



Nauru Climate Smart Agriculture Plan (NaCSAP) 2021-2025



Government of the Republic of Nauru

Nauru Climate Smart Agriculture Plan
(NaCSAP)
2021-2025



May 2021

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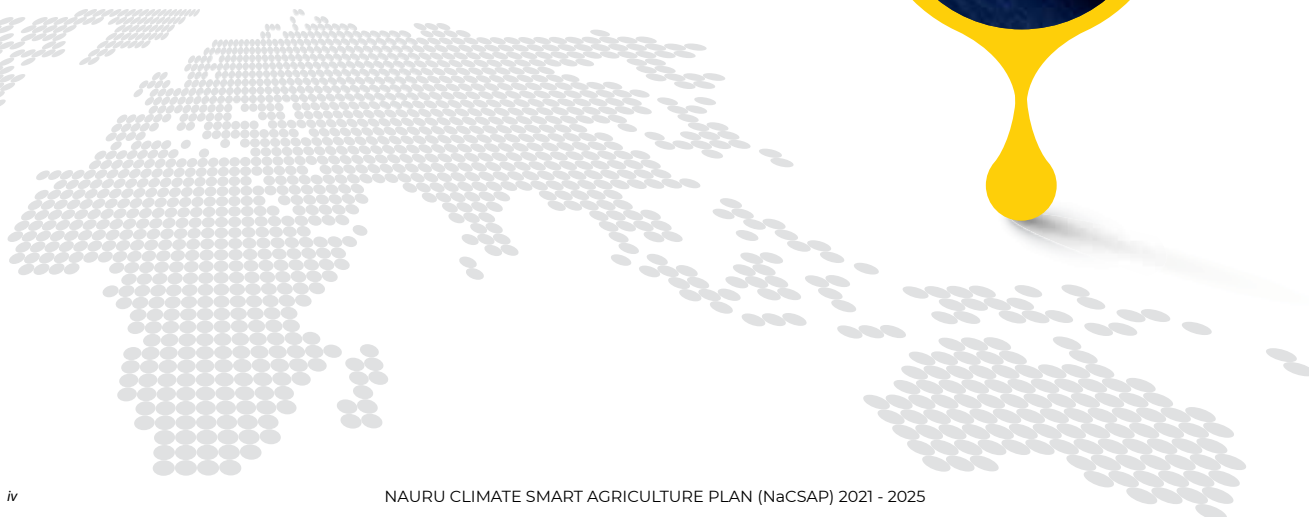
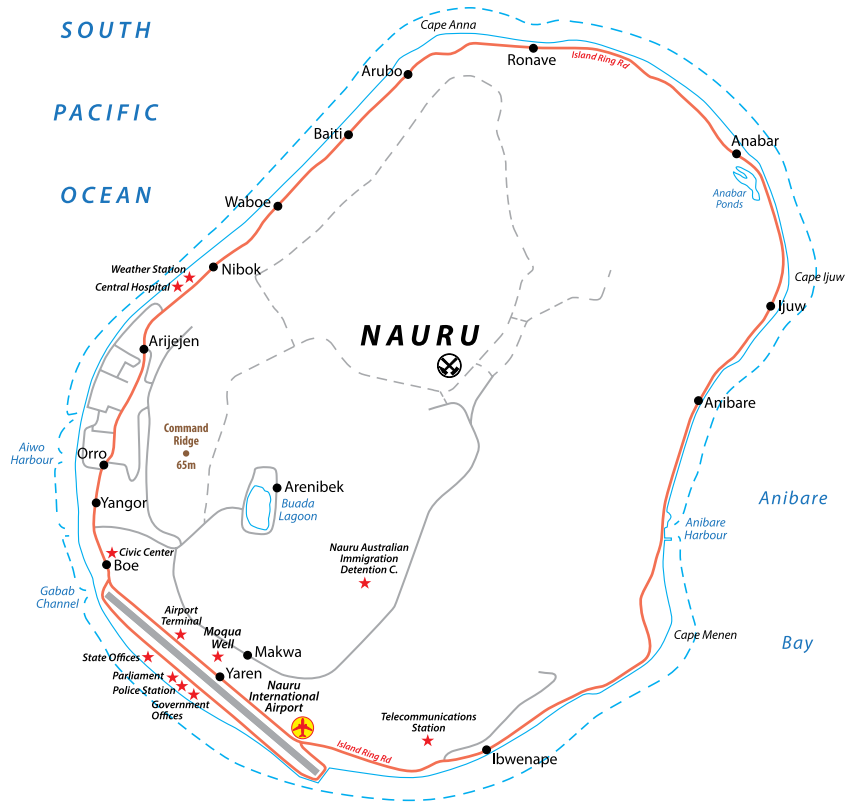
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Map of Nauru



Abbreviations

CSA	Climate smart agriculture
DCIE	Department of Commerce, Industry and Environment
DFAT	Department of Foreign Affairs and Trade (Australia)
FAO	Food and Agriculture Organization of the United Nations
FNS	food and nutrition security
GACSA	Global Alliance for Climate Smart Agriculture
IFAD	International Fund for Agricultural Development
IPM	integrated pest management
MEL	monitoring, evaluation and learning
MTPF	Medium-Term Priority Framework
NaCSAP	Nauru Climate Smart Agriculture Plan
NDC	nationally determined contribution
NFGA	Nauru Farmers Growers Association
NGO	non-government organisation
NSDS	National Sustainable Development Strategy
RONAdapt	Republic of Nauru Framework for Climate Change Adaptation and Disaster Risk Reduction
SPC	Pacific Community
TCP	Technical Cooperation Programme (FAO)
TTM	Taiwan Technical Mission
UNDP	United Nations Development Programme
WFP	World Food Programme

Foreword

Ekamwawir Omo

It is my great pleasure to introduce the *Nauru Climate Smart Agriculture Plan (NaCSAP) 2021–2025*. This is a five-year Plan that will guide the work of the agriculture sector to ensure that the food production system in Nauru is designed to support a climate resilient agriculture sector. I am confident that it will contribute to achieving our social and economic development aspirations that are articulated in the republic's *National Sustainable Development Strategy (NSDS) 2005-2025*.

Nauruans are well aware of the challenges we face at the domestic level when growing our own food, coupled with extreme weather events. It is crucial that we adapt and develop resilient food production systems to achieve food and nutrition security through the application of climate smart agricultural practices.

Climate change and the pandemic have really clarified for my country that food security is vital to our national security.

We need to be smarter in the way we produce and supply our own food. This involves the need to rethink our strategy, to transform and reorient our agricultural systems to effectively support development in this sector.

The agriculture vision of “a community where everyone has access to secure, affordable and nutritious food through attainable agriculture and for a healthier Nauru”¹ still stands and can only be realised through the adoption of a nationwide approach.

The government is committed to building local capacity, strengthening dialogue with stakeholders and partners, providing a conducive environment for agriculture to thrive, and securing the necessary resources to implement this climate smart agriculture (CSA) plan.

I take this opportunity to thank the technical staff of the Regional Pacific NDC Hub, Pacific Community (SPC) and other relevant stakeholders for their dedicated efforts and support in contributing to the development of this invaluable plan.

