



# Study on Botswana Horticultural Value Chain Mapping and Analysis – 2023

Horticulture Webinar – Local Enterprise Authority  
20 MARCH 2025

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# Structure of the presentation

Introduction

Methodological  
approach

Selection of priority  
vegetables

Value chain mapping  
and analysis

The Policy, Institutional  
and Regulatory  
Framework and Support  
Services

Demand Analysis,  
Processing and Export  
Potential

Challenges,  
Opportunities and  
Areas of Competitive  
Advantage

Conclusions and  
Recommendations  
(Value Chain Upgrading)

# Introduction

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- Horticulture one of the priority sectors for economic diversification and employment creation
- Support from government
  - Special ISPAAD/IAS
  - Control of Goods, Prices and Other Charges Act – import controls
  - Fresh Produce Markets
  - Government Continued Commitment
  - Vision 2036
  - Reset Agenda – Value chain development and horticulture included
  - Economic Recovery and Transformation Programme – Horticulture included
  - **Import ban**
  - Horticulture Strategy

# Introduction

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- Government efforts have somewhat contributed to increased production and area planted
- Net imports in fruits and vegetables have also been reduced
- However, net imports in processed products has increased
- Local demand has somewhat decreased because of the import ban on selected vegetables as local production is still trying to catch up

# Introduction

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- Previous studies on horticulture value chain
- LEA 2008
- ITC 2015
- Need for a new study
- Developments have taken place
  - **Import ban**
  - Covid 19 and its response
  - Collapse of the FPMs and BHM

# Study Objectives

*Main objective* – “undertake horticulture value chain mapping and analysis for informing government policy, project activities and crop identification”

## **Specific objectives**

Document full range of processes and activities from start and end

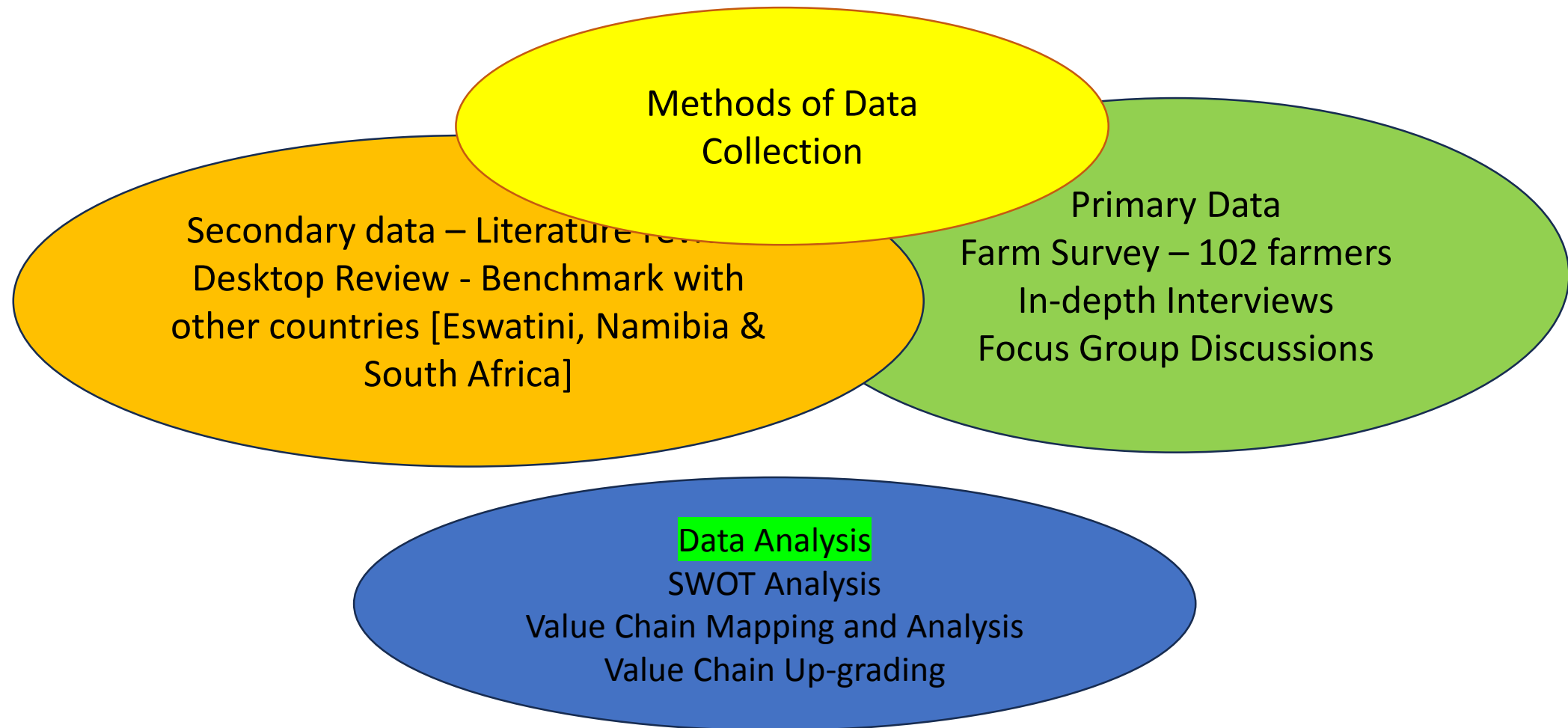
Identify and quantify categories of key actors in each value chain activity

