Niue Agriculture Sector Plan

2015–2019

Department of Agriculture, Forestry and Fisheries

Pacific Community
Communauté du Pacifique

EUROPEAN UNION

PAPP
Pacific Agriculture Policy Project

INTRA ACP

This publication was printed with financial assistance from the European Union-supported Pacific Agriculture Policy Project (PAPP) implemented by the Pacific Community (SPC).

Niue Agriculture Sector Plan

2015–2019

Department of Agriculture, Forestry and Fisheries

Contents

Abbreviations

CePaCT	Centre for Pacific Crops and Trees
DAFF	Department of Agriculture, Forestry and Fisheries (Niue)
EAS	Extension and Advisory Services
ERP	Emergency Response Plan
FA	Farmers Associations
FAO	Food and Agriculture Organization (UN)
FFA	Forum Fisheries Agency (Pacific Islands)
FSSLP	Food Security and Sustainable Livelihood Programme in the Pacific Island Countries
JNAP	Joint National Action Plan
LRD	Land Resources Division (SPC)
NCD	Non-Communicable Diseases
NIOFA	Niue Island Organic Farmers Association
NISP	Niue Island Strategic Plan
NMTS	Niue Meteorological Services
PPP	Public Private Partnership
REAS	Research, Extension and Advisory Services
SPC	Pacific Community
STEPS	(WHO) STEPwise approach to chronic disease risk factor surveillance
TCP	Technical Cooperation Programme (FAO)
UNDP	United Nations Development Programme
WHO	World Health Organization
WTO	World Trade Organization

Acknowledgement

The Niue Agriculture Sector Plan 2015-2019 could not have been produced without the assistance provided by the Pacific Community (SPC) Land Resources Division (LRD) and with support of the United Nations Food and Agriculture Organisation (FAO).

Throughout the preparation of the Agriculture Sector Plan we would like to acknowledge the initial support of Dr Siosiua Halavatau, SPC-LRD and Mr Gibson Susumu, SPC-LRD who provided significant assistance throughout the compilation of the document.

We wish to acknowledge the support provided by the Government of the Day, Hon. Minister Billy Talagi, Director General Dr Josie Tamate and Director Mr Brendon Pasisi. Also, Mr Poi Okesene – Senior Technical Project Manager and Mrs Natasha Toeono-Tohovaka – Senior Administration Project Manager, DAFF, for their contribution towards the document.

Special thanks to the EU-SPC Pacific Agriculture Policy Project Team Leader Mr Vili Caniogo and his Team – Miriama Kunawave Brown and Cheryl Thomas, for their efforts in finalising the document for publication. We acknowledge all of the partners and relevant stakeholders who in one way or another have contributed to the compilation of this very important document.

Foreword

Niue face many challenges in sustaining agricultural growth stemming from a number of factors. Niue's import bill is ten times higher than it exports resulting in significant trade deficit. The economy depends largely on foreign aids to support many of the government operations. Increasing reliance on imported food is increasingly recognised as a major cause of the increasing NCD problems in Niue.

Achieving sustainable growth will depend on strengthening effective partnership and support for private sector development and increased foreign investment. The Agriculture sector has been identified in the NISP as one of the priority areas for economic development. Hence, this sector plan was formulated to guide a coordinated approach in addressing the challenges to the sector and thus strengthen the contribution of the sector to economic growth. The plan recognises a number of constraints need to be addressed to support agricultural development and to name a few, high price of agriculture input supplies, pests and disease problems, limited suitable agricultural land and declining productivity. These problems are compounded with limited market access and competitiveness of agricultural produce. In addition, lack of policy and strategic direction to guide development efforts further hamper development potential of the sector.

This sector plan was formulated through participatory consultation with key stakeholders. As such, we would like to thank the many stakeholders who have contributed valuably to successful development of this sector plan. I would like to thank the especially the Department of Agriculture, Forestry and Fisheries for taking the lead role in the process, representatives of various government departments, including the Department of Health; the Department of Education; and the Department of Culture. Without the contributions from other bodies, such as the Chamber of Commerce, exporters of agricultural produce, civil society organisations, village councils, farmers, fishermen, women, youths and churches, this plan would have not been completed. Further, I would like to also give special recognition to the Land Resources Division of the Secretariat of the Pacific Community for the technical assistance provided to facilitate the formulation of this plan.

The Ministry of Natural Resources alone cannot achieve all the priorities identified to promote agricultural development in Niue. This essentially means that implementation of this plan will require strong commitment and involvement of a wide range of stakeholders involve from the private sector, producers, all service providers in production, research, extension and information, markets, policy makers and as well as credit and input suppliers. Hence, effective partnership is recognised as an important factor for the successful implementation of this sector plan. Successful implementation will contribute to achieve the aspirations of Niue.

With that, I would like to call on all relevant stakeholders and partners to work in concerted effort in implementing the priorities stipulated in this plan in order to achieve the desired objectives for the benefit of the people of Niue.

Honourable Minister
Ministry of Natural Resources
Alofi, Niue
Niue Government

Executive Summary

Agriculture is integral to the economy of Niue and has been identified in the Draft NSP (2015-2020) as one of the priority areas for economic growth. In addition, Agriculture and Food Security were identified as priority areas to address under the Niue JNAP. Further, the Draft NFNSP identified the need to develop a sector strategy to guide collaborative efforts in the food production sector. Hence, this agriculture plan is aligned to both these national strategic plans and sets out the strategic direction for agricultural development Niue in the next five years (2015-2020).

The Niue Agriculture Sector Plan, 2015–2020 was a result of stakeholder participatory consultations and desk-based review of relevant literature for Niue to guide the formulation process. Participatory rural appraisal tools were also used to ensure involvement of all stakeholders in this agriculture plan and to start building partnerships at the beginning of the process which should follow through to implementation. The stakeholders are representatives of various government departments, including the Department of Health; the Department of Education; the Department of Agriculture, Forestry and Fisheries (DAFF), and the Taoga Niue. Other bodies, such as the Niue Chamber of Commerce (NCOC), exporters of agricultural produce, civil society organisations, village councils, farmers, fishermen, women, youths and churches, were also represented.

During the consultations, the stakeholders have broadly agreed on the key guiding principles, vision, goals, objectives and the key outputs and strategies to pursue over the implementation period. The key guiding principles include, recognising food security as an important issue for Niue, that the agriculture Sector should be the engine for economic growth, valuing environmental sustainability, importance of the sector to the social and cultural values, and valuing strong private sector partnership to work in concerted effort in promoting agricultural development in Niue. The plan not only recognises the needs and aspirations of the diverse stakeholders but also require involvement of all relevant stakeholders in the implementation process.

There are five key objectives defined to be achieved over the implementation period. These objectives include:

1. **Improve food and nutritional security for all Niueans**
2. **Develop and promote sustainable food production and management systems**
3. **Support sustainable economic growth and improve the balance of trade**
4. **Strengthen natural resource management**
5. **To improve the capacity-building of stakeholders and agricultural staff**

Under each objective, a range of strategies, which are interrelated in their effects, will be implemented over the next five years. The implementation of any one strategy will help to achieve and also be helped by the implementation of the other strategies. Some of the strategies, when implemented, will contribute to achieving more than one objective.

The implementation process will use a results- based approach with coordinated participation of all stakeholders, including governmental, non-governmental and community-based organisations. DAFF will assume the lead role in facilitating the implementation and monitoring and evaluation process. The plan include a Logical Framework Matrix which will serve as the basis to guide implementation process and as well as the monitoring and evaluation to determine impacts. The plan will be reviewed every six months.

Glossary

ADAPTATION

Modifying a place to suit a partiacular use; or, changing behaviour to meet certain changed conditions.

AGROFORESTRY

Combining the operations of agriculture (cropping, grazing) with growing trees for sale or farm use.

BIO-CONTROL

A management practice in which various predatory or parasitic organisms are used to control pests and pathogens. They are usually part of an integrated pest management strategy for crops, especially vegetables.