¹ Government of Nauru, 2005

I call upon the people of Nauru, all non-government organisations, the private sector and the international community to embrace and contribute to the implementation of Nauru's first ever CSA plan. Let us work together to build a strong and resilient Nauru, leaving no one behind.



Honorable Rennier Gadabu MP

Minister for Commerce,
Industry & Environment

Minister for Climate Change
& National Resilience



Summary



Nauru is one of the smallest countries in the world (with an area of 21 km²) with a total population of about 11,550.² It is one of the most densely populated countries in the world with a population density of over 512 people per square kilometer. The island had been mined for phosphate for years with majority (about 80%) of the land degraded now uninhabitable. After years of mining, the only fertile areas for agricultural purposes are in the narrow coastal belt of the island and the land surrounding Buada lagoon which is taken up by residential housing.

² Global Environment Facility, 2019

Sustainable agriculture development has been identified as a priority sector in Nauru, to enhance food and nutrition security and build resilient communities. However, there are many factors affecting sustainable agriculture, including limited arable land due to land degradation problems resulting from mining and unsustainable land use practices, loss of biodiversity and a range of other agriculture production constraints. These include fragmentation, pollution, plot size, poor soil, limited water holding capacity, narrow genetic diversity, pests and diseases, high input costs, loss of traditional knowledge and lack of farming skills. Specific constraints to livestock production include a narrow genetic base, nutrition, waste management and limited capacity to manage animal health issues.

These constraints are further exacerbated by the impacts of climate change. Key climate change threats to the agriculture sector in Nauru include drought and irregular rainfall patterns and sea level rise.

The NaCSAP aims to identify agriculture production systems and practices that can be developed and/or tailored to support adaptation, and where possible, mitigation, ultimately enhancing the food and nutrition security of Nauru's population. The goal of the NaCSAP is to increase resilient food production systems for food and nutrition security in a changing climate through the application of climate smart agricultural practices. To achieve this goal, the specific objectives of the NaCSAP are:

1. Increase production and productivity of local food systems using climate smart agricultural technologies and practices.
2. Increase marketing and consumption of local foods through education and awareness on food and nutrition security and climate change.
3. Improve governance and coordination on climate smart agriculture and food and nutrition security.
4. Strengthen stakeholder capacity through the provision of targeted trainings on climate smart agricultural practices.

Implementation of the above prioritised activities will require a multisectoral approach involving key national stakeholders at all levels. The Department of Commerce, Industry and Environment (DCIE) is responsible for identifying and mobilising key stakeholders to lead implementation of the key strategic priorities identified in the NaCSAP, referencing the *Monitoring, Evaluation and Learning (MEL) Framework*. The lead implementing agencies will also ensure risks and risk management strategies are incorporated into the planning process. A high-level NaCSAP oversight committee will be established with representation from key stakeholders that will provide guidance, decisions and monitoring for NaCSAP implementation to ensure targets are met. A MEL process will be developed based on the results matrix. Lead implementing agencies will unpack and incorporate the high-level results into their annual workplans to ensure continuous feedback and update implementation status against the overall *MEL Framework* that will be monitored by the NaCSAP Steering Committee on a quarterly basis.



1.3 Agriculture production in Nauru

Nauru produces a limited amount of domestic food, apart from fruit from trees such as coconuts, pandanus and breadfruit. Backyard gardens have been tended on a very small scale, and until recently were promoted by the Taiwan Technical Mission (TTM) in Nauru through the provision of seedlings to households.

With the phosphate stock almost completely depleted, and a resulting downturn in Nauru's economy, critical thought on sustainable livelihoods has emerged. However, after years of mining, the only fertile areas remaining are in the narrow coastal belt and the land surrounding Buada Lagoon. Lack of stakeholder capacity to till the soil, plant crops and raise livestock is another major constraint to agricultural development in Nauru. The inadequacy of bore water and frequent droughts also limit agricultural production. Very few food crops are currently grown, and most food items are imported. The limited varieties of fruit trees and vegetables that are cultivated on a small scale are for home consumption. There is currently no formal commercial agriculture in Nauru.

1.4 What is CSA?

CSA is an approach that helps to guide actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate. CSA aims to tackle three main objectives:

- **Sustainably increasing agricultural productivity and incomes;**
- **Adapting and building resilience to climate change; and**
- **Reducing and/or removing greenhouse gas emissions, where possible.⁶**

This could be in the form of changing cropping patterns, planting dates or management techniques, as well as diversifying crop systems (e.g., mulching, targeted composting, use of cover crops, integrated systems, minimum to zero tillage), introduction and adaptation of proven resilient genetic resources, water saving techniques and adequate use of ground water.

1.5 Why CSA?

The Government of the Republic of Nauru considers the focus of its nationally determined contribution (NDC) to the Paris Climate Agreement to be primarily adaptation, with a strong emphasis on building resilience that also encompasses mitigation in an integrated manner.⁷ The Nauru NDC recognises improvement of the indigenous food supply and potable water availability and storage as critical adaptation strategies for the country. In addition, Nauru considers CSA an opportunity to strengthen the implementation of the national priorities related to climate change and sustainability, agriculture and food security, while also contributing to inclusiveness, poverty reduction, social equity and economic growth.



⁶ FAO, 20211

⁷ Republic of Nauru, 2015

2. CSA PLANNING PROCESS

Recognising the above priorities, the Nauru government has submitted a request to the Regional Pacific NDC Hub to support the implementation of its NDC focusing on climate smart agriculture. SPC's Land Resources Division was subsequently identified to provide technical support.

The planning process began with the development of a vulnerability assessment framework for climate change impacts on agriculture and food security. The framework identified key factors causing Nauru agriculture sector vulnerability and food insecurities. A synthesis of the analysis was developed, in addition to a series of consultations examining Nauru government key CSA adaptation priorities.



3. SITUATION ANALYSIS

Virtual consultations and a literature review identified the following problems.

3.1 Climate change

Nauru's climate and annual weather patterns include prolonged periods of drought. Projections for all emissions scenarios indicate that the annual average air temperature and sea-surface temperature in Nauru will increase in the future. Most global climate models project an increase in average annual and seasonal rainfall over the course of the 21st century. Satellite data indicate the sea level near Nauru has risen by approximately 5 mm per year since 1993. This is larger than the global average of 2.8–3.6 mm per year.⁸ These projections highlight key vulnerabilities such as sea level rise and drought.

3.2 Land degradation

Land degradation will be a major challenge for Nauru in the future. Approximately 80 per cent of Nauru's total terrestrial area has been utilised for phosphate mining, while the limited remaining land area is used for domestic, commercial, industrial and government purposes, with the international airport occupying a significant proportion of the island. Other types of land degradation currently affecting Nauru include loss of forest and vegetation, soil erosion, soil contamination, water erosion/contamination, acidification and desertification that has resulted in almost complete topsoil degradation, and localised inland and coastal erosion.⁹

3.3 Land use planning

At present Nauru does not have a land use plan to guide development decisions. Land use planning is critical to ensuring that future infrastructure investments address the visions and needs of all Nauru communities. Given that major infrastructure sectors such as energy and water have developed or are developing, an approved Nauru Land Use Plan is becoming an urgent priority.

