

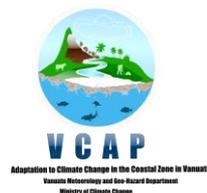
# VANUATU

## NATIONAL FRUITS & VEGETABLES STRATEGY

2017 - 2027



*Fruits and Vegetables are our livelihoods*



## TABLE OF CONTENTS

List of Acronyms and Abbreviations .....	3
Acknowledgments .....	4
Executive Summary .....	5
<b>1. Introduction.....</b>	<b>7</b>
<b>2. Background: The Agriculture Sector.....</b>	<b>8</b>
<b>3. Fruits and Vegetable Overview .....</b>	<b>9</b>
3.1 Rationale for the Fruits and Vegetables Strategy .....	9
<b>4. Improving the Fruits and Vegetable Value Chain.....</b>	<b>11</b>
4.1 Issues and challenges in the sector.....	11
4.2 Proposed phasing of the priority issues and challenges.....	16
<b>5. Potential Risk Factors.....</b>	<b>17</b>
<b>6. Purpose of the Fruits and Vegetable Strategy.....</b>	<b>20</b>
<b>7. Scope of the Strategy .....</b>	<b>21</b>
<b>8. Market Options and Segmentations.....</b>	<b>21</b>
<b>9. Strategy Vision &amp; Objectives.....</b>	<b>24</b>
9.1 Vision of the Fruits and Vegetables Sector.....	24
9.2 Sector Strategy Objectives .....	24
<b>10. Fruits &amp; Vegetables Strategy Framework.....</b>	<b>28</b>
<b>11. Strategy Monitoring and Evaluation Plan.....</b>	<b>43</b>
11.1 Strategy Implementation Process.....	43
11.2 Monitoring & Evaluation .....	44
<b>12. APPENDICES .....</b>	<b>45</b>
a. List of Sources Consulted .....	45
b. Analysis of Market Baseline Indicators and Expected Performance Target .....	46
c. Lead Government Ministries .....	50
d. Fruits prioritization list .....	51
e. Vegetable Prioritization List .....	52
f. Matrix of scope of the Strategy.....	53

## List of Acronyms and Abbreviations

<b>DARD</b>	Department of Agriculture and Rural Development
<b>DoI</b>	Department of Industry
<b>DSPPAC</b>	Department of Strategic Policy Planning & Aid Coordination
<b>ECCRAP</b>	Extreme Climatic Conditions Resilient Agriculture
<b>EDF11</b>	European Development Fund 11
<b>FTDC &amp; AU</b>	Food Technology Development Centre and Analytical Unit
<b>FVIWC</b>	Fruits and Vegetable Industry Working Group
<b>GAP</b>	Good Agriculture Practice
<b>GDP</b>	Gross Domestic Product
<b>GEF</b>	Global Environment Facility
<b>GMP</b>	Good Management Practices
<b>HIES</b>	Household Income Expenditure Survey
<b>IPDM</b>	Integrated Pest and Disease Management
<b>MALFFB</b>	Ministry of Agriculture, Livestock, Fishery Forestry and Biosecurity
<b>MIPU</b>	Ministry of Public Utilities
<b>MTCBD</b>	Ministry of Tourism, Commerce and Business Development
<b>NCD</b>	Non Communicable Diseases
<b>NTDC</b>	National Trade Development Council
<b>NSDP</b>	National Sustainable Development Plan
<b>ORCB</b>	Office of the Registrar of Cooperatives and Business
<b>PAA</b>	Priority Action Agenda
<b>PMO</b>	Prime Minister's Office
<b>PSC</b>	Public Service Commission
<b>ToR</b>	Terms of References
<b>UNDP</b>	United Nations Development Programme
<b>VADB</b>	Vanuatu Agriculture Development Bank
<b>VARTC</b>	Vanuatu Agriculture Research and Technical centre
<b>VAS</b>	Vanuatu Agriculture Supplies
<b>VBS</b>	Vanuatu Bureau of Standards
<b>VCCI</b>	Vanuatu Chamber of Commerce & Industry
<b>VNSO</b>	Vanuatu National Statistics Office
<b>VTO</b>	Vanuatu Tourism Office

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The Global Environment Facility (GEF) funded Vanuatu Coastal Adaptation Project (VCAP) alongside the United Nations Development Programme (UNDP) and Department of Agriculture and Rural Development (DARD) provided major financial, technical and logistical support for the strategy consultations, drafting and printing of the document.

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## Executive Summary



*I*neffective participation of farmers in the fruits and vegetable sector stems from the observed lack of a clearly stated and planned fruits and vegetable roadmap by government and private sector. The resulting effect has led to an increased reliance and dependency on imported forms of fruits and vegetable products both fresh and processed within the domestic markets. Furthermore, the potentials for developing an export market in Australia and New Zealand for fruits and vegetables products with comparative advantages have not been effectively exploited. In addition, the impacts of climate change and disasters are increasingly affecting the production of fruits and vegetables. It has been asserted that these weaknesses have been attributed to a number of factors of which inconsistency in supply and deficient quality in fruits and vegetable products are the more prominent.

### Objective

The main objective of this strategy is to ensure that systematic measures are put in place for enhancing the coordination and management of the sector and to ensure as well that a certain level of consistency is maintained within the fruits and vegetable sector and a certain level of quality is maintained throughout the whole value chain despite external factors including climate change.

In order for the objective to be achieved, it will be vital to make changes to the current legal and structural framework and to influence the general mindset of stakeholders in the sector in respect to the following levels:

1. At the sectoral level, an efficient and effectively coordinated fruits and vegetable sector that can be sustained, is climate smart and is able to consistently produce for the expanding domestic and export market needs to be managed collectively by both the private and public sector;

2. Within the soil, seeds and nursery level, it will be important to ensure that accessibility to quality soil is attained and that acquiring proper commercial seeds, planting materials as well as the technical capacity for producing strong and healthy mature plants are being enhanced and effected;
3. In the production stage, it will be necessary to restructure the country's farming system through improved and innovative agriculture practices. This will be achieved through modification of the sector's marketing system which will result in categorization of different markets for different levels and category of fruits and vegetables products;
4. Within the post-harvest levels, the effective and efficient production for high quality fruits and vegetables products depends on the availability of a growing market that is sustained by a reliable transportation network, efficient networking of self-sustained packing houses and collect centres centred around the most productive agricultural locations and natural food bowls of the country as well as properly managing post-harvest waste;
5. Within the value adding and processing stage, effective production for high quality fruits and vegetables products will depend on the availability and reliability of a growing market. Hence, it will be necessary for creating various categories of products within the domestic and export markets with the view to develop opportunity for opening new markets through value adding and processing;
6. At the marketing level, it is important to maintain a stable and consistent quality and supply of fruits and vegetable products and a timely collection and compilation of quality and detailed data and information and the creation of a strong and reliable market intelligence linking the supply of raw materials to the right markets domestically and internationally.

For these broad objectives to be realised, the following sub-objectives have been developed for this sector strategy:

1. Facilitation of an effective and efficient coordination system for the management and control of fruits and vegetable sector;
2. Ensure that capacity and practical knowledge for undertaking soil analysis is well catered for;
3. A system of sustainable and climate-smart agriculture practices is being established and effectively enforced;
4. Highly efficient networking in transporting, packing and handling and storing is attained and post-harvest waste is effectively managed;
5. Capacity for value adding and processing is ensured in order to increase export opportunities at various available market segments
6. A holistic approach to marketing taking into consideration increased opportunities in all market segments is met and a reliable system of market intelligence long the whole value chain is achieved and operated.

## 1. Introduction

The lack of incentives for the effective participation of farmers in the fruits and vegetable sector leading to an increased reliance and dependency on imported forms of fruits and vegetable products in the domestic markets have been attributed to a number of factors of which inconsistency in supply and deficient quality in fruits and vegetable products are more prominent. These dual negative factors are the direct result of the lack of coordination and management of the sector. Results from wide consultations with respective stakeholders identified an array of key strategies which have been proposed as means for addressing these shortfalls.

The central focus of this fruits and vegetable strategy is targeted on addressing issues pertaining to food security, health and nutrition, climate change and disasters, increased escalation of imported fruits and vegetable products leading to widening of trade deficiency and the inherent constraints within the supply chain. The main issues and challenges identified have been lumped into four main clusters.

First in these issue clusters are those relating to support services critical for effective coordination of the sector, the improvement of standards, strengthening of internal and external networking and the building of data collection and dissemination mechanisms within the sector.

Secondly, those infrastructure issues that have implications for the development of the sector from seeds to marketing have also been identified and proposed for addressing through improved and upgraded market centres, establishment of storage and testing facilities and the construction of appropriate nursery and irrigational facilities.

Thirdly, road and transportation related issues and challenges and reliable sea transport network and system with improved wharfage and stevedoring facilities to cater for fruits and vegetable products preservation and longevity during transshipments have been noted as important areas to consider along the value chain.

Lastly, it is proposed that effective management practices for the sector be established outlining sustainability and ecological consciousness in agricultural practices, improvement in pest and diseases management and skills strengthening resilience in the management of fruits and vegetables in extreme climatic conditions and natural disasters including geo hazards.

A total of six sub-value chains have been outlined and included in the framework consisting of effective coordination of the sector, soil, seeds and nursery management, crop production and management and climate-smart agriculture practices, post harvesting, value adding and processing and expansion of the domestic and international markets through management of market intelligence and information.

## 2. Background: The Agriculture Sector

Agriculture forms the backbone of Vanuatu's economy and although it commands only 20% of the country's GDP, it has consistently over the years been the main source of sustenance for over 80% of the country's population. Factors identified with the inability for increasing the viability of the sector have been attributed to a lack of incentives on the part of farmers for increasing production and improving quality. Climate change and disasters are causing ongoing loss and damage to the sector. Stakeholders in the sector raised their concerns for an expansion of and opening up of market segments for differentiated levels and quality of not only the range of production but also the varieties of crops within the means of their capacity to produce and make value addition.

Moreover, to a considerable extent, is the absence of demonstrated capacity by farmers and other stakeholders in the sector for the ability to advance and improve the sector in a coordinated and concerted fashion. Currently the domestic market for potential crops, fruits and vegetables is huge as shown by studies conducted recently in the sector most particularly in the expanding tourism sector<sup>1</sup> and as is also evident in such studies, the demand is also linked to the recent increase in number of schools and kava bars<sup>2</sup>.



“Currently the domestic market for potential crops, fruits and vegetables is huge as shown by studies conducted recently in the sector”

Sweet Mandarine, Burumba, West Epi

<sup>1</sup>IFC (2015), Vanuatu Agri-Tourism linkages: A baseline study of Agri demand from Port Vila's hospitality sector

<sup>2</sup> Mael (2011), Vanuatu Domestic Market Study: The potential impact of increased tourist on the domestic market for selected fresh vegetable products

### 3. Fruits and Vegetable Overview

The fruits and vegetable sub-sector of the agriculture sector represents a significant portion of the total agricultural production at any given time. In the 2007 agriculture census, it is estimated that more than 60% of local farmers sell their produce at some form of market outlet or another either on a commercial or irregular basis. From this perspective, the fruits and vegetable sub-sector forms not only a strong basis for the argument for greater support for an economic approach to the sector's development, but also a moral one from the standpoint of food security.

Growth and development of the Vanuatu's domestic fruits and vegetable sector is constrained by two critical factors which if not adequately addressed, will continue to hinder the development of the sector and impede farmers and growers to fully benefit on the fruits of their labour. During the consultations on Efate, Tanna and Santo, it was noted that inconsistency in supply of fruits and vegetables and the need for adherence to some primary requirement in quality are critical to the advancement of the sector.

#### 3.1 Rationale for the Fruits and Vegetables Strategy

Whereas, the European Development Fund 11 has enable support for meeting Vanuatu's own policy priorities, a set of rationales is needed for the establishment of the sector strategy. These are outline as follows:

##### 3.1.1 Food Security Issue

The fruit and vegetable sector comprised a significant percentage of the country's food systems considering the availability of fruit varieties and their respective occurrence of seasonality annually. The inability for sustaining supply through lack of knowledge and capacity for maximization on harvests on and off season, including the insufficient means for prolonging the longevity and shelf life of certain fruits and vegetable products continue to render Vanuatu's population vulnerable to imported low value processed fruits and vegetable products as well as restricting the average consumer to low nutrient food sources. Climate change and disaster risks are threatening production of fruit and vegetable foods for Vanuatu's population.

##### 3.1.2 Health Issues

Fruits and vegetable are essential as preventive measures to the prevalent dual diet-related diseases of malnutrition faced by a large majority of children in Vanuatu and the non-communicable diseases affecting a large adult population mostly within the urban areas. It is estimated in 2010 that 64% of all deaths in Vanuatu are attributed to diet and lifestyle – related NCDs<sup>3</sup>. It is not the impossibility of affording a reasonable diet that is the issue at hand but the relatively high cost of purchasing the desired quantity and quality on a consistent basis at an affordable price due to low production and over pricing. Greater access to more fruits and vegetable is highly correlated to sustenance and improvement of individual health.