BIODIVERSITY

Biological diversity. This refers to the total variety of life. It includes the range of plants and animals, the genetic variety within each species, populations and communities and the variety of habitats in which they live. A large biodiversity makes farmland more stable and more able to recover from extremes.

BIOLOGICAL CONTROL

The control of pests by means of managing other living organisms. Control of aphids by ladybird beetles is an example.

BIOSECURITY

The protection of plants, animals, the natural environment and the economy from pests, disease and weeds.

CARBON SINK

An environment that can absorb and store more carbon than it releases.

CUTTINGS

Sections of plants taken from a parent plant to 'take root' or 'strike'. Cuttings are generally identical to the parent. Cutting stock is planting stock grown from cuttings.

FERAL

Wild, untamed or undomesticated animal.

FERTILISER

A substance that is added to the soil to supply essential nutrients for plant growth. Fertilisers may be natural or artificial (manufactured).

GENETIC DIVERSITY

The variety of genetic information contained in the total genes of individual plants, animals and micro-organisms which inhabit the earth.

HYBRID

The offspring of parents of different species, varieties or breeds of plants or animals. They may be fertile or sterile. The greater the difference between the genotypes of the parents, the more likely is sterility. An example is the crossing of a horse and a donkey; the resulting mule is sterile.

INTEGRATED PEST MANAGEMENT

A system of pest control that uses a combination of most appropriate control measures including pesticides, cultural, mechanical and biological means. Monitoring of pest numbers is an important step in integrated management.

LAND DEGRADATION

The decline in land quality caused by improper use of the land.

MICRONUTRIENT

An essential nutrient that is needed in small amounts; also called a trace or minor element; for example, copper, molybdenum.

MULCH

A natural or artificial layer of material on the surface of the soil. Mulches are applied to conserve moisture, control weeds, and improve structure and prevent erosion.

ORGANIC FARMING

A farming system based on the use of natural materials for supplying nutrients and protection to plants and animals. No chemicals such as artificial fertilisers, pesticides or herbicides are allowable for a farm which is certified organic.

PESTICIDE

A general term for chemicals which will kill weeds, fungi, insects or other pests of plants, animals or products.

REHABILITATION

The treatment of degraded or disturbed land to make it more stable and sustainable. Areas that are mined or over-cleared may be rehabilitated.

RESILIENCE

The ability of a system or organism to remain viable under stressful conditions and return to normal function within a reasonable period of time after these conditions are removed.

SOIL DEGRADATION

Soil in which the structure has been damaged, compaction or erosion has occurred. It may also refer to soil acidity and salinity and the loss of nutrients from a soil.

SUSTAINABILITY

In agriculture, sustainable practices are those which are, and will continue to be, profitable for farmers; that will conserve soil, vegetation and water resources and protect the environment; and that will assure adequate and safe food supplies into the future.

01
Introduction

Agriculture is integral to the economy of Niue and has been identified in the Draft Niue National Strategic Plan, 2014-2019 (NSP) as one of the priority areas to drive economic growth in Niue in the next five years (2015-20120). With that, each sector is required to develop a coherent policy guide to effectively contribute to the implementation of the NSP. In addition, the Draft Niue Food and Nutrition Security Policy, 2015-2020 (NFNSP) identified the need to develop a sector strategy to guide collaborative efforts in the food production sector.

Further, Niue's 2012 Joint national action plan (JNAP) for disaster risk management and climate change provides a three year plan of action to address existing gaps relating to vulnerability to climate change impacts and disasters. The JNAP is aligned to the NNSDP. Niue identified five priority areas under the JNAP, one of which focuses on strengthened livelihoods, community resilience, and natural resources and assets. Ensuring food security through the introduction of climate resilient techniques and related technologies is one of the key areas of focus under this priority area.

The Niue Agriculture Sector Plan 2015–2020 was a result of stakeholder participatory consultations and desk-based review of relevant literature for Niue to guide the formulation process. Participatory rural appraisal tools were also exploited to ensure involvement of all stakeholders in this agriculture plan and to start building partnerships at the beginning of the process which should follow through to implementation. The stakeholders are representatives of various government departments, including the Department of Health; the Department of Education; the Department of Agriculture, Forestry and Fisheries (DAFF), and the Department of Culture. Other bodies, such as the Chamber of Commerce, exporters of agricultural produce, civil society organisations, village councils, farmers, fishermen, women, youths and churches, were also represented.

Therefore, this agriculture sector plan is aligned to both the NSP and the NFNSP and sets out the strategic direction for agricultural development Niue in the next five years (2015-2020).

1.1
Key Guiding Principles

Throughout the consultations, the stakeholders have broadly agreed on five fundamental principles to be adhered to in all efforts to promote agricultural development in Niue. These principles include:

1.1.1
FOOD SECURITY

Agriculture plays central role in providing healthy food for majority of Niueans and thus fundamental to food security and health for Niueans. The sector plan's priority focus is given to food security while at the same time exploring pathways for commercialisation of small scale agricultural farms building on the production capacity and resilient farming systems and practices.

1.1.2
ECONOMIC GROWTH

Although commercial agriculture production is still at a naïve stage, subsistence agriculture plays important role in the economy with over 80% of the total households are engaged in some form of agricultural activity[1]. Surplus from subsistence production are either sold locally or exported to niche markets mainly in New Zealand and Australia. Agriculture plays central role in improving the balance of trade through promotion of agricultural commodity exports and import substitution. Currently, the highest import bill for Niue is chicken meat and egg which offers opportunity to explore avenues to promote agricultural import substitutions.

1.1.3
ENVIRONMENTAL SUSTAINABILITY

The natural resources (terrestrial and fisheries) offer important source of food and livelihoods for majority of the population while at the same providing the environmental services for agricultural growth and productivity. Sustaining and managing the veracity of the fragile natural resources of Niue is vital for sustainable agricultural growth and building resilient agricultural systems.

[1] Niue Mini-Agriculture Census, 2009

1.1.4
SOCIO-CULTURAL VALUES

Aside from providing food security for the nation, agriculture plays an import role in the tradition and culture, providing the means for reinforcing the social safety nets of Niueans. It offers way of gift giving and generosity toward families and friends. Agriculture continue to be a vital part of social gatherings and ceremonial gatherings. Furthermore, much of the traditional knowledge and skills preservation is often practice within the agricultural sector.

1.1.5
PUBLIC PRIVATE PARTNERSHIP (PPP)

The sector plan recognises that the public services alone cannot achieve all the desired outcomes for agricultural growth and that majority of the sector outputs lies within the responsibility of the private sector. On the other hand, the government and other service providers should be creating the enabling environment for effective sector performance. Hence, promoting an effective partnership amongst all stakeholders including governmental, non-governmental and community-based organisations with links to regional and international networks, where appropriate, is critical to promote agricultural growth and thus food security in Niue.

1.2
The Role of the Sector

Provisional results from the 2009 Niue Mini Population Census and Census of Agriculture found that, of the 466 households on Niue, 404 households (87%) could be defined as actively involved in agricultural activities. This indicates a generally high degree of the population relying on agriculture to sustain their food and income security. These households are producing food for themselves from agricultural activities, which were not limited to crops that households were growing themselves but included livestock and other food production activities such as uga, or coconut crab, (Birgus latro) hunting. As such, the sector plays an important role in the economy, providing employment, food security and livelihood opportunities for Niueans.

The basic food crops include, taro, bananas and cassava, while subsistence and small scale, semi-commercial fishing, poultry and pig farming are the main sources of protein. Also, the primary export commodities are agricultural produce. The major exports from Niue is taro, fish and handicrafts to niche markets in NZ and Australia. The sector still continues to play an important role in the culture and tradition of Niueans. Families still rely on agricultural produce for social gatherings, gift exchange and other traditional purposes. Hence, strengthening the role of the agriculture sector is considered an important priority for Niue. The Agriculture sector plan renews the emphasis on domestic food production to promote food security and economic growth for Niue. The plan addresses the key challenge of developing pathways for commercialization of smallholder farming systems building on traditional systems and practices, to allow increased employment and cash-generating opportunities for rural households, without sacrificing food security needs.