3.4 Loss of traditional knowledge

Loss of traditional knowledge related to agricultural production and traditional resource management is eroding and a major concern in Nauru. Nauruans have occupied their land for around 3500 years and once had a customary law governing land use and marine system tenure. The loss of traditional environmental knowledge occurred with the advent of the mining industry. This has resulted in the loss of the traditional marine tenure system, as well as traditional agroforestry and agroecology knowledge.

⁸ Republic of Nauru, 2019
⁹ FAO, 2021

3.5 Agriculture production and productivity

Agriculture production in Nauru is constrained by several factors:

3.5.1 Limited arable land

Lack of arable land for farming is the major impediment to advancing adaptable cropping systems in Nauru. The island's size and its land tenure system also inhibit development of adequate crop production ventures. Soil restoration and other innovative planting methods must be adopted for the island's staple crops.

3.5.2 Soil fertility

As in many atoll countries, Nauru's soil is thinly layered and nutrient poor, lacking important major elements such as nitrogen and potassium. It has poor water holding capacity and a narrow available water range.¹⁰

3.5.3 Water and irrigation

Limitations in available water resources intensify threats to land restoration and terrestrial biodiversity conservation efforts. Irrigation, if available, is underdeveloped and relies on underground water resources and an unreliable rainwater collection system. Rainwater catchments are used to supplement bore water, although frequent droughts make dependence on this source risky for commercial operations, domestic use and assistance to the Nauru rehabilitation centre.

3.5.4 Narrow genetic resources

Currently, very few food crops are grown and most food items are imported, with limited varieties of fruit trees and vegetables cultivated on a very small scale for home consumption.

3.5.5 Pests and diseases

Pests and diseases, including zoonotic diseases, are a major concern for both crops and livestock. The presence of two exotic fruit fly species and the coconut leaf beetle (*Brontispa longissima*) causes destruction to coconuts, in addition to the limited fruits and vegetables cultivated on the island. Zoonotic diseases are also a growing concern due to Nauru's reliance on food imports.

3.5.6 Livestock production constraints

Currently, the small amount of livestock production is limited to the Department of Agriculture, which mainly provides poultry and pig production demonstration farms. There are additionally a limited number of households engaged in livestock production. Livestock feed is mainly imported, and costs are high.

3.6 Income and livelihoods

Nauru's main income sources are phosphate mining, fishing fees and revenue from the Nauru Regional Processing Centre. Taken together, these industries demonstrate the country's narrow income stream despite having a high per capita income of USD 9889 (2018),¹¹ in comparison to other Pacific Island nations.

3.7 Food security

The majority of food such as rice, wheat products, ramen, frozen meat, tinned meat and other confectioneries and foodstuffs are imported and have become Nauruans' daily staple food. Poor nutrition, lack of vegetables and fruits, and the associated high costs for their importation, are important contributing factors to Nauru having one of the highest type 2 diabetes rates in the world, as well as its declining life expectancy. Therefore, food insecurity is a major constraint in Nauruan economic status.

3.8 Stakeholder capacity

Farming is a relatively new concept that is more challenging in Nauru than in many other Pacific countries. Lack of human resources capacity for developing the agriculture sector, both in government and in local communities, is a critical limitation that needs to be addressed by support programmes. Full time technical assistance should be considered, in addition to a well-planned capacity building and skills training programmes.

¹⁰ Halavatau, 2018

¹¹ Nauru GNI Per Capita 2012-2021 | MacroTrends

4. STAKEHOLDERS

There are many stakeholders with interest in the agriculture sector that will play an important role in the implementation of the NaCSAP (Table 1).

Table 1. Stakeholders and interests

STAKEHOLDERS	INTERESTS/ROLES AND CAPACITIES
NFA	Direct involvement in agriculture and horticulture and application of CSA practices
Department of Health and public health	Awareness and promotion of food and nutrition security, food safety and healthy diets
Department of Education	Developing guidelines on CSA and promotion/participation of schools in CSA and agricultural activities
Department of Fisheries	Food security and food chains
communities	Implementing partners in agriculture
TTM	Basic agricultural training, vegetable seedling propagation and composting Poultry and egg production
FAO	Technical cooperation programme initiatives
Department of Women's Affairs	Life skills for the youth, especially school dropouts
Department of Commerce, Industry & Environment - Agriculture	Strengthen policy and regulatory frameworks
quarantine	Pest and disease prevention and management practices

5. NaCSAP STRATEGIC PRIORITIES

5.1. National priorities

The NaCSAP aims to contribute to the achievement of the national goals outlined in the NSDS and the Republic of Nauru Framework for Climate Change Adaptation and Disaster Reduction (RONAdapt). Both the NSDS and RONAdapt outline six priority goals:¹²



Water security



Energy security



Food security



A healthy environment



A healthy people



Productive, secure land resources

The strategic priority outlined for agriculture is increasing domestic agricultural production aimed at addressing food security and healthy livelihoods with the following actions:

- *Developing local food and agricultural production initiatives such as kitchen gardens, fruit tree planting and root cropping.*
- *Promoting production of value-added forestry and agroforestry products for domestic consumption.*
- *Promoting commercially viable piggeries, duck and poultry (egg production) and agricultural businesses.*
- *Setting up an agricultural and livestock production resource centre.*

To strengthen and sustainably develop the agriculture sector, the Nauru NDC Implementation Plan detailed actions that include:¹³

1. Explore and encourage sustainable and traditional agricultural practices, including composting, mulching and nursery development.
2. Improve seasonal forecasting and grower access to weather and climate information and provide management options to growers for responding to extreme events.
3. Promote and use drought tolerant crop varieties and resilient livestock breeds.
4. Develop and transfer new appropriate climate smart technologies.
5. Improve stakeholder capacity in partnership with external stakeholders.

¹² Nauru Government, 2005

¹³ Republic of Nauru, 2019

5.2. NaCSAP goal

The NaCSAP goal is to increase resilient food production systems for food and nutrition security in a changing climate through the application of climate smart agricultural practices.