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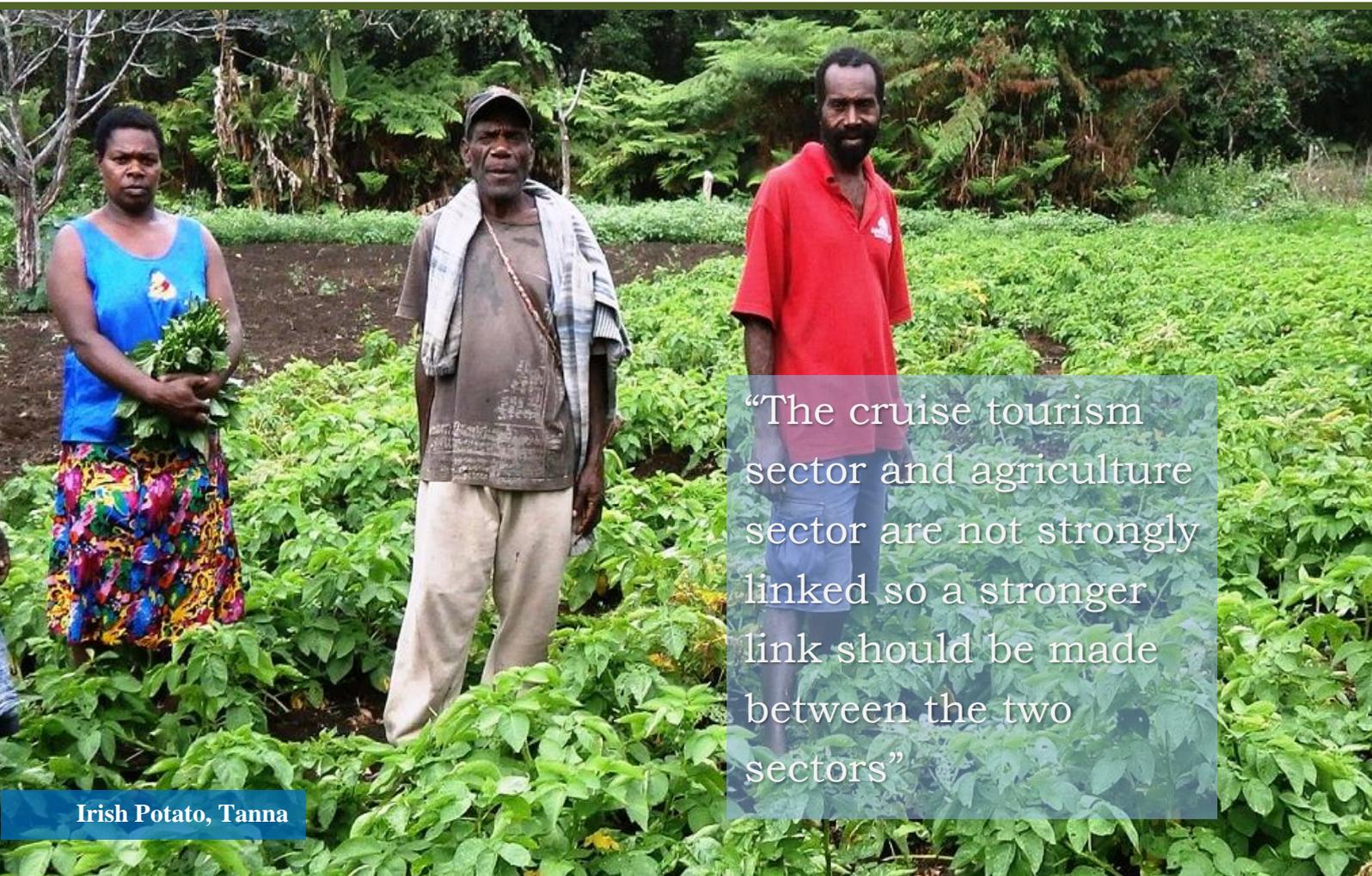
<sup>3</sup> WHO (2013) Vanuatu NCD Risk Factors Report

### 3.1.3 Trade Imbalances

For more than three decades the only way Vanuatu has capitalized in the efforts for narrowing its trade deficit has always been in the export market. The current and projected increase of international arrivals over the next 3 to 4 years provides additional avenue for addressing this gap if both the tourism and fruits and vegetable sectors are rightly connected. Considering the fact that the cruise tourism sub-sector comprised a significant proportion of the total tourism sector and has direct links with the 80% population in the rural areas indeed has huge implications in terms of trade investments from the perspective of the fruits and vegetable sector. Currently the cruise tourism sector and agriculture sector are not strongly linked and a stronger link should be made between the two sectors<sup>4</sup>.

### 3.1.4 Supply Chain Constraints

Fundamental to the fruits and vegetable sector is the need to establish confidence amongst potential buyers, users and service providers regarding the efficiency and articulation of the supply system from production through value adding to marketing. The aim of this strategy will be targeted at improving the supply chain in ensuring the establishment of consistency and sustainability in the supply of quality fruits and vegetable products in the sector while considering factors and barriers including climate change.



Irish Potato, Tanna

“The cruise tourism sector and agriculture sector are not strongly linked so a stronger link should be made between the two sectors”

<sup>4</sup> IFC (2014) Cruise tourism report

## 4 Improving the Fruits and Vegetable Value Chain

**In the consultations with hoteliers and stakeholders a list of issues and challenges were raised in regards to the effectiveness of the value chain. In order to improve the value chain the list of issues and challenges has been clustered for specificity purposes.**

### 4.1 Issues and challenges in the sector

The list of identified issues and challenges in the three consultation workshops on Efate, Tanna and Santo have been analysed and processed into four main cluster areas including sub cluster objectives to reflect and frame the demands of the stakeholders and the needs of the sector.

#### 4.1.4 Cluster 1: Services support to the fruits and vegetable sector

This cluster focuses on the need to put in place an effective coordinating system that will oversee the establishment and improvement of the overall services that will support the sustainability of the sector and consistency in the sector's performance in regards to quantity and quality. This will involve the following sub-cluster objectives:

Sub cluster objectives:

- Central coordination of the sector
- Standardization of the sector
- Establish information and data infrastructure
- Establish strong linkages with relevant government line agencies

For each cluster of challenges and issues a set of overall approaches have been provided for enhancing the effective implementation of the strategic framework.

OVERALL APPROACHES		
Central coordination of the sector	1.1	Once the strategy is completed and endorsed by the relevant authorities it will be necessary for central working group comprising of stakeholders from the private sector and relevant agencies within the government sector
	1.2	Survey to identify the composition of the sector as represented by the various stakeholder group
	1.3	A terms of references for the collaboration of the various members represented in the working group
	1.4	Allocate specific funds and resources for administering for supporting the working in coordinating the sector
Standardization of the sector	1.7	A review of relevant legislations will be undertaken to identify those weak links that can be strengthened
	1.8	Collaborate with the Vanuatu Bureau of Standards (VBS) to develop certain standards for the sector
	1.9	Identify specific areas within the sector that would require some level of intervention with regards to standards

	1.10	Publish standards and conduct awareness amongst stakeholders
	1.11	Link standards to respective relevant implementing authorities for coordination and monitoring of standards
Establish information and data infrastructure	1.12	Survey and map out fruits and vegetable demands for the different market segments for the purpose of quantifying demand levels for each segment, different markets
	1.13	Organize farmer associations around central collection and accumulation fruits and vegetable centres
	1.14	Establish farmer groups and strengthen linkages between farmer groups and respective advisory services with the working group, DARD
	1.15	Identify most effective and efficient method of collecting, storing, managing and dissemination of data in the sector
	1.16	Ascertain the private sectors ability for retrieving and using data and provide upskilling
Establish strong linkages with relevant agencies and Government services	1.17	Ensure maximum integration of all relevant and other related government, NGOs, development partners and stakeholders policies into the sector strategy
	1.18	In respect to the specific functions of MALFFB, MTICBD and MIPU a terms of references (TOR) is to clearly spell out each of their roles in regards to the implementation plan
	1.19	Review TOR of specific functions at an annual basis for the first three years
	1.20	Review the current DARD structure privatize certain level of advisory support in the DARD extension services

#### **4.1.5 Cluster 2: Infrastructural support to the sector**

This cluster focuses on the need to put in place adequate, reliable and efficient roads, sea and air transport network system including as well properly constructed storage facilities that will cater for maintaining and sustaining the quality of products demanded by the market with respect to spatiality and longevity. This cluster also includes infrastructural support in the area of nursery, irrigation, testing and market centres. This will involve the following sub-cluster objectives:

Sub cluster objectives:

- Improve and upgrade market centres
- Establish storage facilities
- Establish testing facilities
- Facilitate construction of nursery and irrigational infrastructure

<b>OVERALL APPROACHES</b>		
<b>Improve and upgrade market centre</b>	<b>3.1</b>	Establish effective governance systems for managing climate-proofed market centres at the municipality and provincial level
	<b>3.2</b>	Establish effective governance systems for managing all packing and storage centres in order to complement market centres upgrading
	<b>3.3</b>	Review effectiveness and quality of services provided by existing market centres and make adjustments to cater for improvement demanded by the consumer community
	<b>3.4</b>	Cater for development and improvement of all markets segments on Tanna, Malekula, Santo and Efate
	<b>3.5</b>	Allocate for specific storage facilities for rural and urban fresh and value add categories of products
	<b>3.6</b>	Allocate for security measures in market compounds for prevention against thefts and resilience against disasters
<b>Establish storage facilities</b>	<b>3.7</b>	Erect storage sheds in identified strategic locations in alignment with the network of roads to production locations or zones
	<b>3.8</b>	Management of storage facilities to be under the authority of the department of cooperatives and department of industry
	<b>3.9</b>	Regular inspections of storage facilities
	<b>3.10</b>	All storage facility sites to charge administrative fees
	<b>3.11</b>	All storage facilities to be run by a collection centre management
<b>Establish testing facilities</b>	<b>3.12</b>	Set up primary testing facilities for sampling purposes in all major producing areas
	<b>3.13</b>	Set up an efficient system of collecting, testing and reporting of test result samples for each producers
<b>Facilitate construction of nursery and irrigational infrastructure</b>	<b>3.14</b>	Identify challenges in respect to difficulties faced by farmers regarding construction of nurseries and water irrigations
	<b>3.15</b>	Map out and prioritized most relevant locations for installation and erection of models of nursery structures to reflect the specific needs of respective geographical locations
	<b>3.16</b>	Conduct trainings on climate-proofed development of nursery infrastructures for respective geographical locations
	<b>3.17</b>	Develop a national crop nursery policy for ensuring maximum benefits for nursery farmers
	<b>3.18</b>	For each F&V types, develop water irrigation models to suit geographical locations
	<b>3.19</b>	Develop a national agriculture irrigation policy for enhancing the development of the F&V sector
	<b>3.20</b>	Establish a national agriculture irrigation development fund for complementing development in the agriculture sector

#### 4.1.6 Cluster 3: Road and transport network services improved

Given that Vanuatu is a country consisting of scattered and highly terrain islands, transportation of fruits and vegetable products stand a huge risk from being damaged during transshipment given the current status of the majority of roads, land and sea transports systems and network as well as climate and disaster impacts on transportation.

Sub cluster objectives:

- Improve and establish reliable road network connecting main farm locations with major market centres
- Upgrade and improve on current sea transportation system and network

OVERALL APPROACHES		
Improve main connecting road networks	3.1	Undertake survey of all major farming areas in the country with the view to identify and establish connecting road networks on Santo, Efate and Tanna
	3.2	Identify and develop for each main farming areas a data and information profile
	3.3	Link each network of roads to specific number of collection and storage facilities to ensure minimum deterioration due to over handling Encourage middlemen or brokers to buy from collection centres
	3.4	Encourage market vendors to buy from middlemen
	3.5	Link up establishment of collection centres and storage facilities to producers cooperatives
	3.6	Improve conditions of connecting roads to main production areas in the fruits and vegetable sectors
Upgrade and improve sea transport system and network	3.7	Establish for each major ports of shipment to Luganville and Port Vila a storage facility with inbuilt coolers for preserving products
	3.8	Encourage shipowners to have proper cool storage in their ships with to cater for different categories of required temperatures for specific fruits and vegetables
	3.9	Make it mandatory for ships to have a routine schedule for inter-island shipping for facilitating regularity in supply from the islands to market centres , including special arrangements during disasters
	3.10	Improve stevedoring practices at the ports of departures and during offloading for purposes of minimizing wastage and loss of value during transshipments
	3.11	Provide temporary sheds for storage of perishables while cargo is being unloaded.