02
Stakeholders and their Roles

A number of stakeholders are identified that play important role in the development of the sector (Table 1). These stakeholders can be grouped based on their roles as sector output generators; service providers; policy brokers; equity brokers; consumers; and investors.

TABLE 1. AGRICULTURE SECTOR STAKEHOLDERS

Sector Output Generators	Service Providers	Policy Brokers	Equity Brokers	Consumers	Investors
• Farmers • Traders • Local Food Vendors • Exporters • FAs • NGOs	• Researchers • EAS • Credit and Finance • Academia • Input Suppliers • MOI (Transportation, Utility) • Environment? • MTS • Biosecurity • COC	• Parliament • Traditional Systems • Customs & Revenue	• Gender Groups • Traditional Systems • Chamber of Commerce • Conservation Groups • FAs • Church Groups	• Households • Individuals • Tourists • Overseas Consumers	• Government (Entrepreneurship) • NZ Govt. • Individual Investors

Defining the role of the diverse stakeholders within the sector is critical to ensure that their priority needs and aspirations are articulated in the plan and to ensure cross-coordination amongst stakeholders. As shown above, it can be clearly understood that outputs generated from the sector is mainly the responsibility of the private sector including farmers, farmer groups and other output providers.

The role of the government is understood as to create the enabling environment for private sector led growth. This does not necessarily mean that the government should be providing direct expenditure to sector output generators but rather more on regulatory and facilitation roles. These include, amongst others, policy and regulatory reforms, standard setting. Nevertheless, the government can also play an important role in facilitating investments to enable private sectors to operate. These can include, provision of infrastructures to facilitate effective output generation and agricultural growth. Further, other services to enhance the private sector to operate effectively, should revolve around ensuring that services targeted for output generators are effective and efficient. Such services include research, extension and advisory services (EAS) and other facilitation roles. Currently, the capacity within DAFF maybe limited to meet the increasing demand for such services and thus must explore effective partnership or explore the possibility of outsourcing some of these services to potential private sector or other NGOs.

Given the multiple stakeholders involved in agricultural growth, it is vital to ensure good communication between the diverse group of stakeholders to build consensus on strategic actions and investments. The lead role in this coordination will be taken by DAFF through the proposed Food Security Steering Committee. Finally, priorities and services from both public and private should be re-oriented to the needs of market and consumers. Equally important is the role of policy makers to ensure implementation operates within an effective enabling environment. The needs and aspirations of other special groups (equity brokers) need to be articulated.

03
Challenges for Agriculture Development in Niue

3.1
Increasing NCD and Lifestyle Diseases

The challenge to food and nutrition security in Niue is to ensure that the population of Niue has access to safe and nutritious food at all times through own production or acquisition of safe and quality food. The recent NCD STEPS survey of adult population identified high prevalence of obesity (61%), diabetes (35%), and high blood pressure (34% on medication). The survey also identified 92% of adults as not eating enough fruits and vegetables[2]. Consumption of low quality imported food has been increasingly realised as the major contribution to the increasing NCD and food related problems in Niue. In addition, The HIES, 2002 reported that expenditure on food (the value of food produced and consumed in the home) was the single most important household expenditure at 34%. This clearly indicates the need to ensure access of households and individuals to sufficient, nutritious affordable food at all times by focussing on development of smallholders and creating employment and income generation from food production.

3.2
High Cost of Production

Production costs is high for Niue with majority of agricultural inputs are being imported. In addition, cost of mechanisation is beyond the affordable price for farmers. An attempt to introduce mechanization for farming in the 1960s was not successful as cost of hiring such farm implements were too high for farmers. Use of fertilizers and herbicides was not only expensive for farmers but also at the expense of natural resource depletion[3].

3.3
Limited Production Capacity

With limited market access for local produce, most farmers are producing mainly for consumption and other targeted events. Limited suitable agricultural lands coupled with absent of farm machinery and implements heightened production constraints. Lack of youth interest in agriculture is recognised as not only a problem but as well as a threat to agriculture production in Niue. Lack of diversity is also contributing to low agricultural production. Livestock production is also kept mainly for occasional use during ceremonial and household special events/ gathering. Also, it is increasingly recognised that most farmers are not happy with the buying price for both local and export markets. These factors limit any opportunity to scale up production for commercial purposes.

3.4
Pests and Disease Problems

A major problem with introduced crops is their susceptibility to pests and diseases, but traditional crops such as taro and coconuts also have pest and disease problems. With increased tourism and economic opportunities increases the risk of introducing new pests and diseases coupled with inadequate supporting facilities and insufficient biosecurity staff make it difficult to properly inspect incoming cargo off ships and yachts. There is a new biosecurity bill pending to be passed parliament.

[2] DRAFT NFSP, 2015; STEPS Survey, 2007
[3] DRAFT NFSP, 2015

3.5
Soil quality and degradation

The limitations of Niuean soils to agricultural production are due to the minimal depth to base rock, makatea outcrops and surface boulders. Characteristics of Niue soils include rock outcrops covering 10%–60% of land surface, low water-holding capacity, moderate to highly alkaline pH, high phosphorous retention, abundance of calcium and magnesium, zinc deficiency varying from moderate to high, and low to very low potassium reserves. The continuous cultivation of land cleared for food production has resulted in reduction in the fallow period and a quickening of the downward spiral in the fertility of these soils. The challenge to improving or maintaining crop production is how to maintain levels of nutrients in the soil. This can only mean heavy reliance on inorganic fertilisers unless organic food production is promoted.

3.6
Limited Transport Linkages

Poor and often high cost of domestic and international transport linkages (both air and sea) is a major obstacle for Trade in Niue. Efficient and competitive air transport is also vital for growth in the tourist sector. Improving transport linkages is one of the highest development priorities for the country and warrants political intervention and advocacy at the highest level.

3.7
Market Availability

An essential requirement for any successful productive enterprise is that there must be a sustained market for the product that will assure producers consistent and attractive financial benefits, and give producers the confidence to make the necessary investments and changes in practice to supply these markets. Furthermore, diversification of marketable products is needed as commercial agricultural currently is largely focused on only a few commodities, taro, vanilla and noni. Limited capacity to meet SPS and food safety requirements further hamper export opportunities. At the moment, a farmers market is operating in Niue however, supply is still below the demand and as a result prices of local produce are often very high.

3.8
Limited Agro-Processing Capacity

Currently, there is limited capacity for agro-processing and value adding of agricultural products. An FAO TCP project has recently built a food processing facility within DAFF to support value added products but only a few enterprises are fully utilising the facilities, producing chips and other value added products which are being sold in the market and other hoteliers.

3.9
Trade Imbalance

Niue imports ten times more than it exports; the import value averages NZD 4.3 million/annum and the export value averages NZD 0.27 million/annum which are often imported food. Private sector subsistence activity accounted for approximately one quarter of gross domestic product (GDP) in 2009 and subsistence agriculture and fishing remain important. The major agricultural export commodity is taro, targeting the niche markets which are mainly Niueans Citizens living in New Zealand and Australia. Other agricultural commodities exported include small amounts of honey, noni and vanilla. Niue face many challenges to meet export requirements ranging from volume to meet demand, transportation, sanitary and phytosanitary and food safety requirements and accessing export markets.

3.10
Climate change impacts

Niue is a net sink, absorbing all greenhouse gases emitted in the country. The agriculture sector is a very small contributor to greenhouse gas emissions. Conversion of tropical forests to other land uses, predominantly to agriculture, emits 204.32 Gg of CO_2. Niue is located in vulnerable zone for natural hazards and thus vulnerable to the impacts of climate variability and climate induced disasters.

04
Niue Agriculture Sector Plan 2015–2020

This Agriculture strategic plan directly supports the NSP with its vision, "a Prosperous Niue", and three of the 7 Pillars namely; Economic Development and Maintain Crucial Infrastructure; and; Natural Resources, Environment and Climate Change; and; Private Sector Development. In addition, the plan supports the implementation of the NFSNP with its goal is to ensure sufficient, safe and nutritious food is available, affordable and accessible to all the people of Niue at all times.