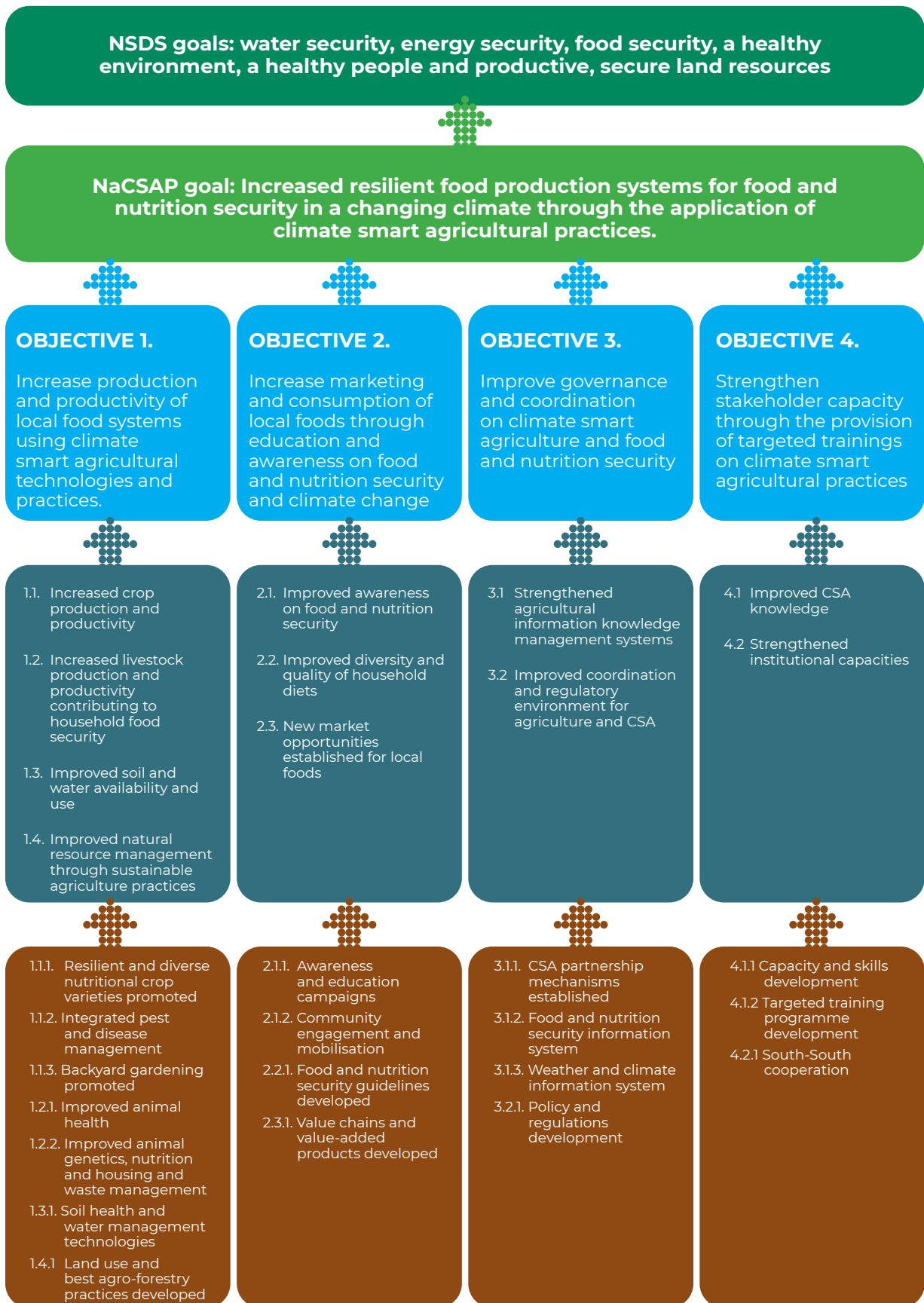
5.3 NaCSAP objectives

The specific objectives of NaCSAP are:

1. Increase production and productivity of local food production systems using climate smart agricultural technologies and practices.
2. Increase marketing and consumption of local foods through education and awareness on food and nutrition security and climate change.
3. Improve governance and coordination on climate smart agriculture and food and nutrition security.
4. Strengthen capacity of stakeholders through the provision of targeted trainings on climate smart agricultural practices.



Figure 1. NaCSAP framework



5.4. Outputs and results

Strategic goal and objectives achievement for Nauru requires effective regulations, research and development activities, capacity development through incentives, knowledge dissemination, and food security and social protection initiatives.

Objective 1. Increase production and productivity of Local food systems using climate smart agricultural technologies

Outcome 1.1. Increased crop production and productivity

- Output 1.1.1.** Resilient and diverse nutritional crop varieties promoted
- Output 1.1.2.** Integrated pest and disease management
- Output 1.1.3.** Backyard gardening promoted

A focus on climate smart crop production options will strengthen crop production in Nauru involving:

- Ensuring availability and access to good quality seeds and planting materials of well-adapted varieties.
- Cultivation of a varied range of crop species and varieties in concert with sustainable crop production practices such as ground cover crops, intercropping or rotations, integrated pest and disease management.
- Adoption of conservation-based agriculture to maintain healthy soils and manage water efficiently to achieve the highest possible outputs.

Soils host the largest terrestrial carbon pool and their biogeochemical processes regulate the exchange of atmospheric greenhouse gases. These emissions are strongly affected by factors such as land use, land use change, vegetation cover and soil management. Organic carbon stocks in the upper soil layers are responsive to these factors and can affect greenhouse gas levels in the atmosphere.

Key activities for climate smart crop production in Nauru will include:

- a. Assess and develop soil health and soil management enhancing technologies
- b. Evaluate, select and promote resilient and nutritional climate smart crop varieties
- c. Integrate pest and disease management practices
- d. Promote integrated backyard gardening
- e. Assess and test the feasibility of soil-free agriculture
- f. A soil-free agriculture facility pilot project

Outcome 1.2. Increased livestock production and productivity contributing to household food security

- Output 1.2.1.** Improved animal health
- Output 1.2.2.** Improved animal genetics, nutrition and housing and waste management

Identifying suitable options for climate smart livestock production is critical for Nauru. There are numerous implementation options capable of delivering benefits for both adaptation and mitigation, including resilient breeds, improved feed management, improved housing and waste management and effective animal disease management. Key activities will include:

- a. Develop and promote resilient pig, chicken and poultry breeds
- b. Develop and promote appropriate livestock husbandry practices
- c. Integrate livestock waste management practices
- d. Develop animal health and disease management strategies
- e. Develop an integrated national livestock business plan
- f. An integrated national livestock business plan pilot project

Outcome 1.3. Improved soil health and water availability and use

Output 1.3.1 Soil health and water management technologies

Changes in the amount of rainfall and variations in rainfall patterns will affect the two main water irrigation sources, groundwater recharge and rainwater. Drought is a major concern for Nauru and key activities will include:

- a. Improve water conservation and ground cover
- b. Promote simple irrigation techniques such as food cube wicking-based systems
- c. Test and promote soil health and soil management practices

Outcome 1.4. Improved natural resource management through sustainable agriculture practices

Output 1.4.1. Land use and best agro-forestry practices developed

Sustainable natural resource management has many co-benefits, including water and soil resources protection, assistance with soil development and enhancement soil fertility, climate regulation, and provision of wildlife habitat. Sustainable resource management in Nauru will include sustainable forest stands and landscapes to act as buffers against shocks and provide ecosystem services that not only underpin agricultural production but also scale-up CSA practices, ultimately supporting the wellbeing of urban and rural communities in a holistic, equitable and inclusive manner. Key activities will include:

- a. Develop and promote land use assessment and land use plans
- b. Assess degraded land and develop rehabilitation strategies
- c. Develop an appropriate agroforestry model
- d. Develop conservation agriculture practices

Objective 2. Increase marketing and consumption of local foods through education and awareness on food and nutrition security and climate change

In order to identify and promote appropriate climate smart interventions, it is important to take a holistic view of the entire food system and consider its vulnerabilities and how it will be affected by climate change. Since food systems are complex, a value chain approach could help identify appropriate activities to strengthen food systems in Nauru. Specific activities will focus on improving awareness and education on food and nutrition security, household diet diversity and quality and promotion of local food consumption.