#### 4.1.7 Cluster 4: Effective and Climate-Smart Management Practices in the Fruits and Vegetable Sector

Sub-cluster objectives:

- Good Agricultural Practices
- Improved pest and disease management
- Managing crop resiliency to extreme climatic conditions, climate change and disaster risks

OVERALL APPROACHES		
Good Agricultural Practices	4.1	Produce for Vanuatu F&V sector a set of GAPs to use as a measure and control mechanism for managing soil fertility, sustainable soil management and improved productivity.
	4.2	Promote the national GAPs within farmer communities
	4.3	Promote the application of appropriate and suitable agronomic knowledge and techniques amongst farmer communities aimed at improving soil nutrients, crop health and productivity, rapid and low cost harvesting and product longevity and increased market competitiveness
	4.4	Promote climate-smart and environmentally conscious and safe practices in the application of genetic improvement for the improvement of productivity, resistance to viruses and insects and resistance to post-harvest deterioration.
	4.5	Initiate national agriculture programs aimed at raising awareness amongst fruits and vegetable farmers and growers regarding the importance of improving the nutritional value of fruits and vegetables through the application of biotechnology rather than relying totally on the natural processes.
	4.6	Identify, increase and enhance importation of cultivars and rootstocks with high tolerance to biotic and abiotic stresses including climate change
	4.7	Improve relations between DARD and academic institutions within the region for purposes of accessing information, technology and facility for the improvement of F&V productivity
Improved Pest and diseases management	4.8	Develop a national policy on Integrated Pest and Diseases Management (IPDM) for the whole agriculture sector including the fruits and vegetable sector
	4.9	Develop a national inventory on pests and diseases with potential risks for the development and improvement of the fruits and vegetable sector
	4.10	Improve local capacity within farmer communities for the effective management of pest and diseases through natural and innovative means other than the relying on the conventional insecticide
	4.11	Improve relations between DARD and academic institutions within the region for purposes of accessing information, technology and facility addressing pest and disease issues

	4.12	Provide necessary support through available national and regional technical and financial facilities for improving farmer capacity at addressing pest and disease issues
	4.13	Strengthen border control mechanisms and surveillance in combating illegal trafficking and unintentional importation of high risk genetic plants and planting materials with potentials for aggravating IPD issues
Managing resiliency to extreme climates conditions	4.14	Develop a national fruits and vegetable contingency plan with specific actions aimed at assisting policy makers and farmers in minimizing costs incurred during climate extremes and natural disasters
	4.15	Encourage use of improved genetic varieties suited for climate extreme conditions
	4.16	Create a national fruits and vegetable support and recovery fund to be used for supporting farmers and growers during extreme climatic conditions and disasters
	4.17	Develop farming methods for the fruits and vegetable sector aimed at sustaining the soil and general environment surrounding the farm areas
	4.18	For fruit trees, regular pruning of over grown branches to be made once the tree has reached maturity to avoid damages tree during strong winds
	4.19	For the fruits sector, introduce varieties that have been improved to withstand strong winds during cyclone seasons

## 4.2 Proposed phasing of the priority issues and challenges

To enhance effective implementation of this strategy, it has been necessary to phase out this strategy according to the cluster of issues identified above. The implementation of the different phases is spanned over the 10 year period from 2017 to 2027.

Phases	Priority Focus	Period
1	<ul style="list-style-type: none"> <li>Service support to the fruits and vegetable sector</li> </ul>	2017- 2018
2	<ul style="list-style-type: none"> <li>Infrastructural support to the sector</li> </ul>	2018-2019
3	<ul style="list-style-type: none"> <li>Road and transport network services improved</li> </ul>	2019-2021
4	<ul style="list-style-type: none"> <li>Promoting Good Management Practices in the sector</li> </ul>	2021- 2027

## 5 Potential Risk Factors

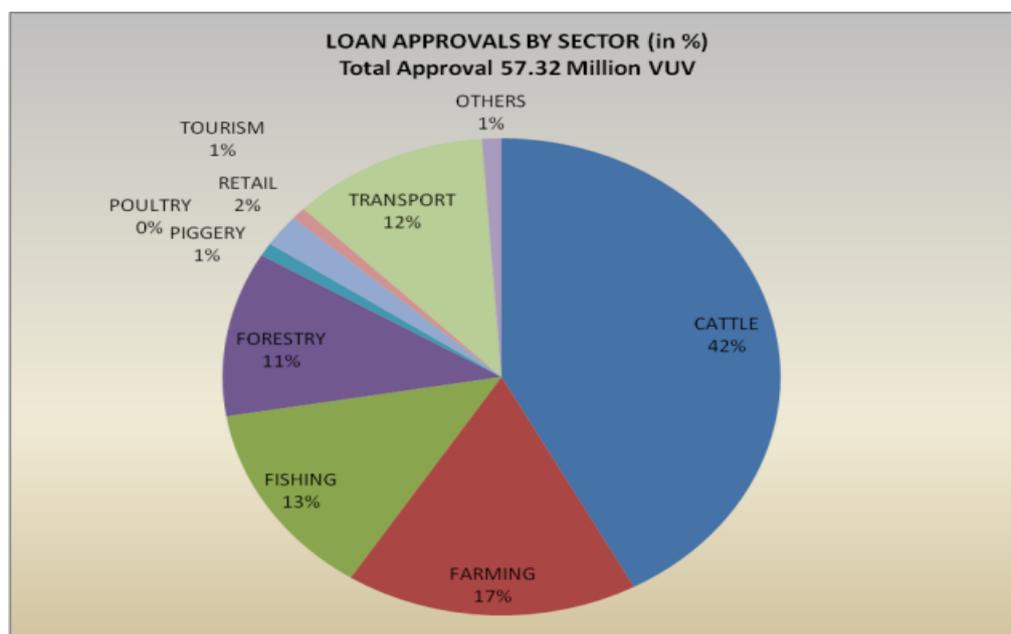
### 5.1 Land availability

Vanuatu's arable surface land area is only 492, 1777<sup>5</sup> hector which equates to 40% of the total arable land and more than 90% of this is under customary ownership. In light of regular occurrences of land disputes, securing land for the consistent production of fruits and vegetables could pose some level of concern that may need to be addressed at the legislative level. The implication here being that accessible but limited land space could become over use and rendering them infertile thereby posing impediments to the advancement of the sector. Any attempts at re-enriching the soil would require technical up skilling, capacity building and legislative review at some stage.

### 5.2 Accessibility to Finance

Accessing finance for development is another issue confronted by most well to do farmers in Vanuatu and in the case of fruits and vegetable development. A review of the loans approval by the Vanuatu Agriculture Development Bank (VADB) show that cattle development is the largest productive sector development in attracting financial support. Farming of which fruits and vegetable are components of attracts only 17% of total loan in 2008.

**Figure 1: Percentage value of imported compared to domestically supplied vegetables**



Source: VADB report

<sup>5</sup> National Agriculture Policy (2014)

### 5.3 Production Skills and Training

It is important to upskill farmers, middlemen, buyers, facilitators and other stakeholders in the sector. At all these various levels different skill gaps have been identified in the workshops and the sector needs to come up with a set of plans for addressing this shortages in capacity. For example the growers of specific products need to learn to work in collaboration with others in the same product in order to guarantee consistency in supply. In the same manner, in instances where there is a middleman for organizing and arranging for markets, the coordination of logistics and time management between the activities of delivery and transporting are among some skills that may need to some stepping up on.

### 5.4 Seasonality

Fruits and vegetable seasons are determined by the wet and dry periods of the year but also by the temperatures of the low and high altitudes. For the whole of Vanuatu, Tafea where Tanna is situated displays a mean annual temperature of 23 degrees Celsius which is good for certain vegetables and fruits such as the tomato while Torba and Malampa both have mean temperatures of 25 degrees Celsius. This alterations and fluctuations in temperature and rainfall has a strong impact on fruits and vegetables supply and demand and should be able to be managed by farmers and growers. It was suggested in the workshops that on the island of Santo and Malekula these differences in temperatures can be addressed through taking advantages of high altitudes to ensure consistency in supply.

### 5.5 Climate Change & Disasters

Vanuatu is one of the most vulnerable countries to climate change and disaster risks. It experiences cyclones, storm surges, landslides, flooding and droughts, which may become more intense as a result of climate change. Vanuatu is also highly exposed to geophysical threats from volcanic eruptions, earthquakes and tsunamis, as well as human, animal and plant disease, and man-made disasters. Vanuatu has been ranked as the most vulnerable country in the world to disaster and climate change risks. Future projections of climate change impacts in Vanuatu include:

- by 2040 daily temperatures will increase from 1995 levels by 1.2 degrees Celsius;
- sea level rise will continue and accelerate;
- ocean acidification will degrade 80 percent of coral reefs within 20 years;
- extreme temperatures will reach higher levels and become more frequent;
- extreme weather events including cyclones and storms will increase in intensity, but not necessarily in frequency;
- dry periods will have a longer duration; and
- extreme rainfall will be more frequent and intense.

## 5.6 Transportation

An island country with little resources for maintaining proper conditions in road and other infrastructure, another challenge that farmers are confronted with is in the area of sea and land transportation. Irregularity and inconsistency in sea transportation routines and routes place on the sector a huge challenge. Coupled with the lack of proper and appropriate storage facilities and the means for running these facilities, outer islands and rural and remote communities endowed with the capacity for producing high value fruits and vegetables will find it difficult to engage in the sector.

With regards to land transportation, participants in the workshops highlighted their dissatisfactions over the type of vehicles that are currently being used for transporting to and from the main markets. It was suggested that more appropriate forms of vehicles are needed.

## 5.7 Mindset

The need to move away from traditional farming is to be encouraged in order to maintain some degree of consistency in both quality and quantity of production. For this to emanate there has to be some level of change in the mind-set of farmers and other stakeholders in the sector including the policy formulators and implementers in government. It will be important for farmers to see their role as not necessarily a personal function but one in which the life and food security of others is depended upon. The role of government is to facilitate through other relevant agencies stronger collaborations aimed at advancing the shift from subsistence to commercial farming.



“The need to move away from traditional farming is to be encouraged in order to maintain some degree of consistency in both quality and quantity of production”

Harvested Pineapple ready for Market, Espiritu Santo

## 6 Purpose of the Fruits and Vegetable Strategy

The overall focus of the strategy is to assist in the implementation, coordination, monitoring of the national Agriculture Policy and to also provide developmental and improvement support to the fruits and vegetable sector. The design of the strategy is such that the flow of information between the different stages in the whole value chain is enhanced there by making the sector more effective and beneficial to both the grower and consumer.

**The strategy has five main purposes:**

- To better clarify and define the different stages within the whole value chain with the view to identify the various stakeholders and their respective roles within the sector;
- To distinctively outline the need for collectors/accumulators in the value chain and understand the important roles and levels of participation to which they are to undertake;
- To identify and strengthen the links between growers, collectors and buyers with a view to secure some degree of stability and consistency in supply preferably with regards to volume and quality;
- To strengthen the link between the sector and other relevant sectors such as the Meteorology, Geo-hazards, Disaster, Tourism, transportation and telecommunication;
- To ensure that the donor community, development partners and organizations with the potential for providing technical and financial assistance in the implementation of the strategy seeing that Vanuatu does not have the resources for undertaking the implementation of this strategy.

“Alterations and fluctuations in temperature and rainfall has a strong impact on fruits and vegetables supply and demand and should be able to be managed by farmers and growers”



Vegetable Farmer, Unua, Malakula

## 7. Scope of the Strategy

There are six stages in this strategy with specific focus on effective coordination of the sector, soil analysis, seeds and nursery management, production including Good Agricultural Practices (GAP) Extreme Climatic Conditions Resilience Agriculture Practices (ECCRAP) and increased mechanization, pre and post harvesting including handling, storage and transportation. The fifth stage in the strategy is the value adding and processing which also emphasis on nature and conditions of market outlets. The sixth stage that this strategy is focused on is the area of marketing and improvement of market intelligence. A typical analysis of the scope of the strategy is outlined in the matrix below.

## 8. Market Options and Segmentations

There exists a network of market outlets for the buying and sales of raw and semi-processed fruits and vegetables products. In the rural settings these outlets are in the form of roadside markets, kava bars and school canteens for larger schools. In the urban areas of Port Vila, Luganville and Lenakel, domestic market opportunities are more prevalent and opportunities for adding value to and prolonging the shelf-life of the products are even higher.

### Market Option Potentials

MARKET SEGMENT	2017-2019	2020-2024	2025-2027
Domestic Rural Fresh Market	Construct 10	Construct 5	Legislate
Domestic Urban Fresh Market	Construct 10	Construct 5	Legislate
Domestic Rural Value Add Market	Construct 10	Construct 5	Legislate
Domestic Urban Value Add Market	Construct 10	Construct 5	Legislate
Export Fresh	Open 10 new markets	Open 5 new markets	Legislate
Export Value Add	Open 10 new markets	Open 5 new markets	Legislate

The more obvious market is the municipality markets, but increasingly more and more private sector individuals and organizations are organizing open markets for different products of which fruits and vegetables are always easily accessible. The high population growth rate in Port Vila and Luganville coupled with the high number of international annual arrivals on cruise and by air enables the setting up of fresh produces market.