4.1
Vision

A Prosperous, Healthy and Food Secure Niueans

4.2
Goal

Maintain and sustain a balanced environment and ensure that all households in Niue are food, nutritionally, and income secure.

4.3
Objectives

1. Improve food and nutritional security for all Niueans
2. Develop and promote sustainable food production and management systems
3. Support sustainable economic growth and improve the balance of trade
4. Strengthen natural resource management
5. Build and improve the capacity of stakeholders and agricultural staff

4.4
Key Outputs and Strategies

This section outlines the most significant outputs for the period 2015–2019. A range of strategies, which are interrelated in their effects, will be implemented. The implementation of any one strategy will help to achieve and also be helped by the implementation of the other strategies. Some of the strategies, when implemented, will contribute to achieving more than one objective. The key strategies are grouped under the five objectives.

OBJECTIVE 1

Improve Food and Nutritional Security for all Niueans

The key performance indicators are:

- increased production of crops and livestock; and
- Increased contribution of locally grown food to the diets.

Output 1.1

Sustainable production, processing, marketing and consumption of local foods promoted

The 2009 Niue Mini Population Census and Census of Agriculture reported that, in a week, Niuean households on average eat 12 meals that include taro, six that include green banana, eight that include ripe banana, five that include cassava, and four that include papaya. The 2011 STEPS survey reported that about 93% of Niueans ate less than five servings of fruit and/or vegetables on an average day. Although most agricultural production is predominantly subsistence, the small amount of local foods consumed by households is a concern. DAFF is committed, with the help of agencies such as SPC, the UN Food and Agriculture Organization (FAO) and the World Health Organization (WHO), to ensure that, during the implementation period, there will be more emphasis on promoting the consumption of nutritious local foods. DAFF will work with key stakeholders to strengthen the link between agricultural production, health and nutrition.

Priority areas include:

- Explore opportunities to market and promote local foods. e.g. Local food festivals, local food cooking competitions
- Promote ways to fully utilise the Test Kitchen to promote energy efficient value added food preservation and processing techniques.
- Strengthen education sector to include agriculture in the primary and secondary school curricula
- Document and promote traditional knowledge on food production and preservation techniques
- Develop and manage food security information including collection and analysis of data

Output 1.2

Crop and animal diversity improved, conserved and utilised

Improving crop and animal diversity, especially among traditional crops and local breeds that are less demanding in terms of production inputs than exotic crops and breeds, will result in the production of cheaper food, as well as raising income generating opportunities. Selecting varieties and breeds that are more adaptable to local conditions and potential climate change impacts, such increased temperature and drought, will ensure the development of sustainable production systems that are environmentally friendly. DAFF will facilitate activities to ensure that genetic diversity of crops and animals is conserved.

Priority strategies include:

- Contribute to the Centre for Pacific Crops and Trees with SPC
- Establishment of pilot Genebanks in selected communities

OBJECTIVE 2

Develop and Promote Sustainable Crop and Livestock Management Systems

The key performance indicators are:

- increased adoption of sustainable management systems;
- increase in crop area and production; and
- increase in livestock numbers and production.

Output 2.1

Appropriate crop and livestock management practices developed and promoted

DAFF will play an important role in providing assistance to stakeholders through policy, technical, advisory and capacity-building services in the areas of sustainable crop and livestock management.

Priority areas include:

- DAFF will support farming communities in improving soil health practices
- Evaluating adaptable crop varieties

- Conduct trials on the feasibility of basic hydroponic systems
- Develop and evaluate simple irrigation systems
- Promote livestock husbandry systems including waste management systems
- Work with communities to control feral pigs.

Output 2.2

Capacity of research, extension outreach and information services strengthened

In order to facilitate development and promotion of appropriate practices and technologies, it is vital to develop the capacities of research, extension and advisory services (REAS). Currently, DAFF and other stakeholders have the human resources but few people have adequate skills to efficiently implement key research and extension activities. There is also limited human resource development, including a general lack of vocational and academic training in agriculture. In addition, it is very important that research and extension outreach programmes are developed that are suited to Niue and also there is a need to try to develop and implement information and knowledge management aspects of a system that will ensure quality delivery of DAFF's services to its clients.

Priority areas include:

- Encourage mentoring of DAFF REAS by experienced professional scientists from regional and international organisations
- Promoted Young farmers learning programs
- Develop succession plan for DAFF to meet shortage of staff needs
- Review current research priorities and activities in the sector and ensure alignment to the private sector and farmer needs.
- Revitalise the research facility in Niue
- Adopt participatory and community-based approaches to promote local food production, healthy lifestyles and sustainable diets.
- Explore opportunities for attachment programs with regional organisations such as SPC (vice versa)

Output 2.3

Pests and diseases identified and control methods developed and promoted; capacity to respond to pests and diseases strengthened

DAFF is committed to ensuring food security in the country by adhering to good practices and food safety policies. DAFF should also ensure that the country is well served with respect to being able to respond, identify and manage new pest incursions with a focus on strengthening existing laws and regulations, as well as providing technical expertise and training to the quarantine staff involved.

Priority areas include:

- Strengthen capacity of Quarantine Enforcers
- Evaluate Bopesticides and other safe chemicals
- Provision and training on pest detection using field kits
- Develop animal health programme.
- Explore and strengthen integrated pests management (IPM)

Output 2.4

Promote utilisation of organic farming practices

Currently DAFF is supporting capacity building and certification for Niue Organic Farmers Association (NIOFA). With the soil condition of Niue, it will be vital that support services promote the use of composting to improve organic composition of the soil building on SLM principles.

Priority areas include:

- Promote and utilise green manure for composting and soil fertility
- Establish an organic waste collection program
- Compost development modelling Cook Islands approach to compost production using organic wastes
- Compost development guide developed

OBJECTIVE 3

Support Sustainable Economic Growth and improve the Balance of Trade

The key performance indicators are:

- Compliance with international standards
- Increased in domestic and export trade

Output 3.1

Agriculture and Tourism linkages strengthened

Agriculture and tourism are priority areas identified under the NNSDP for potential private sector development. Promoting Tourism has direct bearing on agriculture

sector in terms of catering and food supplies for the tourism sector. Hence there is an opportunity to develop linkages and pathways between the agriculture sector and the tourism industry.

Priority areas include:

- Conduct market research to establish the size and characteristics of the market for fresh and processed produce in the tourist markets
- Establish platforms to encourage producer linkage with hoteliers
- Explore opportunity the with tourism industry for promoting local foods in restaurant and hotel kitchen menus.

Output 3.2
Production capacity strengthened

It will be critical to support producers to increase production capacity to meet the domestic and export needs. This will entail facilitation and capacity building for farmers.

Priority areas inclue:

- Strengthen and or support establishment of commodity producer associations.
- Assist in identifying (and solving) specific constraints to supply chain efficiency.
- Establish regular dialogue between all stakeholders in the priority supply chains.

Output 3.3
Import substitution, agro-processing and value adding promoted

In order to improve domestic trade and import substitution, there is a need to improve existing market infrastructure in Alofi. DAFF and stakeholders must work towards getting domestic markets operational on a daily basis. In addition, there are opportunities in the domestic market for added-value products such as breadfruit flour and handicrafts. Value-adding is seen as not only broadening the food base for food security but also providing opportunities to improve household incomes. DAFF, with assistance from FAO, has established a value-adding and processing test kitchen facility for traditional crops, and is looking at the feasibility of processing local meat products. DAFF is assisting with labelling and standard setting. Certain fees are charged to users.

Priority areas include:

- Identify appropriate potential products for processing and value addition.
- Facilitate technical support for appropriate processing technology and practices
- Strengthen market structures and operations in country
- Identify priority commodity supply chains for import substitution and export markets.

Output 3.4
Quarantine and biosecurity capacity improved

Efforts will be made to sustain a low pest status while facilitating trade. Border security is the first line of defence against the introduction of exotic pests and diseases. DAFF biosecurity staff will be trained in different aspects of quarantine, and in pest and disease identification and control.