Outcome 2.1. Improved awareness on food and nutrition security

Output 2.1.1. Awareness and education campaigns

Output 2.1.2. Community engagement and mobilisation

To achieve this outcome, key activities will include:

- a. Develop awareness campaigns on food and nutrition security
- b. Promote community awareness and education on food and nutrition security
- c. Engage and mobilise communities for farming
- d. Promote school gardens

Outcome 2.2. Improved diversity and quality of household diets

Output 2.2.1. Food and nutrition security guidelines developed

To achieve this outcome, key activities will include:

- a. Develop dietary guidelines
- b. Promote healthy diets through cookery programmes

Outcome 2.3. New market opportunities established for local foods

Output 2.3.1. Value chains and value-added products developed

To achieve this outcome, key activities will include:

- a. Review existing food import prices
- b. Identify and promote import substitution value chains
- c. Identify and promote value-added products for the domestic market
- d. Promote value chains for women and youth
- e. Promote awareness and education on food loss and food waste¹⁴
- f. Assess local agriculture products supply and demand

Objective 3. Improve governance and coordination on climate smart agriculture and food and nutrition security

The promotion of climate smart agricultural systems in Nauru requires not only strong commitments, but also greater coherence, coordination and integration among the various sectors dealing with climate change, agricultural development, food security and nutrition. This will empower people, strengthen organisations, institutions and networks and support the establishment of conducive policy and regulatory frameworks.

Outcome 3.1. Strengthened agricultural information knowledge management systems

Output 3.1.1. CSA partnerships mechanisms established

Output 3.1.2. Food and nutrition security information system

Output 3.1.3. Weather and climate information system

Access to information is vital to support decision-making, as well as for evidence-based CSA approaches that can be adapted to the Nauru context. This will require information systems and tools development to facilitate tracking and documentation of information generated from the research and development activities, and packaging that documentation into brochures, posters, videos, etc. to disseminate to target groups. To achieve this outcome, key activities will include:

- a. Develop information and knowledge management systems to support CSA and the food security decision-making process
- b. Develop climate forecasting tools to support agriculture planning processes
- c. Document and promote CSA practices
- d. Disseminate and train on CSA practices
- e. Document and promote traditional knowledge and practices relevant to Nauru

¹⁴ Food loss and waste amount to major loss of resources, including water, land, energy, labour and capital and leads to greenhouse gas emissions, contributing to climate change.

Outcome 3.2. Improved coordination and regulatory environment for agriculture and CSA

Output 3.2.1. Policy and regulations development

Coordination of NaCSAP implementation will build on existing structures at the national level to ensure synergies and alignment of ongoing programmes and initiatives. Key activities will include:

- a. Review and update agriculture and relevant policies
- b. Establish a Nauru CSA coordinating function within the DCIE
- c. Establish a Nauru CSA link to regional and global CSA alliances to access information and knowledge

Objective 4. Strengthen stakeholder capacity through the provision of targeted trainings on climate smart agricultural practices

The NSDS, RONAdapt and Nauru NDC framework identified human capacity as a major weakness in almost every sector, articulating that external partners support is required to maximise opportunities for skills transfer to local staff and/or communities. This will require upskilling of local staff. Extension services are a core priority to better position Nauru to respond to an array of future challenges, including planning for, and responding to, climate change and disasters. The NDC also highlights the need to develop and promote the transfer of appropriate technologies to support capacity building in adaptation activities. Achieving this will require developing both the technical and operational capacities of institutions and individual practitioners.

Outcome 4.1. Improved CSA knowledge

Output 4.1.1. Capacity and skills development

Output 4.1.2. Targeted training programme development

Developing the technical capacities of key stakeholders in agriculture and CSA is a priority for supporting Nauru adaptation efforts. Achieving this will require development of targeted training programmes, implementation of training programmes targeted at key stakeholders, including communities, and labour force upskilling through information training programmes. Key activities will include:

- a. Complete a capacity needs and prioritisation assessment
- b. Develop targeted training packages in various technical areas (research design, data analysis, interpretation, etc.)
- c. Establish training opportunities for agriculture, food security and climate change in partnership with key institutions

Outcome 4.2. Strengthened institutional capacities

Output 4.2.1. South-South cooperation

Strengthening institutional capacities will require capacity building on informed decision-making processes through access to and use of information to support policy strengthening, managing partnerships and project development and implementation. Key activities will include:

- a. Establish linkages amongst extension workers and other key stakeholders
- b. Develop guidelines on partnerships in CSA, including a vulnerability assessment framework
- c. Streamline work programmes amongst key stakeholders
- d. Develop community outreach programmes



6. IMPLEMENTATION ARRANGEMENTS

6.1. Institutional arrangements

NaCSAP implementation will be the responsibility of the Department of Commerce, Industry and Environment in collaboration with key national stakeholders such as the Department of Lands, Department of Education and Department of Climate Change and National Resilience.

The DCIE is responsible for identifying and mobilising key stakeholders to lead implementation of the key strategic priorities identified in the NaCSAP, referencing the MEL Framework. The lead implementing agencies will also ensure risks and risk management strategies (Section 6.5) are incorporated in the planning process. In addition, activities will be further unpacked based on Annex 1: Results framework and Annex 2: Schedule of activities. The lead implementing agencies will be responsible for translating the strategic priorities into a detailed costed annual workplan aligned to ongoing programmes, or through joint resource mobilisation based on estimated budgets, outlined in Annex 3.

6.2. NaCSAP oversight

A high-level NaCSAP oversight committee that includes representation from key stakeholders will be established. Committee members will provide guidance and decisions, in addition to monitoring NaCSAP implementation to ensure targets are met.

6.3. Monitoring, evaluation and learning

A MEL framework will be developed to track implementation and outputs systematically at all levels to track progress and/or needed adjustments. Processes, experiences and results will be documented to guide decision-making and learning. Evaluations will include data and information appraisal that will inform strategic decisions to improve the project or programme in future. A MEL process will be developed based on Annex 1: Results framework. To achieve this, the first activity will establish baselines to guide the MEL process. Lead implementing agencies will unpack and incorporate high-level results into their annual workplans to ensure continuous feedback and update implementation status against the overall MEL framework that will be monitored by the NaCSAP Steering Committee on a quarterly basis.

6.4. Linkages

Implementation and support for the Nauru CSA plan will be in collaboration with partner institutions and organisations listed below.

STAKEHOLDER	INTERESTS
FAO	Supporting member countries in CSA implementation with technical assistance and resource mobilisation through the MTPF and TCP Programmes.
GACSA	A voluntary coalition of over 140 members, including governments, research institutions, farmers' organisations, the private sector, and NGOs for knowledge sharing and cross-regional collaboration on CSA. For the Pacific, PaCSAA is housed within SPC.
IFAD	Funding support for mainstreaming CSA into programmes and activities.
SPC	The Land Resources Division provides technical support in: (1) genetic resources conservation, development and utilisation; (2) sustainable forests and landscapes; (3) sustainable agriculture; and (4) markets for livelihoods.
UNDP	Climate change and DRR programmes that complement CSA at the regional and national levels.
World Bank	Funding to support mainstreaming CSA across its entire annual agricultural portfolio.
WFP	Food security cluster coordination mechanisms and vulnerability mapping.
GCF	Funding projects related to food security and agriculture.
TTM	Funding and technical support. Training in CSA technologies targeted composts and locally grown fruits and vegetables.
DFAT	Funding and technical support.