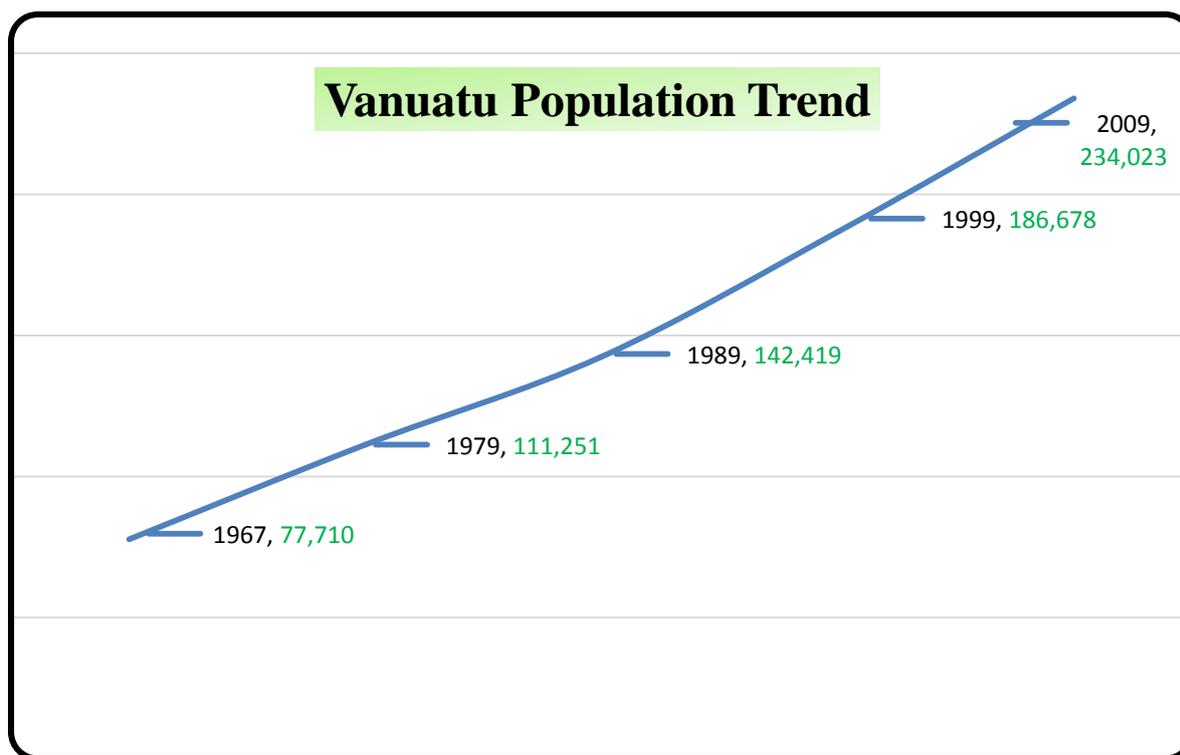
### a. Domestic Rural Markets

Although until a decade ago, fruits and vegetable products are becoming rather difficult to acquire on an individual basis in the rural areas of Vanuatu leading to the existence of a sizable market for fruits and vegetables in the rural areas. Gradual breaking down on traditional and cultural norms and values have created a market opportunity for local products including fruits and vegetables in almost major villages around Vanuatu

### b. Domestic Urban Markets

In addition to hotels, resorts and restaurants, the urban market houses of Port Vila, Luganville and Lenakel are currently the most important vending outlet for fruits and vegetables. On the island of Efate and Santo efforts are being made to address the increase in the main open markets. The high population growth rate impact on schools including school canteens and kava bars have also been found to represent a sizable proportion of the available market opportunities that may exist in Port Vila and Santo. This will require interventions from all sides for the warranted demand on the improvement of market centres specifically relating to quality and standards management.

Figure2: Trend in Population Growth 1967-2009

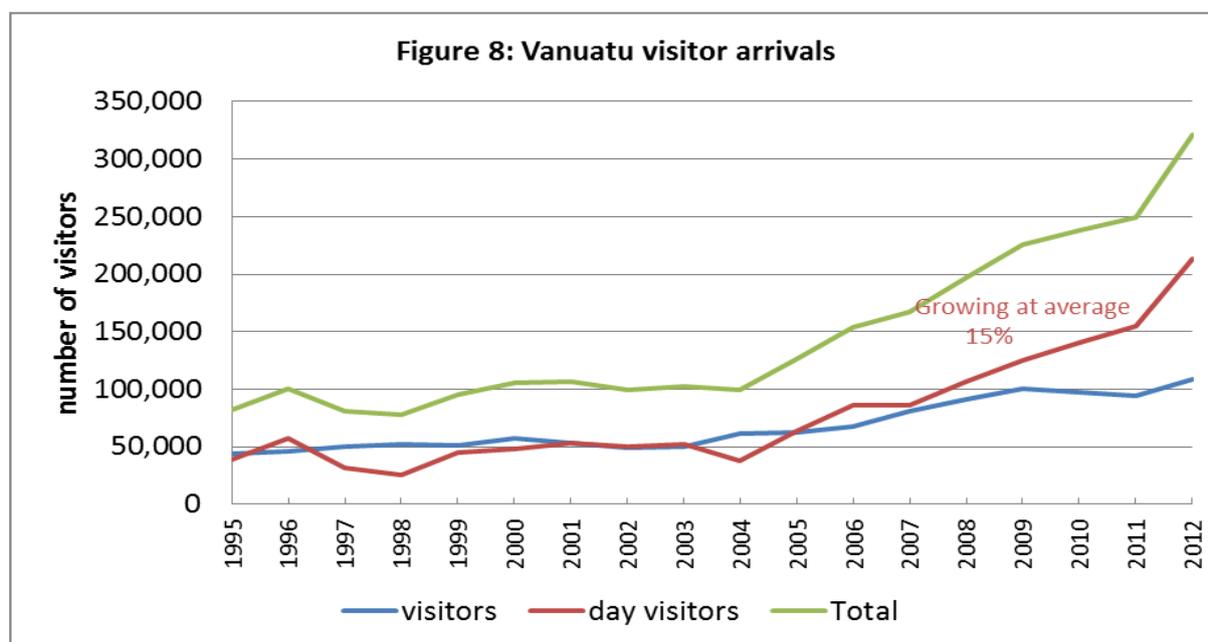


Source: Vanuatu Population Census 2009.

### c. Tourism markets - Agritourism

The tourist market is a segment of the domestic market for fruits and vegetables that have not been effectively utilized due to the lack of coordination and information in the sector. As a result it was noted above that a significant proportion of fruits and vegetable products consumed by the domestic tourist industry is imported.

Figure 3: Vanuatu Visitor Arrivals



Source: VNSO

Over the decade however, the increase in the number of international arrivals have been staggering particularly with respect to the cruise tourism sector. Nonetheless, in study conducted by IFC in 2014, food and beverages still comprised the smallest percentage of income from the 8 major categories of expenditure identified by the study. Mystery Island is situated on the southern province of Vanuatu where the climatic conditions are conducive for vegetable production and the island of Aniwa which hosts the sweetest oranges in the group and yet the tourist industry in the province is not making use of it.

“Different skill gaps have been identified and the sector needs to come up with a set of plans for addressing the shortages in capacity”

Rentapau Hydroponics Farm, South Efate

## 9. Strategy Vision & Objectives

### 9.1 Vision of the Fruits and Vegetables Sector

The sector's strategic vision is in line with the ENV 1.1 of the NSDP and the overall vision of the Vanuatu Agriculture Policy which emphasises the sustainable management of the agriculture sector for ensuring that the people of Vanuatu continue to profit from the proceeds of the sector by 2030.

**A flourishing fruits and vegetables sector that contributes to food security and improved income of all people in Vanuatu**

### 9.2 Sector Strategy Objectives

Six objectives have been identified for this strategy with the specific focus mainly in the areas of seed and planting material supplies, crop production, post-harvest handling, value-adding and processing, and marketing. For each of the specific objectives a set of anticipated output has been identified.

#### Objective 1

##### Facilitate efficient and effective sector coordination

An efficient and effectively coordinated fruits and vegetable sector that is able to be sustained and consistently produces for the expanding domestic and export market needs to be managed collectively by both the private and public sector. As such a fruits and vegetable industrial working committee (FVIWC) will be established to coordinate the sector's supply chain from seeds supply to production to post harvest, value adding and marketing. The composition of the FVIWC will comprised of representatives from stakeholder groups along the whole value chain.

#### *Anticipated overall outputs:*

- Greater collaboration of relevant agencies within the government and private sector for enhancing the sector's efficiency, consistency and sustainability;
- An enabling and supportive legislative and regulative fruits and vegetable producing environment aimed at increasing production and improving quality;
- Effectively coordinated and well managed sector at the government and private sector level with technical and administrative support from both sides throughout the whole value chain;
- Efficient communication of market intelligence relating to domestic and export potentials across the whole sector;
- An effective networking of support services required to strengthen the whole value chain from the nursery to marketing;
- Adequate funding facilities for supporting the stakeholder community established and effected by public and private sector collaboration.

## Objective 2

Improved soil analysis, seeds and seedlings with high relevance to demand of the domestic and export markets

Fundamental to the development and establishment of a viable and beneficial fruits and vegetable sector is the need for acquiring proper commercial seeds, planting materials as well as the technical capacity for producing strong and healthy mature plants. In order to achieve this, it will be essential for the sector to identify and register seed sellers who are genuine and want to see the improvement of the sector.

### *Anticipated overall outputs:*

- Increased number of proper nursery infrastructure and improved genetic planting materials for the sector;
- Highly trained personal for undertaking soil test and assessments of the level of fertility of soil;
- Improved accessibility to genetically improved cultivars and rootstock through review and establishment of appropriate legislation;
- Increase in number of outlets and sources for accessing commercially intended seeds and seedlings;
- Availability of water and irrigation sources for use by seed germinators and farmers
- Increased number of trained personal for constructing horticulture and vegetables nurseries;
- Ready access to commercial seeds and planting materials in all the major producing areas of Vanuatu;
- Increased knowledge by farmers on various pests and diseases with potential for destroying nurseries.

## Objective 3

Establish the basis for good Agricultural practices (GAP) aiming at producing high quality and quantity performances

In order for the sector to improve and start producing high quality products, it will be essential to restructure the country's farming system through improved and innovative and climate smart agriculture practices. This will be achieved through modification of the sector's marketing system which will result in categorization of different markets for different levels and category of fruits and vegetables products.

### *Anticipated overall outputs:*

- Proper land leases system in place for the production of fruits and vegetables;
- Ability for farmers and middlemen to access loans and credits for commercial farming;
- Efficient irrigation infrastructures established on key producing farms on Efate, Santo and Tanna;
- Improved knowledge and skills on integrated pest management amongst farmers and the stakeholder community;
- Subsidization of farming and agricultural equipment by the government for increasing production;
- Improved genetic materials resulting in demand for local produce;
- Improved knowledge in vegetable and horticulture agronomy and husbandry.

#### Objective 4

Enhance the quality and shelf life of fruits and vegetables products through improved pre and post-harvest handling methods as well as effectively coordinating the supply chain

Consistency in quality and quantity is dependent on the effective coordination of the sector. It was highlighted in the consultation that poor management of the fruit and vegetable sector is an attribute of poorly coordinated activities from the planting through harvesting to marketing of the final products. For it to be effective there should be established within the sector's structure brokers or collectors who will coordinate the system.

##### *Anticipated overall output:*

- Packing centres and houses established in key producing areas around Vanuatu;
- Logistics and brokers role established and recognised within the overall fruits and vegetable value chain;
- Improved knowledge on pre and post-harvest handling;
- Improved knowledge on packaging and appropriate packaging materials for specific products;
- Improved storage facilities and techniques for prolonging and enabling the longevity of fruits and vegetable products;
- Improved network of access roads and transporting vehicles for the transporting fruits and vegetable products from farms to processing centres and to the markets;
- Establishment and promotion of cooperatives and other forms of cooperation as accumulators in the sector.

#### Objective 5

Establish a broad base market opportunity for fruits and vegetables domestically and abroad through value adding and value processing to primary products

Effective production for high quality fruits and vegetables products depends on the availability and reliability of a growing market. Evidence shows that the varying categories within the domestic demand for fruits and vegetable products have created a huge opportunity for opening new markets through value adding and processing.

##### *Anticipated overall output:*

- Establishment of a fruits and vegetable packaging standard;
- Establishment of quality control mechanisms and regulations along the fruits and vegetable value chain;
- Increased access to value adding and fruits and vegetable process equipment and machineries;
- Increased number of value adding and processing facilities;
- Establishment of quality control measures for ensuring minimum quality and standards in the sector;
- Establishment of labelling standards for the sector;
- Establishment of testing facilities for sample testing prior to products destined for markets;
- Exemptions on value adding tools and machineries.

## Objective 6

Establish information and intelligence aimed to expanding and sustaining through diversification of the fruits and vegetable sector a category of market opportunities that will sustain production

Consistency in supply and quality is depended on timely collection and compilation of detailed data and information and the creation of a strong and reliable market intelligence linking the supply of raw materials to the right markets domestically and internationally. Of vital importance as well is the need for identifying and purchasing good seed and seedlings markets whereby healthy and productive and high performing fruits and vegetable varieties can be accessed.

### *Anticipated overall output:*

- Improved market intelligence available to farmers and suppliers of seeds and planting materials;
- Segmentation of the fruits and vegetable sector to allow for categories of markets for all levels of producers;
- Improve market vending outlets to cater for improved and high value products;
- Increased production opportunities for farmers and other stakeholders in the sector through effective coordination of the market by brokers and middlemen;
- Increased marketing opportunities through improved quality and quantity of data and data collection and distribution to respective segments of the sector;
- Improved marketing skills for effective participation by relevant stakeholders at all levels of the value chain.