Provide an assessment of competency within each interlink in the chain

Identify gaps, barriers, challenges, opportunities and inefficiencies across the value chain

Identify and justify areas of competitive advantage that may be leveraged to ensure optimisation of commercialisation of the horticulture sector

# Methodological Approach



# Selection of Priority Sectors

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# Selection of priority crops – Criteria

Theme	Sub-themes	Evidence
Competitiveness	On the balance of trade	Export growth or import substitution
	Potential for productivity increase	Current productivity level vs efficient
	Potential for employment	Number of people employed
Capacity and Skills	Soil and climate suitability	Can the crop be grown throughout the country and all year round
	Farmers and extension - knowledge	Knowledge of farmers on production and management
Potential Impact	Increase in income	Income earning capability
	Increase efficiency	Current efficiency vs technical possible
	Potential for further processing	Number of processed products
Feasibility	Interest of producers in the sector	Interest to invest by the private sector
	Interest of other actors in the value chain	Assessment of interest of other actors
	Local demand	Consumption potential for the crop

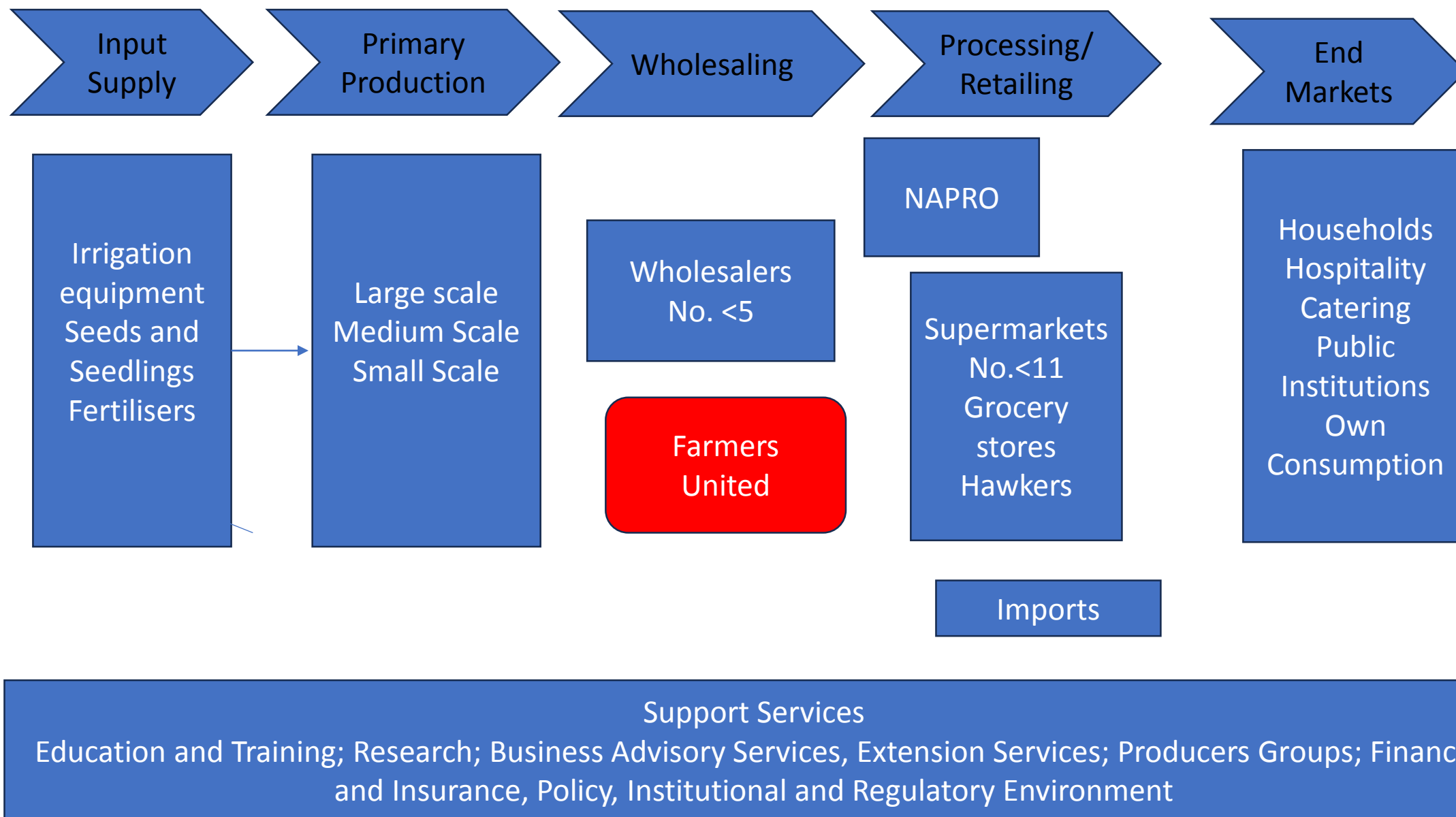
# Selection of Priority Sectors

## The Top 5 Vegetables

Crop	Score	Rank
Cabbage	3.43	1
Tomato	3.39	2
Potato	3.27	3
Onion	3.02	4
Rape	2.89	5

# The Value Chain Mapping and Analysis

- The Value Chain Map



# Value chain analysis – Input supply

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- About 20 input suppliers
- They supply seeds, seedlings, fertilisers and agrochemicals
- Specialised seed suppliers distribute their seeds through other input suppliers with retail outlets on commission basis
- Seed suppliers provide extension services on how to use their products through a variety of channels such social media platforms, radio and TV
- There is a growing number of seedlings producers
- Some manufacturing of fertilisers – especially organic fertilisers
- But the bulk of inputs used in horticulture are imported

# Value chain analysis – Input supply

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- **Constraints/Challenges**