Priority areas include:

- Enact harmonized bio security legislation and regulations
- Develop a national bio security strategic plan
- Development of regulations and an emergency response plan for any major outbreaks of zoonotic animal diseases.
- Improve capacity of biosecurity, customs and other boarder control officers to help ensure protection of boarders from the introduction of new pests and diseases.

Output 3.5
Domestic and export marketing strengthened

DAFF biosecurity staff will be supported by the Pacific Plant Protection Organisation (PPPO), the Plant Health Group of SPC's Land Resources Division (LRD), and FAO to comply with international standards through training in import risk assessment and import specifications, accessing markets, updating national pest lists, and issuing phytosanitary and animal health certificates for export commodities. Also, DAFF will also fulfil the requirements set out in the World Trade Organization Sanitary and Phytosanitary (WTO/SPS) agreement and protocols, including the preparation of a country pest list, conducting pest risk analyses, and surveillance for economically important pests and diseases.

Priority areas include:

- Support effective participation in trade shows, missions and promotions.
- Establish quality standards for priority marketable products
- Establish trade agreements with key trading partners

Output 3.6

Support the development of appropriate infrastructure and land-clearing machinery

In order to be able to grow more local foods there is a need to improve supporting infrastructure, such as feeder roads and machinery for land clearance and preparing land for planting.

Priority areas include:

- Improvement of domestic market infrastructure and local value-added processing, building on the Test Kitchen Model

OBJECTIVE 4

Strengthen Natural Resource Management

Niue is exceptionally vulnerable to the impacts of climate change and disasters. Under this objective, a strong focus will be on enhancing resilient of natural building national capacity, both to mitigate and adapt to climate change and respond to disasters.

Key performance indicators:

- Sustainable farming practices developed
- Climate resilient farming systems evaluated and documented

Output 4.1

Traditional knowledge preserved digitally, enhanced, utilised and acknowledged

The natural environment is integral to food security and livelihood for communities. High proportion of the population still depend on the natural environment for food and income security. DAFF REAS will work with the farming community to promote farming systems and ecosystems perspectives which encourage environmentally friendly production systems, including integrated crop management, integrated pest management, traditional agroforestry and organic farming. Government will also promote efficient waste management systems for livestock and organic wastes from residents modelling the Cook Islands Compost processing.

Priority areas include:

- Train farmers in sustainable natural resource management practices
- Establish demonstration sites to provide practical training and raise awareness on sustainable agriculture practices
- Ensure the safe storage, application and disposal of agricultural chemicals
- Ensure proper treatment of livestock manure and waste
- Government will support and facilitate community-based approaches for management of natural resources.

Output 4.2

Vulnerability of production systems to climate change stressors and non-climate change stressors assessed, and mitigation and adaptation strategies developed and implemented

Niueans are dependent on subsistence agriculture and fishing. Projected climate changes, such as increased precipitation and sea and atmospheric temperature rises, threaten the nation's food security. Improving Niue's food and nutrition security and its resilience to climate change impacts by establishing a system of disaster preparedness and response, including early warning systems and a set of measures to ensure food stability, is a real challenge. Managing and responding to these risks will require integrated solutions. DAFF will have to work in partnership with the Department of Environment and other national and regional stakeholders to address these risks.

Priority areas include:

- Build capacity to conduct vulnerability assessment of agriculture and food security to climate change stressors and non-climate change stressors.
- Evaluate and promote resilient agricultural production systems
- Develop and document cropping calendar
- Conduct awareness on the likely impacts of climate change and other stresses on agriculture and the natural environment with stakeholders

Output 4.3

Biodiversity conserved and promoted

Where forests have been destroyed, degraded or reduced, the plants, animals and human cultures that depend on them have been threatened and some may have disappeared. The traditional agricultural and food production systems in Niue are degrading rapidly and their biodiversity is being eroded. The traditional shifting agro-forestry systems with a range of food trees, culturally and ecologically valuable trees intercropped with staple crops, and domesticating livestock before fallowing for different lengths of time are breaking down. Local biodiversity from these systems was the original source of most foods for Niueans but this very biodiversity is starting to be lost, endangering food security. A few new varieties are gradually replacing many older traditional cultivars of important root crops such as taro, yams and bananas. It is important that the genetic base is broadened by conserving traditional varieties whilst introducing new ones.

Priority areas include:

- In partnership with communities, develop community based forest resource management plans
- Conservation of agro-biodiversity
- Reforestation of cleared areas with agroforestry species
- Introduce viable agroforestry species for income generation
- Conservation of indigenous important agroforestry species
- Control the introduction and spread of pests and invasive species

Output 4.4

Invasive control management for priority species developed

Invasive species pose significant threat to the biodiversity, agro-biodiversity and the natural environment. It is important that Niue continue to strengthen its capacity on surveillance and control of invasive species.

Priority strategies include:

- Strengthen awareness program on invasive species
- Conduct feasibility studies on invasive control measures
- Explore and promote Bio-control measures
- Follow through the enactment of biosecurity bill and its implementation
- Strengthen surveillance and establish data monitoring for invasive species

OBJECTIVE 5

Improve the Capacity of Stakeholders and Agricultural Staff

The key performance indicators are:

- efficient stakeholder staff; and
- Skilled stakeholders.

Output 5.1

Farming and business skills of stakeholders improved

Farming is predominantly undertaken for subsistence in Niue. In order to commercialise operations, there is a need to build the farming and business skills of the farming community, with special emphasis on youth and women.

Priority areas include:

- Develop a comprehensive strategy to improve access to Vocational Education.
- Ensure that capacity building and strengthening partnerships are key components in all government (and development partner) supported agriculture programs. Where appropriate use internship on-the job training and mentoring approaches.
- Strengthen small business enterprise support services.
- Ensure gender balance in recruitment of training staff and enrolment of students on training courses

Output 5.2

Engage and build capacity of youth and women in food production

Youth and women – two demographic groups whose full potential has not been fully exploited – can be key drivers in the effort to increase agricultural production in Niue. Agricultural productivity is currently at a fraction of its full potential. Women, youth and under-utilised land potential provide some of the supply side opportunities that can spur the growth of vibrant enterprises in the agricultural sector. Agricultural education is vital to prepare and support individuals for careers, build awareness, and develop leadership for the food production and natural resource systems in a country. This is particularly true for Niue; it must ensure there is enough interest in food production to sustain the current involvement of households in agriculture and to graduate to the commercial stage of production.

Priority areas include:

- Strengthen the capacity of youth and women in food production.
- Engage the interest of young people while they are still in school will encourage them to take up opportunities in agriculture when they leave school.
- Support development of agriculture curriculums in primary and secondary schools

Output 5.3
Developing stakeholder partnership mechanism

It must be emphasised that successful implementation of this plan will depend on the strength of partnerships among the key stakeholders. It is therefore essential that the key stakeholders are identified early and are engaged in the development, implementation, and monitoring and evaluation of this plan.

Priority areas include:

- Involve farmers in problem diagnosis and in deciding on agricultural strategies to address identified problems
- Establish partnership platforms to allow regular dialogue amongst stakeholders

Output 5.4
Technical skills of stakeholder staff improved

The participatory consultation with stakeholders highlighted the need to upgrade the technical skills of agriculture and other stakeholder staff, especially their diagnostic skills. It is envisaged that this will contribute significantly to addressing farmers' problems. On-farm development of technologies will also be promoted.

Priority areas include:

- Review and finalise new Corporate Plan in line with fulfilling the roles envisage in the implementation of the strategy.
- Carry out capacity assessments of DAFF to better define operational roles and appropriate staffing to deliver these roles.