“The specific objectives of this strategy focuses mainly on seed and planting material supplies, crop production, post-harvest handling, value-adding and processing and marketing”

Community Vegetable garden, Erromango Island

## 10. Fruits & Vegetables Strategy Framework

<b>Objective 1: Facilitate effective coordination of the sector</b>						
<b>Priority Intervention</b>	<b>Planned Action</b>	<b>Expected Results</b>	<b>Performance Indicator</b>	<b>Time Frame</b>	<b>Lead Agency</b>	<b>Implementing Partners</b>
<b>1.1</b> Establish a Fruits and Vegetables Industrial working group	Organize with relevant stakeholders representatives for the formation of the industry working group	Issues and challenges of the fruits and vegetable sector are being progressively and effectively managed	3 quarterly reports and minutes of the FVIWG meetings	2 quarter 2017	DARD VCCI ORCBD DoI Private sector	Donors
<b>1.2</b> Link the fruits and vegetable sector with the producers cooperatives and department of industry	Establish collaboration between the departments of cooperatives, industry and DARD through formal terms of references (TOR)	Increased number of fruits and vegetables producers cooperatives established	20% increase in membership in producers cooperatives over the period 2017-2019	4 quarter 2019	DARD ORCBD DoI Private sector	PSC Donors
<b>1.3</b> Organize producers cooperatives and associations around central, storage facilities, and fruits and vegetable collection centres	Map distribution characteristics of farm communities and organize into a chain of producers cooperative with centralized installation of facilities such as storage, coolers, processers and collector agencies	Increased output of high quality fruits and vegetables at consistent basis and easily accessible by market vendors and buyers	10-20% increase in production of F&V over the period 2017-2019	4 quarter 2019	DARD ORCBD DoI Private sector	PSC Donors
<b>1.4</b> Allocate specific funds and resources for administering and supporting the work of coordinating the sector	Include operational and payroll budget for year 2018 in the government recurrent budget.	Coordinating body/FVIWG is able to hold committee meetings, produced minutes of meetings and annual reports	Consistency in production of reports on the sector by the FVIWG over the period 2017-2019	4 quarter 2019	DARD ORCBD DoI Private sector	PSC Donors

<b>1.5</b> A review of relevant legislations will be undertaken to identify weak links that can be strengthened	Conduct a desk review of legislations impacting on the development of the F&V sector with the view to improve the sector's legislative framework	Reviewed legislations allowing for increased production and marketing of quality F&V at all levels	Observed increase of high level of integration between relevant government agencies over the period 2017-2019	4 quarter 2019	DARD ORCBD DoI Private sector	PSC Donors
<b>1.6</b> Ensure maximum integration of all relevant and other related government, NGOs, development partners and stakeholders policies into the sector strategy	Regular meetings of the FVIWG held and decisions implemented	Relevant agencies integrating the F&V strategy in to their own planning annually	Observed increase in variety of fresh and value added F&V products in the domestic and export markets over the period 2019-2022	4 quarter of 2022	DARD ORCBD DoI Private sector	PSC Donors
<b>1.7</b> In respect to the specific functions of MALFFB, MTICBD and MIPU a terms of references is to clearly spell out each of their roles in regards to the implementation plan	Develop a ToR for the collaboration of the three above ministries in the development of F&V sector and the successful implementation of this strategy	Greater degree of easy access to farming areas in major F&V supply locations and increase in availability of domestic and export market opportunities	Reported average annual increase of more than 20% sales of fresh and value added products in the domestic and export markets annually over period 2022-2025	4 quarter of 2025	DARD ORCBD DoI Private sector	PSC Donors
<b>1.8</b> Collaborate with the Vanuatu Bureau of Standards (VBS) to develop certain standards for the sector	Develop a joint 5 year program with the VBS for the development, enforcement, monitoring and evaluation of F&V standards.	A standards manual for all varieties of F&V products, support services, packaging materials, types, volumes, weights, and labelling systems	Increased level of customer satisfaction observed regarding F&V products domestically and internationally over the period 2022-2025	4 quarter of 2025	DARD ORCBD DoI Private sector	PSC Donors
<b>1.9</b> Identify specific areas within the sector that would require some level of intervention on standards	Conduct a study to determine the specific areas entailing immediate attention with regards to standardization in the sector	Study report outlining specific areas of development in the sector that would entail some level of standardization	An increasingly observed standardized F&V sector over the period 2025-2027	4 quarter of 2027	DARD ORCBD DoI Private sector	PSC Donors

<b>1.10</b> Publish standards and conduct awareness amongst stakeholders	Determine cost of publishing and conducting of national awareness and secure budget	Completed and published F&V standards manual	Standards manual utilized by 2020	4 quarter of 2020	DARD ORCBD DoI Private sector	PSC Donors
<b>1.11</b> Link approved standards to respective relevant implementing authorities for coordination and monitoring and evaluation	Develop a F&V sector standardization manual for the enforcement, monitoring and evaluation of different sets of standards by responsible enforcing authorities	Enforcement, coordination, monitoring and evaluation mechanisms established and operational	Increased observation of impact of the F&V standards being reported by 2022	4 quarter of 2022	DARD ORCBD DoI Private sector	PSC Donors

**Objective 2: Improved soil analysis, seeds and seedlings with high relevance to the demands of the domestic and export markets**

Priority Intervention	Planned Action	Expected Results	Performance Indicator	Time Frame	Lead Agency	Implementing Partners
<b>2.1.</b> Establish proper seed and nursery facilitating centres	Identify most economically and administratively suitable locations in Vanuatu for establishing nursery facilitating centres	Increased availability of seedlings and seeds and nursery facilities and centres	A 20% increase in number of growers producing high value products with seeds sourced from nearby seed centres by 2018	4 quarter of 2018	FVIWC DARD Private sector Biosecurity Universities	Donors
<b>2.2</b> Construct proper and climate and disaster resilient nursery infrastructure	Conduct study aimed at identifying the most secure and optimum climatic resilient materials and structure for constructing nursery infrastructure	Increased number of highly durable and extreme climatic condition resilient nursery infrastructures and nursery materials	50% of farmers utilizing climate resilience nursery infrastructure by 2019	4 quarter of 2019	FVIWC DARD Private sector Biosecurity NAB MoCC Universities	Donors
<b>2.3.</b> Facilitate establishment of irrigation for complementing nursery development	Collaborate with the department of rural water supplies in locating water sources and ground water tables as sources of irrigation networking amongst clusters of producers	Well documented inventory of F&V related water sources readily available for water irrigational needs of the sector	50 km of water carrying irrigational infrastructure put in place and effectively utilized by farmers by 2020	4 quarter of 2020	FVIWC DARD Private sector Biosecurity Universities	Donors

<b>2.4</b> Facilitate establishment of hardware from which high value nursery materials could be sourced	Identify most economically suitable sites and facilitate the establishment of privately owned hardware for nursery materials through establishment of enabling environment	Increased number of privately established hardware outlets for sourcing nursery materials	4 hardware outlets established on Tanna and Malekula by 2018 with high percentage of farmer use.	4 quarter of 2018	FVIWC DARD Private sector Biosecurity Universities	Donors
<b>2.5</b> Establish seed selling outlets for fruits and vegetable growing areas around Vanuatu	Identify most economically suitable locations in fruits and vegetable producing areas for the establishment of agreement with retail outlets for the sales of F&V seed	Increased number of economically viable retail outlets with capacity for sustaining seed supply	A higher percentage of retail outlets in rural areas with high production seed	4 quarter of 2019	FVIWC DARD Private sector Biosecurity  Universities	Donors
<b>2.6</b> Undertake research to determine level of soil fertility for the production of F&V in high producing areas in Vanuatu	Improve technical and practical capacity for scientific research on determining soil types and levels of soil fertility for different varieties of fruits and vegetables for high production areas	Increased number of technical and practical personals with scientific knowledge on soil types and fertility levels for different varieties of F&V	Inventory of soil types and properties for different varieties of F&V available for the development of the sector by 2018	4 quarter of 2018	FVIWC DARD Private sector Biosecurity Universities	Donors
<b>2.7</b> Undertake research on performance rate of different varieties of fruits and vegetables in different heights and altitudes in high performing areas	Identify geographically suited location for undertaking such research and identifying as well the variety of fruits and vegetable for which the demand warrants such an undertaking for ensuring supply consistency	Well document and published findings and knowledge on geographical locations on suitable altitudes for certain F&V in Vanuatu	Inventory of favourable geographical locations in terms of altitude for the production of certain F&V all year round By 2019	4 quarter of 2019	FVIWC DARD Private sector Biosecurity Universities	Donors
<b>2.8</b> Encourage importation of high value seeds and seedlings from tropical countries like Vanuatu	Assess market demand and identify variety and source country for which the required planting material is to be imported and ensure national regulations are being adhered to.	Increased number of introduced varieties with high turnout potentials	A more diversified F&V sector with an increased number variety of F&V by 2019	4 quarter of 2019	FVIWC DARD Private sector Biosecurity Universities	Donors

<b>2.9</b> Improve the linkage between market demand and seed production	Develop market intelligence for all comparatively advantaged F&V and inform and organise seeds suppliers and seed centre management operations around these information	Increased number of farmers and growers accessing seeds with high market demand potentials	20% increase in number of farmers and growers engaging in growing F&V varieties that have a high demand in the domestic and export market by 2020	4 quarter of 2020	FVIWC DARD Private sector Biosecurity Universities	Donors
<b>2.10</b> Undertake research for determining high resilient fruits and vegetable varieties for cultivation including an effective early warning system	Review and make inventory of resilience level of conventional fruits and vegetables and undertake research into resilient level of recently introduced variety with a view to develop strategic approaches to level of F&V resilience to pest and diseases and extreme domestic climatic conditions	Acquire knowledge and capacity for developing climate and pest and diseases resilience F&V within the local farmer community	Increased presence of highly pest and diseases and climate resilience F&V by 2022	4 quarter of 2022	FVIWC DARD Private sector Biosecurity Universities	Donors
<b>2.11</b> Facilitate provision and availability of good agriculture land for fruits and vegetables development	Identify suitable land for fruit and vegetable production and secure long term leases for the same	An inventory of good agricultural land for F&V that could be sourced by potential entrepreneurs through lease arrangements with land owners	Effective land planning and utilization system established for Vanuatu's F&V sector by 2022	4 quarter of 2022	FVIWC DARD Private sector Biosecurity Universities	Donors

**Objective 3: Establish the basis for Climate Smart Agricultural Practices (CSAP) in the fruits and vegetable sector**

Priority Intervention	Planned Action	Expected Results	Performance Indicator	Time Frame	Lead Agency	Implementing Partners
<b>3.1.</b> Encourage the establishment of credit and funding facilities in selected areas for fruits and vegetable cultivation	Review the VADB legislations NBV conditions on loans and lending with a view to enable more farmers taking advantage of the services provided by these two state own financial institutions	Increase in the value of loans to farmers and in the number of successful farmers for loan approvals	50% of all farmer applications for loan approved annually by 2019	4 quarter of 2019	FVIWC DARD Private sector Universities	Donors

<b>3.2</b> Introduce mechanization to farming of fruits and vegetables to reduce costs of production	Identify the most cost-effective and sustainable method of mechanization with potentials for the development of the F&V sector and improve mechanization through the establishment of machinery and equipment centres	Increase in the volume of farmland developed and relative reduction in cost and time with potential increase in F&V production	Observed relative reduction in farm input and increase in output by 2020	4 quarter of 2020	FVIWC DARD Private sector Universities	Donors
<b>3.3</b> Complement mechanization through provision of duty exemptions and VAT for selected machineries and infrastructural materials for F&V development at all levels	Collaborate with the department of customs and department of industries in identifying categories of machineries and materials including as well the most economical and fiscal rates to apply.	Relative reduction in cost of farm machineries and implements	50% increase in number of personal and association having immediate access to a tractor or rotovator by 2020	4 quarter of 2020	FVIWC DARD Private sector Universities	Donors
<b>3.4</b> Take effective measures for addressing high cost of production in the sector	Review all the literature on cost of business in Vanuatu with special focus on F&V production and consider options for cost reduction	Relative reduction in cost of electricity, sea and land transport, stevedoring and production at all levels	An average of 10% reduction in the running cost of production at all levels in the sector by 2021	4 quarter of 2021	FVIWC DARD Private sector Universities	Donors
<b>3.5</b> Increase production as a measure to address inconsistencies relating to supply	Undertake detail study into production of specific products with a view to identify and address the inherent constraints contributing to inconsistency in supply	Issues of inconsistencies in specific F&V products with comparative advantages effectively addressed	50% increase in volume of F&V products purchased locally by hoteliers and a corresponding 50% reduction in the value of imported F&V products by 2025	4 quarter of 2025	FVIWC DARD Private sector Universities	Donors

<b>3.6</b> encourage production for all identified market segments and opportunities	Conduct awareness on availability and required standards for accessing different market segments to all stakeholders	Broad based production in the F&V sector targeting all the available market segments within the rural urban and export categories	Increased availability in F&V products resulting in increased access to healthy diets and reduction in NCDs amongst Ni-Vanuatu consumers by 2027	4 quarter of 2027	FVIWC DARD Private sector Universities	Donors
<b>3.7</b> Enhance increased production and improvement of quality products through water supply for farm irrigation and	Conduct awareness on benefits of irrigation on farm productivity and facilitate through technical and financial means farmer and grower access to farm irrigational infrastructure, establishment and trainings on farm irrigational utilization and management	Increased number of farmers having access to water irrigation for their farms	Observed ability for local F&V products to be competitive in both the domestic and export market by 2022	4 quarter of 2022	FVIWC DARD Private sector Universities	Donors
<b>3.8</b> Encourage pest and diseases management for sustaining quality and quantity in F&V production	Improve technical, practical and intellectual capacity of respective stakeholders through training and awareness on pest and diseases management	Observed reduction of incidents of outbreak of pests and diseases and increased capacity for management of pests and diseases	Observed infrequent cases of susceptibility to pests and diseases attacks on the F&V sector by 2019	4 quarter of 2019	FVIWC DARD Private sector Universities	Donors
<b>3.9</b> Increase technical capacity in the areas of advisory and field support	Restructure DARD and increase F&V technical personals through government interventions including engaging private sector expertise in field support through contract arrangements	Instant and easy farmer and grower access to technical and field support services	Increase in the farmer – field support services by 2019	4 quarter of 2019	FVIWC DARD Private sector Universities	Donors
<b>3.10</b> Increase farmer capacity in respect to knowledge in fruit and vegetable husbandry, agronomy, horticulture and husbandry	Facilitate through formal and informal trainings of farmers and technical personals for purposes of increasing knowledge on agronomy, and vegetable and fruits husbandry at all levels	Increased number of farmers with knowledge on agronomy and fruits and vegetable husbandry	A 50% improvement in the quality of F&V products amongst 80% of the farmer community in 2020	4 quarter of 2020	FVIWC DARD Private sector Universities	Donors