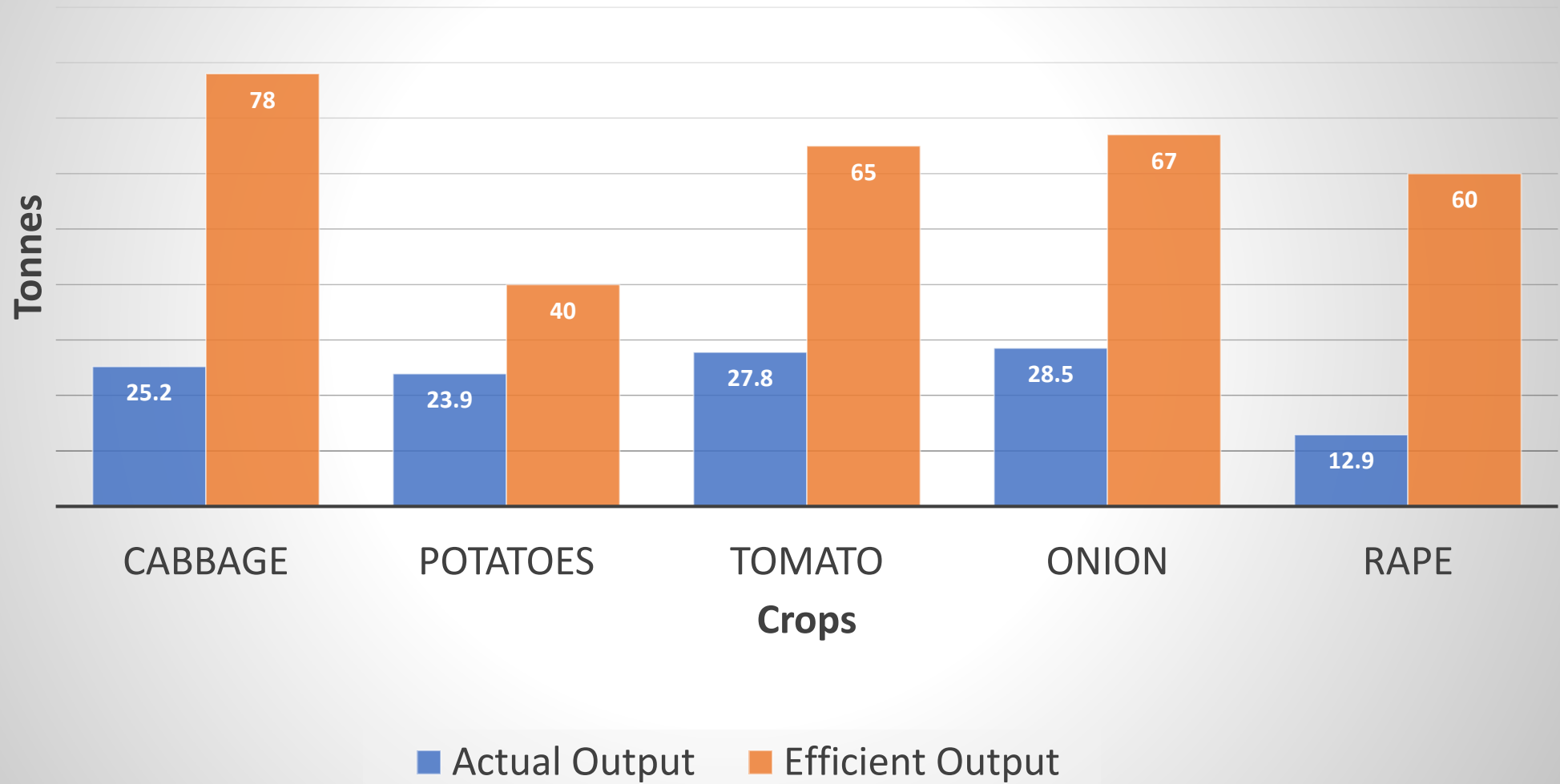
- Lack of seed policy and regulations leading to unregistered suppliers
- This disadvantages registered seeds suppliers as the unregistered ones do not pay tax
- They also pose risks of importing seeds which are contaminated with diseases and are of poor quality
- No certification for agro-chemicals and the country relies on third party certification which cannot be trusted

# Value chain analysis – Primary production

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- We have large scale, medium scale and small scale producers
- Majority of producers are small scale planting less than 5 hectares
- The farm survey revealed that the majority planted less than 2 ha

Figure 4.2: Actual Output vs Efficient Output





# Value chain analysis – Primary Production

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## **Technology, technical and farm business skills**

- Production technology – over 85% use open field despite the increase in the frequency of extreme weather conditions
- The main causes of in-field losses are pests and diseases, frost and hailstorms
- The main causes for post-harvest losses were cited as lack of market, poor storage, poor transportation and poor quality due to improper harvesting.
- Farm survey results indicate majority of farmers are educated with 91% having at least secondary school education and 56 having tertiary education
- In terms of education and training 56% indicated that they did not have any formal training in horticulture

# Constraints at primary production level

Low technology adoption especially  
production under protected environment

Low technical and business management  
skills

Unfavourable weather conditions

Pests and diseases

Lack of market access

Unreliable labour

Water salinity

# Value chain analysis - Wholesaling

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- There is limited wholesaling taking place
- The wholesalers do not sell their products to retailers/supermarkets as the latter have their own distribution centres who do the aggregation of products
- The wholesalers distribute the products to public institutions, and some do retailing.
- No pack houses in the country, retailers doing their own packaging
- **Constraints** – inconsistent supply and high prices after the import ban

# Value chain analysis - Processing

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- Limited processing taking place with NAPRO being the main processor
- The main products – tomato sauce (plain and chilli) raw materials used are tomato and chillies
- Pickled beetroots – beetroots
- Mixed vegetables – cabbage, carrots and onions
- Production of tomato sauce temporarily stopped because the varieties produced locally are not suitable for processing
- Some processing taking place at supermarkets and hawkers
- This involves cutting leafy vegetables such as cabbage, and rape

# Value Chain analysis – Processing

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- **Challenges/Constraints**
- NAPRO products have not been able to compete with established brands – shelf life and acceptance
- The plant has faced teething operational problems
- Inconsistency of supply from farmers
- Poor quality raw materials supplied - for example tomato varieties not suitable for processing