05
Risks Analysis and Partnerships Opportunities

5.1
Risks Analysis

There are some issues that, if not addressed, will pose risks to the successful implementation of the plan. They are described below.

a) **Limited human resource capacity for agriculture development:** The technical knowledge and skills of DAFF staff are limited and need upgrading to a competent level so that they can correctly advice farmers. The capacity of the farmers to grow staple, nutritious food crops and produce sufficient livestock also needs upgrading if Niue is to improve food production.

b) **Technological risks:** The success of this plan will depend on selecting the variety of each crop and breed of animal that is best adapted to the local conditions. To produce good crops will require sufficient organic matter, plant nutrients and water in the soil. The best breed of each animal must be selected and the best husbandry given, including the best feed. All of this requires good technology development; if the technology is not the best, then the outputs will be less than what Niue wants and needs.

   Since the plan will be aiming at increasing the production of staple and nutritious crops, there will be a risk of an increasing incidence of pests and diseases. The plan must look at developing plant-derived pesticides to counter the potential risk of pests and diseases.

c) **Climate change/weather risk:** Most crops grown in Niue are affected by climate variability and extreme events. The most likely risks affecting agricultural crops and production will be changes in rainfall, particularly during La Niña years, when droughts are most likely to occur.

d) **Price risk:** For the value chain crops, uncertainty in the market for commodities such as taro, vanilla and noni, and the challenges of a price move are often different, depending on whether the stakeholder is a farmer or a processor. This may also affect the demand for inputs.

e) **High dependency on imported foods:** The changing dietary habits of the population have resulted in a high dependence on imported foods. This has resulted in increasing levels of nutrition-related non-communicable diseases and the emerging high incidence of vitamin and mineral deficiencies, which impact negatively on the health system, families and the national economy.

f) **Severe outbreak of new pests and diseases:** Though climate change risks seem to be high on the agenda of many developing nations, one which poses an even bigger threat is that of pests and diseases, particularly now with the increase in trade with other countries who are high risk countries in terms of invasive species (termites, taro leaf blight, etc.)

5.2
Partnership Opportunities

The success of this agriculture sector plan will also depend on how DAFF enters into partnership with other national, regional and international agencies operating in the island.

5.2.1
NATIONAL AGENCIES

The new Ministry of Natural Resources consists of the DAFF, Department of Environment and the Department of Meteorology. These key agencies will support DAFF in the implementation of this agriculture sector plan. Other key agencies that currently work closely with DAFF are the Department of Education (agricultural education), the Public Works Department (infrastructure, such as feeder roads), the Department of Health (food security and non-communicable diseases), and the Department of Community Affairs and Customs (tradition and cultures).

5.2.2
REGIONAL AND INTERNATIONAL AGENCIES

Key international and regional development partners include the Food and Agriculture Organization (FAO-UN) the Secretariat of the Pacific Community, the Government of Australia, the Pacific Islands Forum Secretariat, the Secretariat of the Pacific Regional Environment Programme, the United Nations Development Programme–Samoa, the World Health Organization, the United Nations Children's Fund, and the Forum Fisheries Agency (Pacific Islands).

The major international and regional agencies operating in Niue and their areas of focus are described below.

The Food and Agriculture Organization:

FAO support to Niue in the next four years will be pursued until the following five priority outcomes have been achieved.

- **Strengthened policy, legal and regulatory frameworks for sustainable agriculture**

  One of the key strategies that will guide Niue's economic development is the formulation of specific sector plans. FAO provided technical assistance in the conducting of the 2009 agriculture census and this has enabled Niue to gather the information needed for baseline and monitoring progress. This will blend into the M&E framework of this agriculture plan, allowing for its effectiveness to be measured.

- **Increased agricultural production for local consumption and to meet international and domestic market demands**

  Primarily through the Food Security and Sustainable Livelihood Programme in the Pacific Island Countries (FSSLP), but also through the FAO Technical Cooperation Programme (TCP), FAO will bring support to improve production and productivity for targeted agriculture, forestry and fisheries commodities. Youth will be encouraged into farming through school curriculum development and skills training in farm management and agri-business. Particular attention will be accorded to Niue's vulnerability to the impacts of natural disasters and climate change. Recognising that Niue aims to be an organic nation, agricultural productivity/development will be guided by principles of organic farming and sustainable agricultural and land management.

- **Increased income and employment opportunities through development of commercial fisheries**

  Development of marine resources offers potential for economic growth, sustainable livelihoods and food security in Niue. Resources from FSSLP and TCP will be available to support sustainable development of fisheries and value-added products. Attention will also focus on support for the development of sustainable fisheries management plans, which include responsible income-generating opportunities.

- **Improved marketing systems and market access for high value specialty commodities**

  Improved market opportunities, market access, processing and value-adding are critical areas for development. The objective is to create increased income-earning and employment opportunities in the primary sector. Support through FSSLP and TCP resources could strengthen infrastructure, improve capacity for product processing and value adding, and also strengthen capacity in food safety and standards to improve market access. Assistance may also be provided to strengthen marketing opportunities for certified organic products, particularly vanilla and nonu.

- **Sustainably managed terrestrial, freshwater and marine resources**

  Niue's pristine environment is an attribute which offers commercial advantages in marketing the country and its products through organic farming, eco-tourism and whale watching. In partnership with UNDP and, subject to availability of funds from the Global Environment Facility–Pacific Alliance for Sustainability, FAO will support the government of Niue in implementing a project for conserving Niue's biodiversity via an integrated system of protected areas. The main output areas will be: improved policy and legal frameworks to underpin protected area networks; strengthened capacity for community-based conservation management; and establishment of new protected areas. Support may also be provided through TCP resources to develop a forestry sustainable utilisation plan.

The Pacific Community (SPC)

SPC is currently supporting Niue in various areas related to food security and climate change. Through its Joint Country Strategy, SPC is assisting Niue in the following areas:

- surveys undertaken for nematodes and potential biocontrol agents;
- pest incursion response and quarantine pest surveillance;
- capacity building of national biosecurity staff;
- facilitating export of fresh produce, including market access, the development of commodity pathways and related activities;
- providing paravet training and developing an animal health emergency response plan;
- supporting and advising DAFF in addressing livestock production;
- supporting conservation of genetic resources through SPC's Centre for Pacific Crops and Trees (CePaCT);
- supporting the activities of the Niue Islands Organic Farmers Association (NIOFA);
- supporting the Niue Youth in Agriculture Project and the development and implementation of an agriculture strategic plan;
- supporting forestry and agro-forestry activities; and
- supporting and advising DAFF in addressing crop production problems.
- supporting and providing geographical information systems in relation to agricultural development. This involves supporting training through the Niue Justice, Lands and Survey Department, which provides further training for agriculture personnel involving land information maps.

The Government of Australia

The Government of Australia is supporting genetic resources work in Niue. Currently it is supporting work conducted by CePaCT in conservation, development and distribution of planting material for traditional crops such as taro.

The United Nations Children's Fund, SPC and WHO

These Agencies are providing support for awareness activities on healthy and nutritious diets and WHO has also assisted with development of food safety legislation and regulations.

The Pacific Islands Forum Secretariat (PIFS)

PIFS is providing support in the areas of trade and development for agricultural products in the Pacific. They also assist with providing training in the areas of sanitary measures in relation to trade-related issues under the Pacific Island Countries Trade Agreement (PICTA) and the Pacific Agreement on Closer Economic Relations (PACER) between the Forum Island countries and Australia and New Zealand.

.

The Secretariat of the Pacific Regional Environment Programme (SPREP)

SPREP provides technical support in the areas of sustainable land management and meeting requirements under the United Nations Convention to Combat Desertification (UNCCD). This involves supporting requirements for the performance review and assessment of implementation system (PRAIS reporting) under the UNCCD convention. SPREP also assists with Global Environment Facility processes in order to secure funds for agriculture-related projects.

06
Implementation Arrangements

DAFF will play the lead role in coordinating and facilitating the implementation of the plan. Currently, Ministry of Natural Resources (MNR) is undertaking an assessment of its core functions and capacity to deliver the required services. As a result, MNR is currently re-orienting its core functions under a new proposed structure which is currently pending Cabinet approval. Under the new MNR structure, the lead role to facilitate the implementation of the plan will be distributed amongst the relevant programs/division within DAFF. Each program/division under the new structure will then need to establish a close partnership mechanism with relevant stakeholders.