<b>3.11</b> Strengthen the effectiveness of the technical support services to the sector through the privatization of the extension services	Focus on improvement of private sector capacity through training and other forms of capacity building exercises with the view to outsource certain government services to the private sector	A vibrant and economically viable F&V sector supported by the private sector	80% of the extension services of the DARD be under private sector responsibility by 2019	4 quarter of 2019	FVIWC DARD Private sector Universities	Donors
<b>3.12</b> Promote apprenticeship or work attachments in farms in Australia and New Zealand to gain some knowledge and skills	Review the RSE and Australian employment schemes and negotiate for bilateral arrangements with Australia and New Zealand on prospects of advancing to a more formal skills transfer approach	Opening up the training sector resulting in an increase in number of competent and able F&V farmers skilled in all the areas of the sector	10% of F&V farmers to be outputs of the proposed apprenticeship arrangements with Australia and New Zealand by 2025	4 quarter of 2025	FVIWC DARD Private sector Universities	Donors
<b>Objective 4: Enhance the quality and shelf life of fruits and vegetable products</b>						
Priority Intervention	Planned Action	Expected Results	Performance Indicator	Time Frame	Lead Agency	Implementing Partners
<b>4.1.</b> Improve farmer and harvester capacity for pre-harvesting preparations and post harvesting F&V	Run community awareness and trainings pre-harvesting and post harvesting techniques for farmers as well as harvesters	High level of knowledge ability on the benefits of pre and post harvesting techniques amongst farmers and harvesters	50% reduction in total F&V waste for the sector by 2019	4 quarter of 2019	FVIWC DARD MIPU Private sector Universities	Donors
<b>4.2.</b> Establish government subsidized packing centres in the main areas of vegetable and fruit production.	Determine production volume and variety of produces in high producing areas with the view to establish location and size of proposed packing centres and nature of packing to be undertaken	Economically fiscally viable packing centres able to be sustained through self-supported initiatives	100% of subsidized packing centres able to be self-sustained after the end of the project in 2025	4 quarter of 2025	FVIWC DARD MIPU Private sector Universities	Donors

<b>4.3</b> Establish government subsidized cool storage for fruits and vegetables reroute to markets and for disaster and emergency purposes	Align cool room demand with production capacity for each high producing areas to determine number of cool rooms to be install	Distribution of F&V cool rooms compatible to the production capacity of each areas so that they are self-sustained	80% of commercial farmers be able to access a cool room by 2025	4 quarter of 2025	FVIWC DARD MIPU Private sector Universities	Donors
<b>4.4</b> Enforce F&V packing in remote areas where packing centres are non-existent	Identify and encourage private retailers to engage and undertake packing in certain rural and remote areas for products that are to be sold in the main market centres	Most marketable F&V products destined for any segment of the market is to be packed	80% of marketed F&V products in all market segments to be packed in some form by the 2020	4 quarter of 2020	FVIWC DARD MIPU Private sector Universities	Donors
<b>4.5</b> Establish middlemen and brokers in the value chain to ensure scale and proper packaging through licensing system	Allocate packing responsibilities to the middleman and broker through licensing for occupying and managing packing centres	The middleman through the packing centres will facilitate product accumulation and increase scale in order to meet the various market demands.	80% of the country's farming network to be centred around a central packing system supported by the middleman/broker of cooperative system By 2025	4 quarter of 2025	FVIWC DARD MIPU Private sector Universities	Donors
<b>4.6</b> Introduce the use of save chemicals to treat vegetables and fruits to enable longevity	Upskill farmers and middleman on use of save chemicals for prolonging fruits and vegetable longevity	Reduction of waste due to improved shelf life of fruits and vegetables	50% reduction in post-harvest waste due to use of longevity chemical enhancers	4 quarter 2019	FVIWC DARD Biosecurity Private sector Universities	Donors
<b>4.7</b> Build access roads to Fruits and Vegetables production areas.	Integrate the F&V strategy into the roads and infrastructure plan on an annual basis with the view to improve the quality of F&V during transportation	Improved road conditions for purposes of ensuring quality in delivery of goods and lower the cost of transportation	80% of all commercial farming areas to be serviced by a reasonable standard road by 2027	4 quarter of 2027	FVIWC DARD MIPU Private sector Universities	Donors
<b>4.8</b> Conduct training on appropriate packaging of fruits and vegetables	Conduct community awareness and training amongst packers and farmers on quality packing methods	Packing to become standardized with some level of traceability and consumer conscious	90% of all market centres to enforce some packing standards by 2019	4 quarter of 2025	FVIWC DARD MIPU Private sector	Donors

					Universities	
<b>4.9</b> Train transport drivers on proper handling and transportation of fruits and vegetables	Develop awareness and educational materials for the training of transporters and transport owners on safe handling methods for the F&V sector	Approved licences by TA for the transportation of F&V to market centres	90% of F&V transports are to be licensed under an approval of the TA in order to operate by 2019	4 quarter of 2019	FVIWC DARD MIPU Private sector Universities	Donors
<b>4.10</b> Use specialised vehicles and carriers to transports fruits and vegetables.	Approval of standard vehicles for the transportation F&V under ministerial orders and the approval of the Transport Authority (TA)	Approved vehicle type for the transportation of F&V to markets centres	100% of transport vehicles for the F&V sector are to be standardized by 2019	4 quarter of 2025	FVIWC DARD MIPU Private sector Universities	Donors
<b>4.11</b> Introduce proper transportation standard requirements for transporting specific fruits and vegetables	Collaborate with the TA personals in establishing a transport system that guarantees maximum safety for F&V producers	Appropriate storage facilities, with recommended temperature subjected to correct cover material for protection of F&V	100% of transporting vehicles are to meet a food safety transportation standard by 2019	4 quarter of 2025	FVIWC DARD MIPU Private sector Universities	Donors
<b>4.12</b> Engage cooperatives societies to promote collection packaging, handling and marketing of F&V products	In small scale producing areas collaborate with the department of cooperatives with the view to increase in scale and improve quality through adhering to packing standards	Small rural communities able to participate, compete and access main market centres through accumulation of scale via cooperatives societies in their areas	80% of cooperatives in rural areas to incorporate F&V packing facilities by 2020	4 quarter of 2020	FVIWC DARD MIPU Private sector Universities	Donors

**Objective 5: Improve market segmentation and diversification through value addition and processing**

Priority Intervention	Planned Activity	Expected Results	Performance Indicator	Time Frame	Lead Agency	Implementing Partners
<b>5.1.</b> Encourage value adding and processing at all levels of the community	Conduct national awareness to the importance and significance of value adding and processing	Significant percentage of the producer population is knowledgeable of the	Observed 20% of commercial F&V raw produce is value added and processed by 2020	4 quarter of 2020	FVIWC DARD DoI Private sector	Donors

	with regards to shelf-life and longevity in the F&V sector	benefits of value adding to raw products			VBS FTDC &AU	
<b>5.2</b> Enhance value adding and processing capacity amongst primary and secondary producing communities	Facilitate training and upskilling programs targeted at alleviating wastage at the primary and secondary stages of the sector	Emergence of division of industrial specialization in the F&V sector	Segregation of specialization on primary and secondary processing is 50% stabilized by 2025	4 quarter of 2025	FVIWC DARD DoI Private sector VBS FTDC &AU	Donors
<b>5.3</b> Facilitate awareness raising and training on packing and packaging standards to stakeholders	Develop training manuals on packing and packaging standards for purposes of raising awareness to the stakeholder community	High prevalence of awareness on packing and packaging standards amongst producer population	80% of F&V products sold in market outlets to be pack and packaged in standard material and to standard size and weights by 2022	4 quarter of 2025	FVIWC DARD DoI Private sector Private sector VBS FTDC &AU	Donors
<b>5.4</b> Facilitate training and upskilling in quality control to all stakeholders	Develop training manuals on F&V quality control measures and requirements for purposes of raising awareness amongst stakeholder community	High prevalence of awareness on quality control measures and standards amongst producer population	80% of all F&V products to adhere to some quality control by 2025	4 quarter of 2025	FVIWC DARD DoI Private sector Private sector VBS FTDC &AU	Donors
<b>5.5</b> Facilitate development of different packing and packaging standards for different products	Develop training manuals for raising awareness with respect to the various packing and packaging standards for different products	High prevalence of awareness on different packing and packaging standards for different products amongst producer population	80% of different products to adhere to specific packaging standard by 2025	4 quarter of 2025	FVIWC DARD DoI Private sector	Donors
<b>5.6</b> Facilitate development of different packing and packaging standards for different market segments	Develop training manuals for raising awareness with respect to the various packing and packaging standards for different market segments	High prevalence of awareness on different packing and packaging standards for different market segments amongst producer population	80% Of products sold at all marketing segments to reflect required standards of packaging for those segments by 2025	4 quarter of 2025	FVIWC DARD DoI Private sector VBS FTDC &AU	Donors

<b>5.7</b> Facilitate development of different level of standards for each physical infrastructure for each market segment	Develop training manuals for raising awareness with respect to the various levels of standards for the physical infrastructure for each market segment	High prevalence of awareness on different standards for of physical structure for each market segment amongst stakeholders and producer population	80% of all levels of market segments to reflect the approved standard physical structures required for that segment	4 quarter of 2025	FVIWC DARD DoI Private sector VBS FTDC &AU	Donors
<b>5.8</b> Establish new market outlets and improve current market display facilities	Increase the number and availability of access to market outlets for all segments and make improvement to displays facilities for all current facilities	Increased volume at all levels and stages of production	Available market space to increase by 80% by 2025	4 quarter of 2025	FVIWC DARD DoI	Donors
<b>5.9</b> Improve storage and cooling facilities for all market segments	Assess quality of current facilities against expected quality demanded by the F&V market and set the standards for improvement	Uniformity and consistency in quality and standards of market outlets for all segments	Observed improvement in all market storage facilities by 2025	4 quarter of 2025	FVIWC DARD DoI Private sector VBS FTDC &AU	Donors
<b>5.10</b> Determine respective machineries for specific value adding and processing of fruit and vegetables	Identify the different value adding initiatives that are being or will be undertaken for various market segments and facilitate for the importation of respective machineries	Availability and access to machinery for value adding and processing	Value adding machines in proportionate to 50 producers per value adding machines by 2025	4 quarter of 2025	FVIWC DARD DoI Private sector VBS FTDC &AU	Donors
<b>5.11</b> Facilitate training for the use of machineries used in value adding and processing of fruits and vegetables	Develop operating and safety training manuals for all category of value adding and processing machineries in the F&V sector	High prevalence of knowledge on safety operation and management of value adding and processing machines	90% of users organizations of value adding machines are able to service and maintain their machines from their own sources by 2020	4 quarter of 2025	FVIWC DARD DoI Private sector VBS FTDC &AU	Donors
<b>5.12</b> Establish labs for testing quality and put in place quality standards for fruits and	Identify four central locations on Efate, Malekula, Santo and Tanna for the setting up of F&V testing laboratories where samples can be tested regularly	Improved access to F&V testing facility	90% of producers are able to have immediate access a F&V testing facility by 2025	4 quarter of 2025	FVIWC DARD DoI Private sector VBS	Donors

vegetables for the specific market segments					FTDC &AU	
<b>5.13</b> Conduct Training on labelling and labelling issues	Develop training manuals based on approved standard of labelling for respective market segments	High prevalence of knowledge on approved standard of labelling amongst producers	90% of producers have a fair understanding of the type o labelling requirement to adhere to in their particular market segment by 2025	4 quarter of 2025	FVIWC DARD DoI Private sector VBS FTDC &AU	Donors
<b>Objective 6: Establish market information and intelligences</b>						
Priority Intervention	Planned Activity	Expected Results	Performance Indicator	Time Frame	Lead Agency	Implementing Partners
<b>6.1.</b> Facilitate more opportunities for the marketing of F&V products	Undertake market survey to determine the different market dynamics and marketing opportunities that may exist within the different marketing segments	Greater insights and understanding into dynamics of the different market categories	Survey report by end of 2018	4 quarter of 2018	FVIWC DARD DFET DoI Private sector	Donors
<b>6.2</b> Segment all the F&V markets and identify the type and level of production to supply these markets	Develop an act of parliament to specify the different market segments including the enforcement of rules and regulations governing types and level of production		Market Act pass by parliament of Vanuatu by 2018	4 quarter of 2025	FVIWC DARD DFET DoI Private sector	Donors
<b>6.3</b> Facilitate establishment of new opportunities for domestic rural fresh and value added markets in major island	In all market centres create separate areas and facilities for the display and sales of fresh and value added F&V products	Distinct locations for selling of fresh and value added products in all major market centres	Municipality markets in Port Vila, Luganville and Lenakel to display these features by 2019	4 quarter of 2019	FVIWC DARD DFET DoI Private sector	Donors
<b>6.4</b> Facilitate establishment of new	Develop an export financing support facility for assisting potential local entrepreneurs	Increased specialization in the export sector with more opportunities	50% increase in the number of fresh and	4 quarter of 2025	FVIWC DARD DFET	Donors