6.5. Risks and risk management

Identifying risks and proposing mitigation measures will ensure proper execution of the NaCSAP. Risks and proposed mitigation measures are listed below.

Risk	Risk level	Mitigating measures
Extreme events		
Project implementation delayed by a pandemic or extreme weather event, e.g., COVID-19, typhoon, ocean surge, severe El Niño drought, major pest or disease incursion or major social/cultural event.	High	<ul style="list-style-type: none"> Ensure activity planning contains sufficient buffering for pandemics or severe and disruptive weather events. Include major social and cultural events in schedules during inception and planning.
Time constraints		
Commitment from all stakeholders	Moderate/High	<ul style="list-style-type: none"> Recruit full team at start of implementation. Regularly monitor and revise action plans. Regularly remind countries of limited time framework. Apply lessons learned from previous projects.
National capacity and challenges to full stakeholder involvement		
Insufficient capacity to fully implement project activities.	Moderate/High	<ul style="list-style-type: none"> Ensure during design phase that selected activities are fully feasible using lessons learned from other projects. Capacity building and institutional strengthening from beginning to end of project.
Little involvement of community (grassroots stakeholders), women and vulnerable groups.	Moderate	<ul style="list-style-type: none"> Build on experience and lessons learned from previous projects and programmes.
Challenges with implementation		
Risk	Risk level	Mitigating measures
Logistical challenges of implementing activities become overwhelming.	Moderate	<ul style="list-style-type: none"> Build on scheduling and logistics lessons learned from previous projects; adopt flexible and back-up planning approaches such that alternatives (e.g., moving activities to a different location) can be prioritised when necessary.
Assumptions		
<ul style="list-style-type: none"> Global economic conditions and national governance do not prevent economic growth. Continual high-level national government commitment to prioritising food security with climate change and disaster risk management in the national development agendas. Social and political stability is maintained. Harmonious collaboration amongst all development partners and donor agencies occurs for funding and implementation of project. 		



Annex 1. Results framework

Results Chain	Intervention logic	Indicator	Baseline (2020)	Target (2025)	Source and means of verification	Assumption
Impact	Increased resilient food production systems for food and nutrition security in a changing climate through the application of climate smart agricultural practices	<ul style="list-style-type: none"> Diversified farming systems Area planted with crops 	<ul style="list-style-type: none"> Low agro-biodiversity Low agriculture production 	<ul style="list-style-type: none"> New resilient varieties promoted within farming systems 	<ul style="list-style-type: none"> HIES Market surveys Supply survey 	<ul style="list-style-type: none"> Climate chain and food and nutrition security remain a high priority for Nauru
Objectives	1. Increase production and productivity of local food systems using climate smart agricultural technologies	<ul style="list-style-type: none"> CSA technologies (crops, livestock, soil, pests and diseases) generated Yield per unit area 	<ul style="list-style-type: none"> Low agriculture production 	<ul style="list-style-type: none"> Percentage of increase in production and productivity of farming systems 	<ul style="list-style-type: none"> Surveys Agriculture reports HIES 	<ul style="list-style-type: none"> Interest and commitment from stakeholders and communities
	2. Increase marketing and consumption of local foods through education and awareness on food and nutrition security and climate change	<ul style="list-style-type: none"> Percentage of increase in household consumption of local foods CSA and FNS awareness and training programmes 	<ul style="list-style-type: none"> Dependency on imported food 	<ul style="list-style-type: none"> Percentage improvement in FNS and CC understanding 	<ul style="list-style-type: none"> Household surveys Market surveys 	<ul style="list-style-type: none"> Favourable policies in place supporting consumption of local foods
	3. Improve governance and coordination on climate smart agriculture and food and nutrition security	<ul style="list-style-type: none"> Integrated CSA coordination structure in place linked to FNS programmes 	<ul style="list-style-type: none"> Existing CC Committee in place 	<ul style="list-style-type: none"> Published coordination committee operational guidelines and functional committee 	<ul style="list-style-type: none"> Policy documents National reports 	<ul style="list-style-type: none"> Strong commitment from government
	4. Strengthen stakeholder capacity through the provision of targeted trainings on climate smart agricultural practices	<ul style="list-style-type: none"> Number of people trained on CSA practices and technologies 	<ul style="list-style-type: none"> 25 extension officers trained on CSA (2020) 	<ul style="list-style-type: none"> Adaptive capacity of communities 	<ul style="list-style-type: none"> Training reports 	<ul style="list-style-type: none"> Interest and capacity of stakeholders remain a high priority
Outcomes/ Outputs	1.1. Increased crop production and productivity 1.1.1. Resilient and diverse nutritional crop varieties promoted. 1.1.2. Integrated pest and disease management 1.1.3. Backyard gardening promoted	<ul style="list-style-type: none"> Number of soil management and water use technologies developed Number of new crop varieties evaluated and promoted IPM practices developed and promoted 	<ul style="list-style-type: none"> Degraded lands Poor soil conditions Low crop diversity Existing fruit fly problems 	<ul style="list-style-type: none"> Number of soil health and soil management technologies developed Adaptable varieties 	<ul style="list-style-type: none"> Surveys Annual agriculture reports HIES 	<ul style="list-style-type: none"> Interest/ commitment from households and communities
	1.2. Increased livestock production and productivity contributing to household food security 1.2.1. Improved animal health 1.2.2. Improved animal genetics, nutrition and housing and waste management	<ul style="list-style-type: none"> Number of improved breeds promoted Waste management practices developed Livestock husbandry guidelines developed and promoted 	<ul style="list-style-type: none"> Low livestock production Limited livestock waste management Low genetic diversity 	<ul style="list-style-type: none"> Improved/resilient breeds of pigs and poultry promoted Livestock husbandry practices implemented 	<ul style="list-style-type: none"> Agriculture annual reports Project reports 	<ul style="list-style-type: none"> Favourable government support policies
	1.3. Improved soil health and water availability and use 1.3.1. Soil health and water management technologies developed and promoted. Soil health and soil management technologies and practices promoted	<ul style="list-style-type: none"> Water management/ use and irrigation technologies developed and promoted Soil health and soil management technologies and practices promoted 	<ul style="list-style-type: none"> Poor water use efficiency Degraded soil health 	<ul style="list-style-type: none"> Improved soil and water management conservation and ground cover 	<ul style="list-style-type: none"> Annual agriculture reports 	<ul style="list-style-type: none"> Strong support from communities
	1.4. Improved natural resource management through sustainable agriculture practices 1.4.1. Land use and best agro-forestry practices developed	<ul style="list-style-type: none"> Land use assessment report and land use plans in place Appropriate farming systems, including agroforestry, developed Conservation agriculture practices developed 	<ul style="list-style-type: none"> Lack of land use plans 	<ul style="list-style-type: none"> Land use plans developed and implemented 	<ul style="list-style-type: none"> Land use plan report Sector reports 	<ul style="list-style-type: none"> Commitment from communities