The sector plan will use a results-based approach with coordinated participation of all stakeholders, including governmental, non-governmental and community-based organisations. Each Program/Division within MAFF will need to develop annual workplans through participatory consultation with relevant stakeholders to guide implementation of priorities. Development of Divisional work plans shall pick up at the output intervention level and further define specific actions with set timeframes to achieve the identified outputs/strategies. Activity delivery timeframes should be clearly defined with responsible agency/program. Each annual work plan should be carefully costed which will form the basis to leverage funding from both the Government and other donor supported programmes or projects.

Also, with the current capacity of DAFF to implement the identified priorities, DAF will ensure a coordinated and engagement of all relevant stakeholders in the implementation of the project. Hence strengthening DAFF's capacity to facilitate the delivery of the outputs is critical. This should involve effective partnership with the private sector, relevant NGOs and producer organisations to work in concerted efforts in achieving the desired outputs for the sector strategy. Where possible, contracting out some of the responsibilities outside the current capacity of DAFF to other stakeholders will be also necessary. In addition, a while of government approach should be encouraged. This should also involve the relevant financial and relevant authorities require for the successful implementation of the project.

07
Monitoring and Evaluation

Monitoring and evaluation (M&E) is a management tool required to track progress and demonstrate the impacts of a given project, programme or policy. The monitoring should be results-based moving beyond an emphasis on inputs and outputs to a greater focus on outcomes and impacts. Results-based monitoring and evaluation is not easy to carry out but it can be done, and this sector plan will endeavour to do so. The performance indicators for the plan's objectives and goal imply that outcomes and impacts will be monitored in the plan. The plan includes a detailed logframe (Appendix 1) that sets out the results to be monitored, evaluated and reported against. Key performance indicators with baselines and targets have been set in Annex 1 which will be used for monitoring and evaluation of sector plan implementation progress.

Independent reviewers may also be engaged to evaluate the plan in the middle and at the end of the implementation period (2015-2019). Evaluations will assess results, impacts and sustainability in light of the goal and objectives. In order to enable efficient monitoring and evaluation, baseline data for each performance indicator will be collected. Performance will be measured against these baseline data. DAFF will conduct six-monthly monitoring and evaluation exercises that will assess progress and redirect the plan if necessary.

Appendix 1

Logical Framework Matrix

Intervention logic	Performance indicators/Objectively Verifiable Indicators	
	Indicators	**Baseline**
Objective 1 **Improve food and Nutritional Security for all Niueans**	**(i) increased production of crops and livestock; and** **(ii) Increased contribution of locally grown food to the diets.**	
Output 1.1 Sustainable production, processing, marketing and consumption of local foods promoted	(i) Involvement of women and youth/ community groups in developing home vegetable gardens (ii) Consumption of local foods (iii) Measures in place for importing agricultural meat products	• Number of women/youth involved in vegetable gardens • Households eat 12 meals taro, 6 green banana, 5 cassava/week , 93% of Niueans eat less than 5 servings of fruit/vegetables /day • Volume of meat imported • DAFF records on number of local farmers involved in local meat production.
Output 1.2 Crop and animal diversity improved, conserved and utilised	(i) Number of nurseries and genebanks established (ii) Improvement in animal breeds (iii) Nutritional quality of one crop investigated and documented (iv) Protection and conservation of the local uga by having exporting, harvesting measures in place (v) Enforcement measures for the local annual hunting season for the peka and lupe	• Currently DAFF controlled • Mostly local breeds • Taro is identified for analysis • Inventory of the local uga population • Inventory of the local lupe and peka population
Objective 2: **To develop and promote sustainable crop and livestock management systems**	**(i) Increased adoption of sustainable management systems** **(ii) Increase in crop area and production** **(iii) Increase in livestock numbers and production**	
Output 2.1 Appropriate crop, livestock, forestry management practices developed and promoted	(i) Sustainable soil management technologies developed and adopted (ii) Adaptable crops selected (iii) Agro-forestry technology and organic farming methods developed and adopted (iv) Crop production technologies developed and promoted (v) Crop water management technologies developed and adopted (vi) Improved livestock management developed and adopted (vii) National waste management strategies developed and adopted (viii) Feral pigs effectively controlled (ix) Sustainable land-use policy developed (x) Code of land use developed (xi) Environment bill enforced	• Mostly relying on bush/fallow land – previous baseline soil data analysis • Crop species adaptable to drought • Documentation of agro-forestry and organic farming systems. • Inventory of crop production technologies for both commercial and domestic markets. • Predominantly rainfed • Mostly traditional systems • Animal waste basically not managed • Poor fencing is a major cause • No land use policy

	Intermediate	At the end	Means of verification
	• Assessment of increased number of women/youth and communities growing home vegetable gardens carried out • 25% households eat at least 14 meals of root crops/week and 5 servings of fruit/vegetables/day • Potential local livestock farmers identified and expanded • 20% increase in local meat production	• Increased production of nutritionally balanced crops • 50% households eat at least 24 meals of root crops/week and 5 servings of fruit/vegetables/day • Local livestock farmers' meat production level enhanced and increased. • 40% meat import substitution	• DAFF reports • Community Affairs reports • Agricultural Census • Customs report • HIES
	• Participatory genebanks and nurseries established • Local breeds upgraded • Diversity established • Quota put on number of uga per person to be exported or harvested • Quota put on number of birds/ animals caught, or ammunition available to individuals	• Availability of seeds and planting materials increased • Distribution of improved breeds improved • High quality nutritional varieties established • Local uga population managed and protected. • Local peka and lupe population managed and protected. Enforcement measures in place.	• DAFF reports • DAFF/CePaCT reports • Environment reports • Agricultural Census report • Police reports
	• Some fertilisers, compost, green manure, silage and legume cover crops used • Adaptable varieties for some crops selected • Ecological sustainability status established • Potential solutions tried on-farm • Water management technologies like mulching and drip irrigation trialled • Improved systems tried – pens and feeds • Waste management strategies like composting promoted • Proper fencing promoted • Policy guidelines developed	• Improved soil health • Adaptable varieties for most crops selected • Master plan and organic farming systems develop • An agro-forestry master plan and agro-forestry systems developed • Some improved technologies adopted • 10% of commercial farmers will adopt improved water management technologies • % of livestock farmers adopt management systems • 10% farmers adopt waste management strategies • 90% of pigs properly fenced • land-use policy enacted	• Soil test • CePaCT/DAFF report • NIOFA Reports • DAFF reports • Agricultural Census report • Niue Statistics • DAFF and Environment reports • DAFF and Environment reports

Intervention logic	Performance indicators/Objectively Verifiable Indicators	
	Indicators	Baseline
Output 2.2 Capacity of research, extension outreach, and information services strengthened	(i) Number of qualified staff employed	• Ad hoc mentoring of research scientists
Output 2.3 Pests and diseases identified and control methods developed and promoted; capacity to respond to pests and diseases strengthened	(i) Number of pests and diseases identified (ii) Plant protection programme operational (iii) Animal health programme operational (iv) Emergency response plans (ERP) developed and implemented	• Current pest and disease status established • Pest control systems trialled • Pest control systems trialled • Ascertain status of current system
Output 2.4 Promote utilisation of organic farming practices	(i) Promote utilisation of green manure for composting (ii) Establish an organic waste collection program (iii) Compost development modelling Cook Islands approach to compost production using organic wastes	• Limited knowledge in organic farming practices • Organic waste currently not utilised
Objective 3 **Support sustainable economic growth and improve the balance of trade**	**(i) Compliance with international standards** **(ii) Increased in domestic and export trade**	
Output 3.1 Agriculture and Tourism linkages strengthened	(i) Regular market surveys conducted (ii) Producer-hotelier platform established (iii) Number of hotels restaurant serving local menus	• Limited market surveys being conducted • Lack of communication between producers and hoteliers and restaurants
Output 3.2 Production Capacity strengthened	(i) Number of commodity producer associations formed	• Only NIOFA Association exist
Output 3.3 Import substitution and promotion of agro-processing and value adding	(i) Value-added products developed and promoted (ii) Design packaging for products (iii) Increase in domestic marketing of agricultural products (iv) Value chain established for one local product (v) Cash crops promoted and maintained (vi) Measures in place to protect the local honey industry	• Potential value-added products identified • Proper packaging techniques identified • Current volume of domestic market • Taro selected • Vanilla, nonu and other potential cash crops identified • Export data for Niue honey against imported honey from overseas • No system • No system