fresh and value added export markets for F&V products with comparative advantages	intending to engage in the exportation of agricultural crops including F&V products	available in the export market to be exploited by both fresh and value added producers	value added producers of F&V by 2019		DoI Private sector	
<b>6.5</b> Conduct specific trainings on areas of domestic and export marketing to all relevant stakeholders	Develop market training manuals aimed at equipping domestic marketeers and exporters of F&V products with the latest know-how on competitive marketing	Increased prevalence of capable marketing and export agencies for both domestic and export markets	50% increase in sustained available export markets to Australia and New Zealand by 2019	4 quarter of 2019	FVIWC DARD DFET DoI Private sector	Donors
<b>6.6</b> Facilitate market support to farmer associations to ensure consistency in volume and supply to markets	Identify most effective forms of market support mechanism needed by farmer associations	Increase scale and quality of production	Sustain 20% growth in all market segments beginning from 2018	4 quarter of 2018	FVIWC DARD DFET DoI Private sector	Donors
<b>6.7</b> Complement market efficiency by supporting middle men or brokers to ensure supply consistency of fruits and vegetables to the markets.	Develop support program aimed at improving the effectiveness of middlemen and brokers in enhancing the expansion of markets through consistency of supply	Sustained supply for current and newly opened market segments	50% increase in number of middleman and brokers by 2020	4 quarter of 2020	FVIWC DARD DFET DoI Private sector	Donors
<b>6.8</b> Facilitate improvement of collection of domestic marketing data and information from production to marketing including waste	In collaboration with relevant government agencies including provincial authorities, develop an effective system of data collection to be used at farm gate, collection centres and markets centres	Market information is more segregated depicting data at all respective levels of marketing	Observed increased in number of producers for respective segments and corresponding increase in number of buyers by 2019	4 quarter of 2019	FVIWC DARD DFET DoI Private sector	Donors
<b>6.9</b> Facilitate dissemination of market information for both	Utilize all relevant medias including the TVL and Digicel companies for the dissemination	Up to date market information is readily available to potential buyers and producers in	The TVL and Digicel are incorporated into the F&V market	4 quarter of 2019	FVIWC DARD DFET DoI	Donors

fresh and value added products at the rural and urban markets to relevant stakeholders	of market information in both urban and rural areas	the rural and urban areas	intelligence network system by 2019		Private sector	
<b>6.10</b> Improve organization of and dissemination of F&V export marketing data and information	Develop an annual reporting system and format that depicts all relevant information pertaining to the demand within the export market	Increased level of awareness amongst exporters and policy makers in order to further improve the export sector	First such annual report to be released in 2018	4 quarter of 2018	FVIWC DARD DFET DoI Private sector	Donors
<b>6.11</b> Regular updating of market information and intelligence for all categories of markets and market segment.	Establish a F&V market information office within the department of industry for the collection and dissemination of up to date information in all market segments	Increased production and value adding reflecting the demands of the market	Office to be establish by 2019	4 quarter of 2025	FVIWC DARD DFET DoI Private sector	Donors

## 11. Strategy Monitoring and Evaluation Plan

In order for this strategy to be successfully implemented it is necessary to include a section on monitoring and evaluation. An industry working group will be established for purpose of undertaking these tasks in collaboration with DARD and other relevant stakeholders.

### 11.1 Strategy Implementation Process

The success of this coconut strategy heavily lies on its effective implementation and regular monitoring and periodic evaluation. For these two things to happen, a number of factors first will need to be addressed. They are:

- a) Establishment of the Vanuatu National Fruits and Vegetable Industrial Working Committee, financial resourcing of the Industrial working Committee and recruitment of committee office bearers;
- b) Review and restructuring of the VARTC in line with the objectives and activities outlined in this strategy;
- c) Capacity building exercises for DARD staffs to ensure that follow up on implementation is effectively and efficiently undertaken. Special trainings on non-conventional issues/demands in agriculture development must be organized. For example on the facilitation on the establishment of the brokers and middlemen along the value chain and change of mindset of farmers;
- d) Restructuring in the Department of Agriculture & Rural Development is necessary to allow for implementation of this National Fruits and vegetables Strategy including any other strategies aimed at expanding the agriculture sector. This will require Government to increase its annual budgetary allocation to DARD;
- e) Regular monitoring of the implementation and effectiveness of the fruits and vegetable strategy will be undertaken via forums such as the NTDC. Additionally a dedicated effort to revise and strengthen strategy indicators must be made with great urgency;
- f) Farmer and producers associations in the provinces must be strengthened through legislative intervention and by providing ongoing public awareness about the contents of this strategy. During the course of developing this strategy, consultations with communities have established some level of networking in the communities. Further follow up consultations will need to be undertaken to ensure that momentum and dialogue is maintained over a long term;
- g) Dialogue and awareness among fruits and vegetable sector stakeholders in all levels of the society should be maintained on a regular basis to capture, both formally and informally, feedbacks on the strategy implementation progress;
- h) A mid-term review of this fruits and vegetable sector strategy should be completed in 2022. This review will facilitate production of reports which will then be useful for engaging potential donors in the event of any additional developments relating to the implementation of the strategy;

- i) The final evaluation of the outcome of this fruits and vegetable strategy will be undertaken at the end of 2027. A review should therefore be planned for 2026-2027.

### 11.2 Monitoring & Evaluation

Currently there are severe data limitations for monitoring Agriculture sector outcomes including the fruits and vegetable sector and a first priority will therefore be to establish a minimum set of core indicators that need to be measured. It will then be important to ensure the relevant data is collected in any future agriculture surveys,

HIES, Demographic Health Surveys, nutritional surveys, and Population Census.

Whereas this strategy will require a more qualitative assessment based on the general perceptions of sector experts and stakeholders, the development of a Monitoring & Evaluation Matrix for this strategy is essential, and must urgently be linked to policies and monitoring programs led by DSPPAC in close cooperation with Vanuatu VNSO. In conjunction to linkages to sectoral policies and strategies, the need for aligning this strategy's outcomes to the National Sustainable development Plan recently launched this year.



“It is important to ensure that data is collected in any future agriculture surveys, HIES, Demographic Health Surveys, nutritional surveys, and Population Census”

Vegetable Farm, North Pentecost

## 12. APPENDICES

### a. List of Sources Consulted

Edwin Tamasese, (2011), Samoa Domestic Market Study: Assessing the effectiveness of the current domestic market data collection to determine the likely impact of increase vegetable production.

Emily Morgan, unknown, Food and Vegetable Consumption and waste in Australia: Recommendations towards a food supply system framework that will deliver food in a sustainable way.

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IFC (2015), Vanuatu Agri-Tourism linkages: A baseline study of Agri demand from Port Vila’s hospitality sector.

ITC (2009), A sector development strategy for the fruits and vegetable and roots and tubers in Fiji

Mael Joshua (2011), Vanuatu Domestic Market Study: The potential impact of increased tourist on the domestic market for selected fresh vegetable products

Philips, K. and Kermanns, L., (2012), Vanuatu Cost of doing Business

Tim Martyn (2011), Fiji Domestic Market Study: Opportunities and Challenges for vegetable import substitutions

Vanuatu Government (2015), Vanuatu National Agriculture Policy

Vanuatu Government (2013), Vanuatu National Plan of Action on Food and Nutrition Security 2013-2015

Vanuatu Government (2009), 2009 Census Report

Vanuatu Government (2013), a report by WHO on Vanuatu NCD risks factors STEPS report

## b. Analysis of Market Baseline Indicators and Expected Performance Target

The purpose of the table below is to assist the DARD and the fruits and vegetable sector to monitor growth and development in the sector from a quantitative perspective. It is not meant to be a tool for assessing growth.

Objectives	Baseline indicator	Expected Performance Targets
Facilitating effective coordination of the sector	N/A	
	N/A	20% increase in membership in producers cooperatives over the period 2017-2019
	N/A	10-20% increase in production of F&V over the period 2017-2019
	N/A	average annual increase of more than 20% sales of fresh and value added products in the domestic and export markets annually over period 2022-2025
Improved soli analysis, seeds and seedlings with high relevance to the demands of the domestic and export markets	N/A	A 20% increase in number of growers producing high value products with seeds sourced from nearby
	N/A	50% of farmers utilizing climate resilience nursery infrastructure by 2019
	N/A	50 km of water carrying irrigational infrastructure put in place
	N/A	4 F&V related hardware outlets established on Tanna and Malekula by 2018
	N/A	Inventory of soil types for different varieties for 5 major producing islands
	N/A	Inventory of favourable geographical locations in terms of altitude for the production of certain F&V all year round By 2019
	N/A	20% increase in number of farmers and growers engaging in growing F&V prioritized varieties that have a high demand in the domestic

	N/A	20% increase in effective land planning and utilization
Establish the basis for Good Agricultural Practices (GAP) in the Fruits and Vegetable Sector	N/A	50% of all farmer applications for loan approved annually by 2019
	N/A	50% increase in number of personal and association having immediate access to a tractor or rotovator by 2020
	N/A	Annual average of 10% reduction in the running cost of production at all levels in the sector by 2021
	N/A	50% increase in volume of F&V products purchased locally by hoteliers
	N/A	Annual reduction of 5% in NCD growth rate
	N/A	A 50% improvement in the quality of F&V products amongst 80% of the farmer community in 2020
	N/A	20% improvement in the amount of Brix for each priority F&V by 2019
	N/A	80% of the extension services of the DARD be under private sector responsibility by 2019
	N/A	10% of F&V farmers to be outputs of the proposed apprenticeship arrangements with Australia and New Zealand by 2025
	Enhance the quality and shelf life of fruits and vegetable products	N/A
N/A		100% of subsidized packing centres able to be self-sustained after the end of the project in 2025
N/A		80% of commercial farmers be able to access a cool room by 2025
N/A		80% of marketed F&V products in all market segments to be packaged in some form by the 2020
N/A		80% of the country's farming network to be centred around a central packing system supported by the middleman/broker of cooperative system

	N/A	80% of all commercial farming areas to be serviced by a reasonable standard road by 2027
	N/A	90% of all market centres to enforce some packing standards by 2019
	N/A	90% of F&V transports are to be licensed under an approval of the TA in order to operate by 2019
	N/A	100% of transport vehicles for the F&V sector are to be standardized by 2019
	N/A	100% of transporting vehicles are to meet a food safety transportation standard by 2019
	N/A	80% of cooperatives in rural areas to incorporate F&V packing facilities by 2020
Improve market segmentation and diversification through value addition and processing	N/A	20% of commercial F&V raw produce is value added and processed by 2020
	N/A	Segregation of specialization on primary and secondary processing is 50% stabilized by 2025
	N/A	80% of F&V products sold in market outlets to be pack and packaged in standard material and to standard size and weights by 2022
	N/A	80% of all F&V products to adhere to some quality control by 2025
	N/A	80% of different products to adhere to specific packaging standard by 2025
	N/A	80% of products sold at all marketing segments to reflect required standards of packaging for those segments by 2025
	N/A	80% of all levels of market segments to reflect the approved standard physical structures required for that segment
	N/A	Ratio of 50 producers to 1 value adding machines to be achieved by 2025

	N/A	90% of users organizations of value adding machines are able to service and maintain their machines from their own sources by 2020
	N/A	90% of producers are able to have immediate access a F&V testing facility by 2025
	N/A	90% of producers have a fair understanding of the type o labelling requirement to adhere to in their particular market segment by 2025
Establish market information and intelligences	N/A	80% of all market segments in Vanuatu able to be reported
	N/A	Market Act pass by parliament of Vanuatu by 2018
	N/A	80% of producers for all market segments be able to access a proper market facility 2019
	N/A	50% increase in nutritional value (brix) of fresh and value added producers of F&V by 2019
	N/A	50% increase in sustained available export markets to Australia and New Zealand by 2019
	N/A	Sustain 20% growth in all market segments beginning from 2018
	N/A	50% increase in number of middleman and brokers by 2020
	N/A	50% of producers are market intellect literate by 2019

