leakage.
- Develop and maintain planting material through nurseries. Three propagation shade houses have been built to provide nurseries but need to be continued with further resources and capacity to maintain and distribute planting materials.
- Relocation - As part of the government's recovery and rehabilitation programme (post Cyclone Heta), Alofi North will be relocated to the upper terrace. However, due to lack of funding and constraints in utilities needed for land development, the relocation has not been completed. It was proposed that funding will be required to integrate climate change issues into the relocation programme.
- Co-finance cyclone proofing the meteorological services building.
- Develop and build the national disaster management office to coordinate and manage natural and non-natural disasters.

Mitigation activities

- Mitigation – renewable energy technology, energy efficiency, technology, and build capacity to update greenhouse gas inventories.
- Undertake an assessment of different technologies relating to solar energy, wind turbines and bio-fuels as to the feasibility of their use in Niue

Governance and international cooperation

- Governance and mainstreaming – mainstream climate change issues into development and budgetary processes.
- Develop a meteorological services policy and legislation.
- There is a need for effective implementation, participation and collaboration with regional and international partners, donors and development agencies.
- Build on lessons learnt from projects such as PACC in future project implementation, monitoring and evaluation.

Training

- Training and capacity-building in the area of engineering, hydrology and waste management are inadequate. There is need for improved management of solid waste and liquid waste treatment and disposal.
- There is a need for vocational agricultural training and education on addressing climate change issues/concerns within the agriculture sector.
- There is a need for certification of meteorological services personnel (observers and forecasters) on quality management services to standards set by the International Civil Aviation Organization (ICAO). Funding is required for technical assistance, or an expert to train meteorological staff to ICAO standards.
- There is also a need to enhance and strengthen the human resources through attachment programmes over a three to four year period.
- At present Niue has limited capacity to provide three-day forecasts; training of forecasters is required to undertake this work.

Early warning system for disasters

- An improved communication system needs to be established for onset of disaster as well as reporting on post-disaster
- More AWS should be established to closely monitor climatic conditions including drought and conductions for fires.

Niue has specific sector plans and strategies relating to water resources:

1) Water for Life (WfL): Alofi North Village Water and Wastewater Management Plan 2010–2015 and Alofi South Village Water and Wastewater Management Plan 2010–2015
2) Niue Infrastructure Plan: Overview, Roading, Wharf, Water Supply and Wastewater.
3) Niue Drinking Water Safety Plan
4) Water Act 2012

The SPC GCCA: PSIS project in Niue will provide 5,000 litre rainwater tanks to each of 214 households which have been identified in three villages, namely Tuapa, Alofi North and Alofi South. The GCCA: PSIS project will complement and upscale the existing Rainwater Harvesting Project funded by GEF and AusAID and will ensure coverage of the whole island, a total of 477 households in 14 villages. This will assist Niue by securing a reliable supply of potable water especially during extreme events such as tropical cyclones. A communications and awareness campaign will be conducted to advise each household of their responsibility

to provide guttering, and additional fixtures where necessary e.g. fascia boards for the guttering. This will assist with building ownership of the project and ensuring maintenance and care of the rainwater harvesting systems by the individual householders.

Key Challenges

The biggest challenge Niue faces is lack of human resources which is exacerbated by outmigration. Addressing climate change is a long-term development problem as there are a large number of constraints, gaps, needs and priorities that need addressing in order to facilitate adequate adaptation. Thus the other main challenge for Niue is to ensure that there is adequate human, technical and financial support from the regional and international community to help with addressing the climate change issues and concerns embodied in the climate change policy.

The government of Niue highlighted its priority needs for adaptation to climate change in the yet-to-be endorsed JNAP and other documents[2]. Although Niue has made some progress since 2001 in addressing climate change issues with the support of its regional and international development partners, key challenges still remain and will compromise future long term efforts unless effectively addressed.

Of particular note are capacity constraints relating to the lack of highly skilled personnel, in permanent positions, to take on the task of managing climate change risks over the near and long term. Short term personnel and project personnel only go some way to addressing this gap. Climate change education at primary, secondary and tertiary levels, short term training, on-the-job training and job attachments are critical to address the capacity gap. So too is the need to develop innovative ways to retain skilled personnel in country through appropriate levels of remuneration and other means.

Raising public awareness about climate change risks is another important activity that needs to be implemented through a planned process thereby moving away from ad hoc approaches.

Given that many of climate change activities implemented in Niue are project based, with 3-5 year time frames, the results and outcomes may not always be sustainable. Niue is already making efforts to prepare a financing strategy for climate change adaptation and disaster risk reduction activities and to tailor new projects to address specific gaps in their national agenda, and this approach needs to be maintained and expanded.

Integration of climate change into national, sector and community programmes, projects and activities is needed on a continual basis over the long term and there is a need to create an enabling environment for engaging with both local communities and national level government.

Another key challenge for Niue is to ensure that gender-sensitivity and disability inclusiveness is addressed in its climate change programmes, projects and activities. Climate change affects communities and individuals in different ways and it is important to ensure that climate change activities are fully inclusive of these special groups.

[2] First and Second National Communications under the UNFCCC highlight many of the climate change adaptation needs and priorities.

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