Intermediate	At the end	Means of verification
• International research centres engaged in local research	• High quality outputs produced	• DAFF reports
• Surveillance system developed • Pests and diseases control package developed • Pests and diseases control package developed • An ERP established	• Surveillance system operational • 20% productivity increase • 20% productivity increase • An effective ERP operational	• DAFF/SPC reports • DAFF reports
• Organic farming guidelines developed	• Increased number of organic farmers by 10%	• DAFF reports • SPC/POETCom report
• Market survey conducted • Producer – hoteliers platforms formed	• Market demands identified • At least 50% of restaurants serving local foods	• Tourism reports • DAFF Reports • HIES
• 2 Producer organisations formed	• % increased in crop acreage • Yield increased	• DAFF Resports
• Production promoted • Branding and promotion of some potential value-added products • Market to open most days of the week • Main value chain constraints established • Cash crop diversity increased • Local honey industry protected from pests and diseases introduced from overseas	• Value-added products marketed locally and exported • Variety of local value-added products expanded • Some commodities exported • Integrated value chain approach operational • Improved cash crop diversity and increased production level • Local honey industry protected	• DAFF reports • DAFF &Niue Statistics • DAFF/trade reports • DAFF/SPC reports • DAFF report • Agricultural Census report • Statistics Niue report • DAFF and SPC/FAO reports • HIES

Intervention logic	Performance indicators/Objectively Verifiable Indicators Indicators	 Baseline
Output 3.4 Quarantine and biosecurity capacity improved	(i) Awareness programmes on biosecurity programmes and protocols (ii) Number of pests intercepted (iii) Biosecurity bills developed and implemented	• Improve DAFF existing awareness plan • Border security surveillance established • Quarantine legislations reviewed.
Output 3.5 Domestic and Export marketing strengthened	(i) Increased sales agricultural sales (ii) Diversity of agricultural products in local markets (iii) At least one additional export commodity developed	• Only 3 commodities exported
Output 3.6 Domestic marketing structures developed	(i) Market infrastructures improved (ii) Improved feeder roads for all farming areas (iii) Improved cropping calendar for all farmers through availability of land-clearing machinery.	• Establish current status of local market • Establish conditions of feeder roads • Inconsistent land-clearing programme due to unavailability of machinery
Objective 4 Strengthen Natural Resource management	**(i) Sustainable farming practices developed (ii) Climate resilient farming systems evaluated and documented**	
Output 4.1 Traditional knowledge preserved digitally, enhanced, utilised and acknowledged	(i) Innovative products developed using traditional knowledge (ii) Increased proportion of traditional methods of food preparation and preservation used (iii) Level of traditional knowledge on different farming methods obtained, documented and shared. (iv) Preparation of a local cropping/ hunting calendar.	• Inventory of traditional products • Inventory of traditional food preservation and preparation methods • Inventory of local knowledge from community and Taoga Niue • No calendar available to date.
Output 4.2 Vulnerability of production systems to climate change stressors and non-climate change stressors assessed, and mitigation and adaptation strategies developed and implemented	(i) Vulnerability analysis (VA) for agriculture conducted (ii) Awareness programme developed and implemented	• No vulnerability assessment • Little awareness

Intermediate	At the end	Means of verification
• Interception of pests improved • Biosecurity bill drafted • Biosecurity legislation prepared • Enforcement measures in place • Compensation programme endorsed by cabinet.	• Increased production of fruit fly host commodities. • Biosecurity awareness on protocols strengthened • Pest list database used for export decisions • Biosecurity bill endorsed • Biosecurity legislation enacted and implemented	• DAFF/SPC reports • DAFF reports • DAFF & Crown Law
• A growers' compensation programme developed • HTFA facility established • Public and stakeholders awareness profile raised	• High temperature forced air treatment (HTFA) facility for exporting potential agricultural crops • Increased farm incomes Protection of producers from unforeseen shocks	• HIES
• Facilities upgraded • Liaise with PWD on developing and improving feeder roads • Better machinery available and good land-clearing programme for all farmers	• Market operational most days • Increased supply of local food crop production. • More diverse local food crops grown and increased level of production	• DAFF reports • DAFF/PWD reports • DAFF/PWD reports
• Some products developed and promoted • Some methods promoted • Knowledge obtained from local communities and their consensus on traditional farming practices. • Methods in traditional cropping calendar adopted by community groups.	• Communities producing products • Communities using methods to produce or preserve foods • Traditional knowledge obtained, documented and shared • Planting and hunting calendar produced and adopted by community groups	• DAFF reports • Taoga Niue Report
• Vulnerability analysis completed with adaptation plans • Awareness programme developed and implemented	• Adaptation plan operational • Large percentage of community awareness	• DAFF/SPC report

Intervention logic	Performance indicators/Objectively Verifiable Indicators	
	Indicators	**Baseline**
Output 4.3 Biodiversity restored, conserved and promoted including forest invasive species	(i) Resource Management plans developed (ii) Niue agro-biodiversity evaluated and documented (iii) % of degraded land reforested (iv) Number of new agroforestry species introduced	• Ongoing resource management plans being developed • Limited documentation on agro-biodiversity • Eroding knowledge on biodiversity
Output 4.4 Strengthen Invasive Prevention and Control	(i) Number of awareness programs conducted (ii) Invasive control measures developed (iii) Bio-controls identified (iv) Biosecurity bill enacted (v) Invasive database established	• Limited awareness on invasive issues • Limited capacity on control measures • Lack of capacity to conduct surveillance • Lack of data on invasive
Objective 5 **To improve the capacity of stakeholders and agricultural staff**	**(i) Efficient stakeholder staff** **(ii) Skilled stakeholders**	
Output 5.1 Farming and business skills of stakeholders developed and improved	(i) Number of stakeholders trained (ii) Number of training courses conducted (iii) On-farm interventions promoted	• Training needs assessment conducted
Output 5.2 Engage and build capacity of youth and women in food production	(i) Number of schools, youth groups and women engaged (ii) On farm trainings promoted (iii) Awareness and education strengthened (iv) Agriculture as a career promoted in schools and youth (v) Curriculum taught in schools	• Engage schools, youths and women • Engage Education Department
Output 5.3 Developing stakeholder partnership mechanism	(i) Producer platforms established	• Limited exchange programs
Output 5.4 Technical skills of stakeholder staff improved	(i) Number of staffed trained	• Limited training opportunities for on-board staff

	Intermediate	At the end	Means of verification
	• Resource management guidelines developed • Agrobiodiversity evaluation guide developed • At least 3 new agro- species promoted	• At least 5 community resource management plans developed • Agro-biodiversity documented and promoted • 50% degrade land reforested with fruit trees	• DAFF Reports
	• Awareness program developed • Surveillance system developed • Some partnership on surveillance and control	• Community awareness programs conducted • Effective partnership with community • Awareness materials developed and issued	• DAFF reports • GEF Reports
	• Training programme developed and implemented	• Stakeholders trained and 20% efficiently applying skills	• DAFF reports • NIOFA
	• Farming programme developed and implemented • Development of curricula and resources for teachers and students in the Niue context across the 8 curriculum areas in ECE, primary and secondary supported	• Number of youths and women producing high quality food increased • Curricula taught in schools and integrated across the 8 curriculum areas. • Incentive programs for youth targeting national and community events (agricultural shows)	• DAFF reports • DAFF/Education reports and Taoga Niue
	• Advisory service needs identified	• Effective response to	
(ii)	Training programs established	(iii) Skilled DAFF staff Mentoring	• DAFF Reports