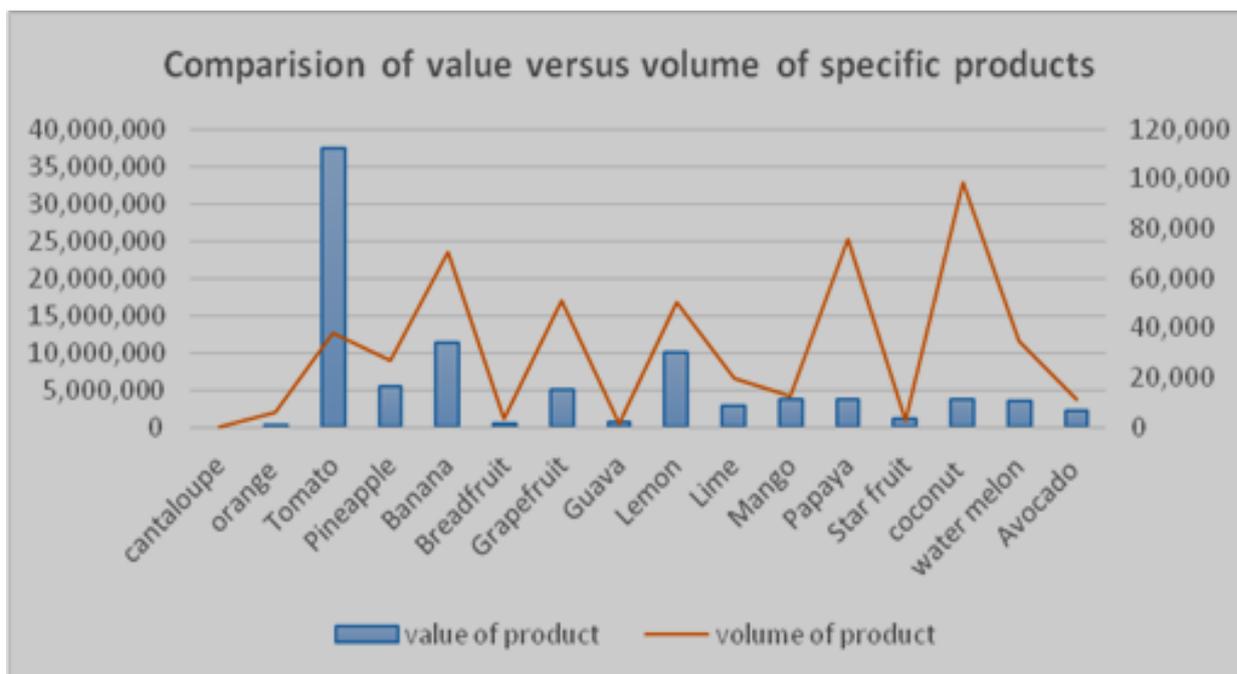
### c. Lead Government Ministries

Objectives	Government Ministry
Facilitating effective coordination of the sector	Ministry of Agriculture, Fisheries, Forestry, Livestock and Biosecurity
	Ministry of Tourism, Industry, Commerce and Business Development
	Ministry of Finance & Economic Management
Improved soil analysis, seeds and seedlings with high relevance to the demands of the domestic and export markets	Ministry of Agriculture, Fisheries, Forestry, Livestock and Biosecurity
	Ministry of Tourism, Industry, Commerce and Business Development,
	Ministry of Education
	Ministry of Finance & Economic Management
Establish the basis for Climate Smart Agricultural Practices in the Fruits and Vegetable Sector	Ministry of Agriculture, Fisheries, Forestry, Livestock and Biosecurity
	Ministry of Tourism, Industry, Commerce and Business Development,
	Ministry of Education
	Ministry of Finance & Economic Management
	Ministry of Climate Change
Enhance the quality and shelf life of fruits and vegetable products	Ministry of Agriculture, Fisheries, Forestry, Livestock and Biosecurity
	Ministry of Tourism, Industry, Commerce and Business Development,
	Ministry of Public Utilities
	Ministry of Finance & Economic Management
Improve market segmentation and diversification through value addition and processing	Ministry of Agriculture, Fisheries, Forestry, Livestock and Biosecurity
	Ministry of Tourism, Industry, Commerce and Business Development,

	Ministry of Public Utilities
	Ministry of Finance & Economic Management
Establish market information and intelligences	PMO
	Ministry of Agriculture, Fisheries, Forestry, Livestock and Biosecurity
	Ministry of Tourism, Industry, Commerce and Business Development,
	Ministry of Public Utilities
	Ministry of Finance & Economic Management

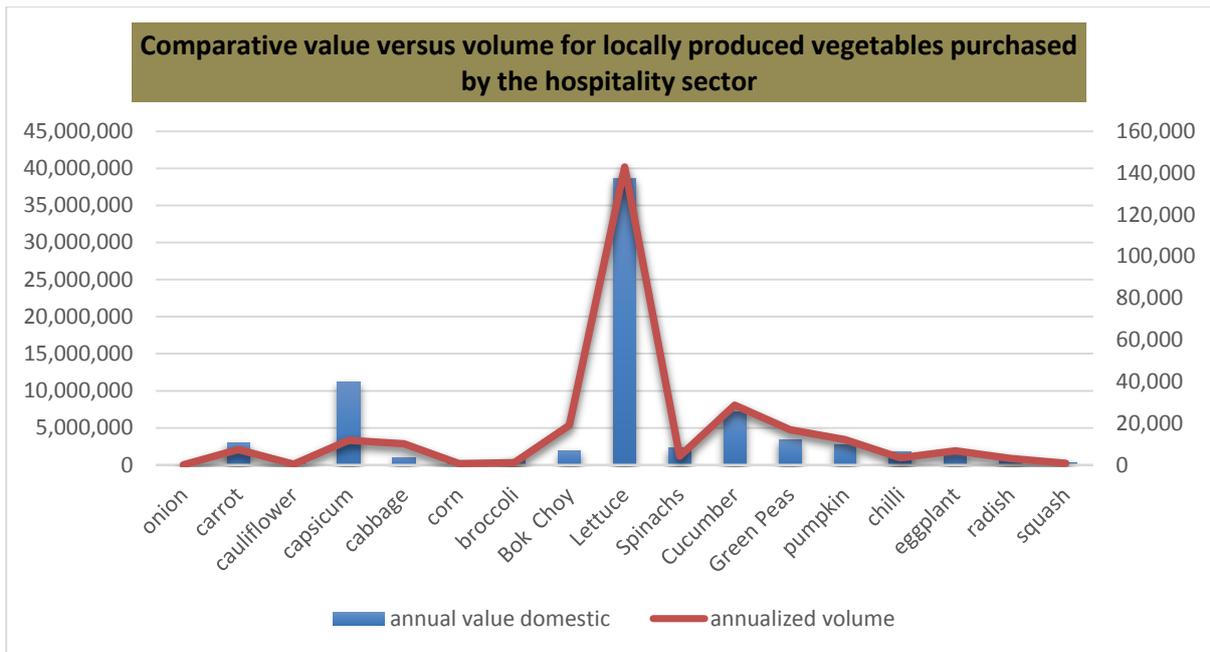
#### d. Fruits prioritization list

Fruit	Imports as percentage of product demand	Priority based on percentage of imports in value	Technical feasibility of local production
Cantaloupe	Above 80%	high	High
Orange	20-80%	high	High
Tomato	20-80%	high	High
Pineapple	Below 20%	medium	High
Water melon	Below 20%	medium	High
Banana	0%	low	High
Breadfruit	0%	low	High
Grapefruit	0%	low	High
Guava	0%	low	High
Lemon	0%	low	High
Lime	0%	low	High
Mango	0%	low	High
Papaya	0%	low	High
Star fruit	0%	low	High
Coconut	0%	low	High



### e. Vegetable Prioritization List

Vegetable	Imports as percentage of product demand	Priority based on percentage of imports in value of fruits	Technical feasibility of local production
Onion	Above 80%	high	High
Broccoli	Above 80%	high	high
Carrot	20-80%	high	High
Cauliflower	20-80%	high	Medium
Capsicum	20-80%	high	High
Cabbage	20-80%	medium	High
Corn	20-80%	medium	High
Spinach	Below 20%	medium	High
Lettuce	Below 20%	High	High
Bok Choy	Below 20%	low	High
Cucumber	Below 20%	low	High
Green Beans	0%	low	High
Pumpkin	0%	low	High
Chilli	0%	low	High
Egg Plant	0%	low	High
Radish	0%	low	High
Squash	0%	low	high

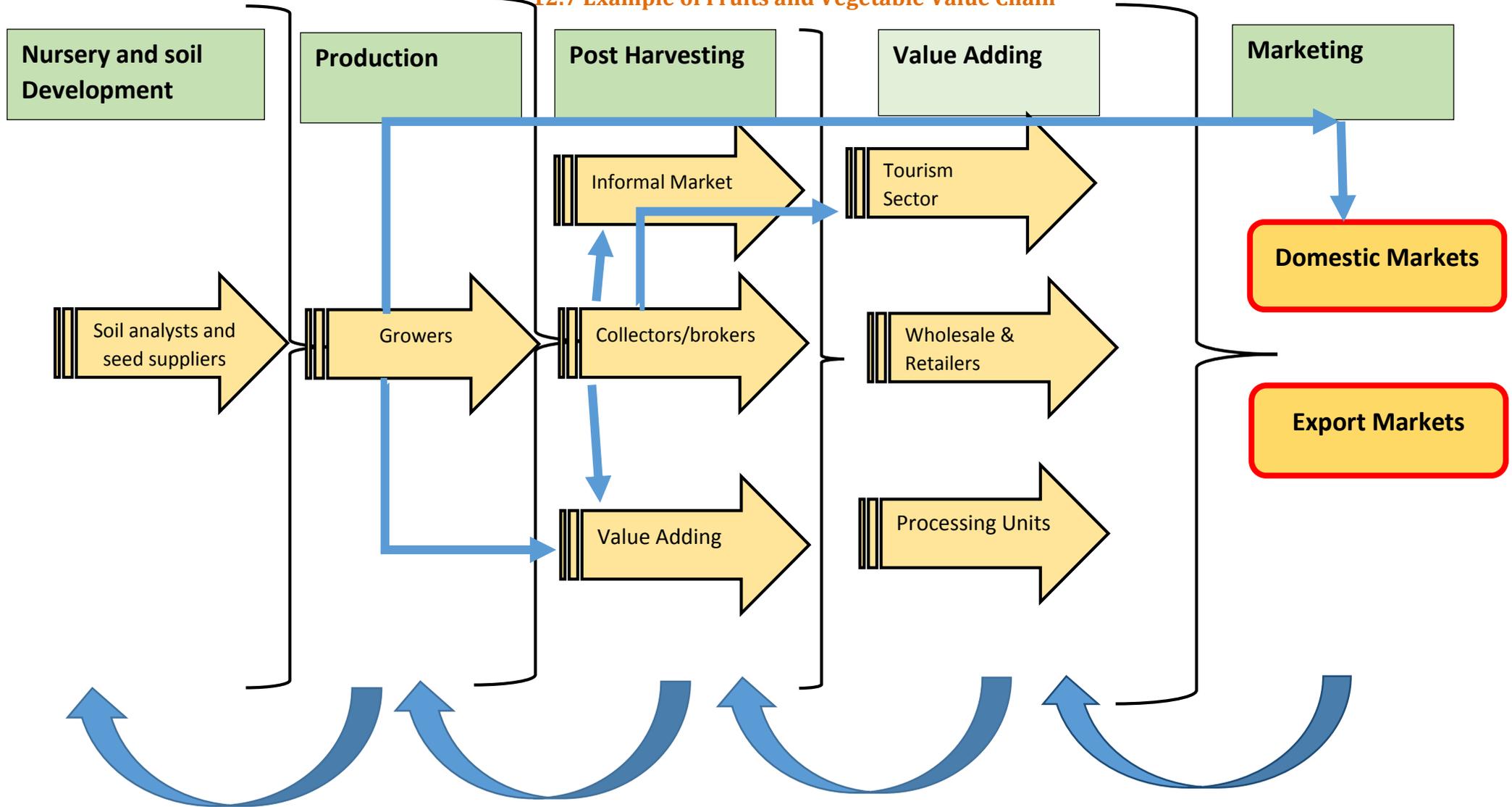


**f. Matrix of scope of the Strategy**

Stage	Functions	Stakeholders
<b>Nursery</b>	<ul style="list-style-type: none"> <li>- Ensure adequate supply of high value seeds and planting materials available and accessible to growers</li> <li>- Collaborate with relevant agencies for ensuring regeneration of genetically adaptive planting materials</li> </ul>	<ul style="list-style-type: none"> <li>- DARD</li> <li>- VAS</li> <li>- VARTC</li> <li>- Development partners</li> <li>- Private sectors</li> </ul>
<b>Production</b>	<ul style="list-style-type: none"> <li>- Ensuring that the supply side is matched with the expectation of the demands of the current and future potential markets.</li> <li>- Ensuring that production is undertaken in consideration with the social and environmental wellbeing.</li> </ul>	<ul style="list-style-type: none"> <li>- DARD</li> <li>- MIPU</li> <li>- Development partners</li> <li>- Private sectors</li> </ul>
<b>Post harvesting</b>	<ul style="list-style-type: none"> <li>- Ensuring maximum care in handling of products during harvesting</li> </ul>	<ul style="list-style-type: none"> <li>- MIPU</li> <li>- DoI</li> <li>- Private sectors</li> </ul>

	<ul style="list-style-type: none"> <li>- Transportation, logistics and storage</li> <li>- Washing, Grading and sorting of fruits and vegetable products</li> <li>- Delivery of finished raw products</li> </ul>	
<b>Value Adding</b>	<ul style="list-style-type: none"> <li>- Packaging and labelling of semi-finished and finished products</li> <li>- Branding requirements and adhering to primary standards</li> <li>- Organizing standardization of market and vending outlets</li> </ul>	<ul style="list-style-type: none"> <li>- DoI</li> <li>- DoT</li> <li>- Private sectors</li> </ul>
<b>Marketing</b>	<ul style="list-style-type: none"> <li>- Facilitating accession to domestic and export markets</li> <li>- Enhancing local retail and wholesale</li> </ul>	<ul style="list-style-type: none"> <li>- Department of industry</li> <li>- VTO</li> <li>- Private sectors</li> </ul>

### 12.7 Example of Fruits and Vegetable Value Chain



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