Results Chain	Intervention logic	Indicator	Baseline (2020)	Target (2025)	Source and means of verification	Assumption
Outcomes/ Outputs (continued)	2.1. Improved awareness on food and nutrition security 2.1.1. Awareness and education campaigns 2.1.2. Community engagement and mobilisation	<ul style="list-style-type: none"> Number of awareness materials developed Number of awareness programmes delivered 	<ul style="list-style-type: none"> Preference / reliance on imported food 	<ul style="list-style-type: none"> Communities engaged and farming mobilisation 	<ul style="list-style-type: none"> Awareness materials Sector reports 	<ul style="list-style-type: none"> Strong will from communities
	2.2. Improved diversity and quality of household diets 2.2.1. Food and nutrition security guidelines developed	<ul style="list-style-type: none"> Dietary guidelines developed Local food recipes developed and promoted 	<ul style="list-style-type: none"> Lack of dietary guidelines 	<ul style="list-style-type: none"> Dietary guidelines implemented at household levels including schools 	<ul style="list-style-type: none"> Dietary guidelines report 	<ul style="list-style-type: none"> Support from communities
	2.3. New market opportunities established for local foods 2.3.1. Value chains and value-added products developed	<ul style="list-style-type: none"> Value added products for domestic market identified Value chains for women and youth promoted 	<ul style="list-style-type: none"> Limited marketing opportunities for agriculture 	<ul style="list-style-type: none"> Increased contribution from agriculture to household income 	<ul style="list-style-type: none"> Household surveys HIES 	<ul style="list-style-type: none"> Favourable policies for local foods
	3.1. Strengthened agricultural information and knowledge management systems 3.1.1. CSA partnership mechanisms established 3.1.2. Food and nutrition security information system 3.1.3. Weather and climate information system	<ul style="list-style-type: none"> Development of information and knowledge management systems Development of knowledge products related to CSA practices 	<ul style="list-style-type: none"> Limited information and knowledge management processes 	<ul style="list-style-type: none"> CSA practices documented and scaled in country Climate forecasting tools to support agriculture planning process in place 	<ul style="list-style-type: none"> KM products Sector reports 	<ul style="list-style-type: none"> Favourable policies supporting information and knowledge management process
	3.2. Improved coordination and regulatory environment for agriculture and CSA 3.2.1. Policy and regulations developed	<ul style="list-style-type: none"> Complementary and related policies reviewed and updated 	<ul style="list-style-type: none"> Weak work plan policies and coordination mechanisms 	<ul style="list-style-type: none"> CSA partnership and governance in place linked to regional and global alliance 	<ul style="list-style-type: none"> National policies Meeting records 	<ul style="list-style-type: none"> Commitment from stakeholders
	4.1. Improved CSA knowledge 4.1.1. Capacity and skills development 4.1.2. Targeted training programme development	<ul style="list-style-type: none"> Capacity assessment of stakeholders Streamlined workplans in place and implementation supported by all relevant stakeholders 	<ul style="list-style-type: none"> Poor capacity of stakeholders 	<ul style="list-style-type: none"> Capacity building packages developed and implemented 	<ul style="list-style-type: none"> Capacity building programmes 	<ul style="list-style-type: none"> Strong interest and commitment from government and farming communities
	4.2. Strengthened institutional capacities 4.2.1. South-South cooperation	<ul style="list-style-type: none"> Capacity needs assessment completed Targeted training programmes developed and implemented 	<ul style="list-style-type: none"> Low capacity of human resources 	<ul style="list-style-type: none"> Agricultural officers and farming communities trained on CSA practices 	<ul style="list-style-type: none"> Training reports 	<ul style="list-style-type: none"> Incentives provided to support training programmes

Annex 2. Schedule of activities

Results chain	Activities	2021				2022				2023				2024				2025				Responsible	Partners
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
1. Increased production and productivity of food systems using climate smart agricultural technologies and practices																							
Outcome 1.1. Increased crop production and productivity	a. Assess and develop soil health and soil management enhancing technologies																				DCIE, DE, DLR	TTM, SPC, FAO, UNDP	
	b. Evaluate, select and promote resilient and nutritional climate smart crop varieties																				DCIE, NC	TTM, SPC, FAO, UNDP	
	c. Integrate pest and disease management practices																				DCIE, DE, DLR	TTM, SPC, FAO, UNDP	
	d. Promote integrated backyard gardening																				DCIE, NC	TTM, SPC, FAO, UNDP	
	e. Assess feasibility of soil-free agriculture																				DCIE, NC	TTM, SPC, FAO, UNDP	
	f. A soil-free agriculture facility pilot project																				DCIE, NC	TTM, SPC, FAO, UNDP	
Outcome 1.2. Increased livestock production and productivity contributing to household food security	a. Develop and promote resilient pig, chicken and poultry breeds																			DCIE, NC,	TTM, SPC, FAO, UNDP		
	b. Develop and promote appropriate livestock husbandry practices																			DCIE, NC	TTM, SPC, FAO, UNDP		
	c. Integrate livestock waste management practices																			DCIE, DE, DLR	TTM, SPC, FAO, UNDP		
	d. Develop animal health and disease management strategies																			DCIE, NC	TTM, SPC, FAO, UNDP		
	e. Develop an integrated national livestock business plan																			DCIE, NC	TTM, SPC, FAO, UNDP		
	f. An integrated national livestock business plan pilot project																			DCIE, NC	TTM, SPC, FAO, UNDP		
Outcome 1.3. Improved soil health and water availability and use	a. Improved water conservation and ground cover																			DCIE, NC	TTM, SPC, FAO, UNDP		
	b. Promote simple irrigation techniques such as food cube wicking based systems																			DCIE, NC	TTM, SPC, FAO, UNDP		
Outcome 1.4. Improved natural resource management	a. Develop and promote land use assessment and land use plans																			DCIE, DE, DLR	TTM, SPC, FAO, UNDP		
	b. Assess degraded lands and develop rehabilitation strategies																			DCIE, NC	TTM, SPC, FAO, UNDP		
	c. Develop an appropriate agroforestry model																			DCIE, DE, DLR	TTM, SPC, FAO, UNDP		
	d. Develop conservation agriculture practices																			DCIE, NC	TTM, SPC, FAO, UNDP		
2. Increased marketing and consumption of local foods through education and awareness on food and nutrition security and climate change																							
Outcome 2.1. Improved awareness on food and nutrition security	a. Develop awareness campaigns on food and nutrition security																			Department of Lands	TTM, SPC, FAO, UNDP		
	b. Promote community awareness and education on food and nutrition security																			DCIE	TTM, SPC, FAO, UNDP		
	c. Engage and mobilise communities for farming																			DCIE	TTM, SPC, FAO, UNDP		
	d. Promote school gardens																			DCIE	TTM, SPC, FAO, UNDP		
Outcome 2.2. Improved diversity and quality of household's diets	a. Develop dietary guidelines																			DCIE	TTM, SPC, FAO, UNDP		
	b. Promote healthy diets through cookery programmes																			DCIE	TTM, SPC, FAO, UNDP		
Outcome 2.3. New market opportunities established for local foods	a. Review existing food import prices																			Dept. of Education	TTM, SPC, FAO, UNDP		
	b. Identify and promote import substitution value chains																			DCIE	TTM, SPC, FAO, UNDP		
	c. Identify and promote value-added products for the domestic market																			DCIE	TTM, SPC, FAO, UNDP		
	d. Promote value chains for women and youth																			DCIE	TTM, SPC, FAO, UNDP		
	e. Promote awareness and education on food loss and food waste																			DCIE	TTM, SPC, FAO, UNDP		
	f. Local agriculture products supply and demand assessment																			DCIE	TTM, SPC, FAO, UNDP		
3. Improved governance and coordination on climate smart agriculture and food and nutrition security																							
Outcome 3.1. Strengthened agricultural information knowledge management systems	a. Develop information and knowledge management systems to support CSA and the food security decision-making process																			DCIE, DE, DLR	TTM, SPC, FAO, UNDP		
	b. Develop climate forecasting tools to support the agriculture planning process																			DCIE, NC	TTM, SPC, FAO, UNDP		
	c. Document and promote CSA practices																			DCIE, DE, DLR	TTM, SPC, FAO, UNDP		
	d. Disseminate and train on CSA practices																			DCIE, NC	TTM, SPC, FAO, UNDP		
	e. Document and promote traditional knowledge and practices relevant to Nauru																			DCIE, DE, DLR	TTM, SPC, FAO, UNDP		
Outcome 3.2. Improved coordination and regulatory environment for agriculture and CSA	a. Review and update agriculture and relevant policies																			DCIE, NC	TTM, SPC, FAO, UNDP		
	b. Establish a Nauru CSA coordinating function within DCIE																			DCIE, DE, DLR	TTM, SPC, FAO, UNDP		
	c. Establish a Nauru CSA link to regional and global CSA alliances to access information and knowledge																			DCIE, NC	TTM, SPC, FAO, UNDP		
4. Strengthened stakeholder capacity through the provision of targeted trainings on climate smart agricultural practices																							
Outcome 4.1. Improved CSA knowledge	a. Complete a capacity needs and prioritisation assessment																			DCIE, DE, DLR	TTM, SPC, FAO, UNDP		
	b. Develop targeted training packages in various technical areas (research design, data analysis, interpretation, etc.)																			DCIE, NC	TTM, SPC, FAO, UNDP		
	c. Establish training opportunities for agriculture, food security and climate change in partnership with key institutions																			DCIE, DE, DLR	TTM, SPC, FAO, UNDP		
Outcome 4.2. Strengthened institutional capacities	a. Establish linkages amongst extension and other key stakeholders																			DCIE, DE, DLR	TTM, SPC, FAO, UNDP		
	b. Develop guidelines on partnerships in CSA, including a vulnerability assessment framework																			DCIE, NC	TTM, SPC, FAO, UNDP		
	c. Streamline work programmes amongst key stakeholders																			DCIE, DE, DLR	TTM, SPC, FAO, UNDP		
	d. Develop community outreach programmes																			DCIE, NC	TTM, SPC, FAO, UNDP		

Annex 3. Budget

Results chain	Activities	Amount (AUD)
1. Increased production and productivity of food systems using climate smart agricultural technologies		
Outcome 1.1. Increased crop production and productivity	a. Assess and develop soil health and soil management enhancing technologies	124,500
	b. Evaluate, select and promote resilient and nutritional climate smart crop varieties	175,000
	c. Integrate pest and disease management practices	135,000
	d. Promote integrated backyard gardening	105,500
	e. Assess feasibility of soil-free agriculture	75,500
	f. Soil-free agriculture facility pilot project	3,000,000
Outcome 1.2. Increased livestock production and productivity contributing to household food security	a. Develop and promote resilient pig, chicken and poultry breeds	125,000
	b. Develop and promote appropriate livestock husbandry practices	165,000
	c. Integrate livestock waste management practices	145,000
	d. Develop animal health and disease management strategies	90,000
	e. Develop an integrated national livestock business plan	50,000
	f. Integrated national livestock business plan pilot project	3,000,000
Outcome 1.3. Improved water availability and use	a. Improve water conservation and ground cover	80,000
	b. Promote simple irrigation techniques such as food cube wicking-based systems	120,000
Outcome 1.4. Improved natural resource management through sustainable agriculture practices	a. Develop and promote land use assessment and land use plans	55,500
	b. Assess degraded lands and develop rehabilitation strategies	275,000
	c. Develop an appropriate agroforestry model	100,000
	d. Develop conservation agriculture practices	120,000
Subtotal		7,941,000
2. Increased marketing and consumption of local foods through education and awareness on food and nutrition security and climate change		
Outcome 2.1. Improved awareness on food and nutrition security	a. Develop awareness campaigns on food and nutrition security	15,000
	b. Promote community awareness and education on food and nutrition security	22,000
	c. Engage and mobilise communities for farming	25,000
	d. Promote school gardens	55,000
Outcome 2.2. Improved diversity and quality of household diets	a. Develop dietary guidelines	10,000
	b. Promote healthy diets through cookery programmes	10,000
Outcome 2.3. New market opportunities established for local foods	a. Review existing food imports prices	25,000
	b. Identify and promote import substitution value chains	55,000
	c. Identify and promote value-added products for domestic markets	12,000
	d. Promote value chains for women and youth	55,000
	e. Promote awareness and education on food loss and food waste	55,000
	f. Local agriculture products supply and demand assessment	50,000
Subtotal		389,000
3. Improved governance and coordination on climate smart agriculture and food and nutrition security		
Outcome 3.1. Strengthened agricultural information knowledge management systems	a. Develop information and knowledge management systems to support CSA and the food security decision-making process	25,000
	b. Develop climate forecasting tools to support the agriculture planning process	15,000
	c. Document and promote CSA practices	25,000
	d. Disseminate and train on CSA practices	75,000
	e. Document and promote traditional knowledge and practices relevant to Nauru	30,000
Outcome 3.2. Improved coordination and regulatory environment for agriculture and CSA	a. Review and update agriculture and relevant policies	5,000
	b. Establish a Nauru CSA coordinating function within DCIE	12,000
	c. Establish a Nauru CSA link to regional and global CSA alliances to access information and knowledge	1,000
Subtotal		188,000
4. Strengthened stakeholder capacity through the provision of targeted trainings on climate smart agricultural practices		
Outcome 4.1. Improved CSA knowledge	a. Complete a capacity needs and prioritisation assessment	5,000
	b. Develop targeted training packages in various technical areas (research design, data analysis, interpretation, etc.)	10,000
	c. Establish training opportunities for agriculture, food security and climate change in partnership with key institutions	5,000
Outcome 4.2. Strengthen institutional capacities	a. Establish linkages amongst extension and other key stakeholders	5,000
	b. Develop guidelines on partnerships in CSA, including a vulnerability assessment framework	10,000
	c. Streamline work programmes amongst key stakeholders	5,000
	d. Develop community outreach programmes	15,000
Subtotal		55,000
TOTAL		8,573,000

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