# Value Chain Analysis – Retailing

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- **Dominated by supermarkets** – eleven supermarkets with over 200 stores countrywide
- These have central buying centres which distribute the products to branches across the country
- The supermarkets package products before resale and as indicated earlier they undertake some processing
- Supermarkets source their products directly from farmers and imports
- Some have integrated vertically into production
- There are also small groceries store across the country in rural areas
- Hawkers are also an import actor at retail level, and they also undertake some processing – cutting of rape into pieces and packaging it for sale

# Value chain analysis – End Markets

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- End markets consist of:
  - Households
  - Public Institutions
  - Hospitality
  - Catering
  - The end markets are fed by local production and imports
- In 2022 government imposed a ban on importation of selected vegetables
- This reduced imports by 51% from BWP398 million to BWP195 million



# Value chain analysis – End Markets

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- Total consumption of fresh vegetables amounted to 120, 687,53 and 60,340.21 tonnes in 2021 and 2022 respectively (88% fall)
- In terms of production in 2021 – 75,448.92 tonnes were produced and in 2022 this fell to 67,612.22 tonnes.
- The value of local vegetable production stood at BWP883 million in 2021 and increased by 2.5% to BWP903 million in 2022.
- Net imports of processed vegetable products amounted to BWP235 million in 2021 and increased to BWP342 million an increase of 27%
- The estimated total value of vegetables (fresh and processed) amounted to BWP1.4 billion in 2021 and BWP1.3 billion in 2022.
- Estimated employment in the vegetable value chain is roughly 6000



# Value Chain Profitability - Gross margins

Farm Level Gross Margin		Processing Gross Margin			
Crop	Percent Gross Margin	Product	Item	Monthly (P)	Unit Basis
Cabbage	58	Mixed vegetables (450 grams)		264000	12
Tomato	65	Raw materials	cabbage	15840	0.72
Potato	63		Onions	21600	1.80
Onion	47		Carrots	16720	0.70
Rape	49	Labour costs		44280	2.01
		Packaging costs	Bottles	34,869.52	1.58
			Labels	8,800.00	0.40
		Total Variable Costs		142,115.52	7.28
		Gross Margin			4.72
		Gross Margin %			39%

## Share of consumer price – farmers and retailers

Crop	Farm Gate Price (BWP)	Retail Price (BWP)	Farmers share (%)	Retailers Share (%)
Cabbage	5.07	15.92	0.32	0.68
Tomato	12	18.1	0.66	0.34
Potato	8.5	14.58	0.58	0.42
Onion	8.6	15.9	0.54	0.46
Rape	4.5	5.82	0.77	0.23

# Gaps in the value chain

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- Lack of aggregation and logistics
- Lack of marketing infrastructure such a cold rooms
- Lack of Collection centres and central market
- Limited processing

# Policy, Institutional and Regulatory Framework

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# Policy, Institutional and Regulatory Environment

Policy/Intervention	Objectives
IAS – ISPAAD	Increase production; create employment, diversify the agricultural production base; provide essential farm inputs and equipment and improve competitiveness of the horticultural industry
Control of Goods, Prices and Other Charges Act – Import Controls and <b>import bans</b>	Improve market access
Fresh Produce Markets	Improve markets access

# Institutional Environment

Institution	Role
Ministry of Agriculture – Department of Crop Production [Horticulture Unit]	Extension services
Ministry of Agriculture – Department of Plant Health	Control of plant diseases and protection of plant health
Ministry of Agriculture – Department of Agribusiness Promotions	Promotion of commercialisation of agriculture – relocated to Ministry of Entrepreneurship
Ministry of Entrepreneurship	Entrepreneurial promotion
Ministry of Trade and Industry	Trade policy issues
Ministry of Lands and Water Affairs	Land allocation and water rights
Ministry of Education	Education and training
Ministry of Health	Food safety issues

# Regulatory Framework

Act/regulation	Purpose	Responsible
<i>The Control of Goods, Prices and Other Charges Act</i>	To control exports and imports. Import restrictions and bans - alleged smuggling of banned products	MIT
<i>Food Control Act</i>	To ensure provision of clean, safe and wholesome food to consumers – implementation weak in the horticultural industry as fresh produce flows direct from farms without any testing	MoA
<i>Plant Protection Act</i>	To prevent the introduction, spread and establishment of plant pests and facilitation of trade in plants and animals to enable Botswana to comply with international standards – Implementation weak as seeds enter the country without any checks being made	MoA

# Support Services – Technical and Business

Service Providers	Services provided
Horticulture Section	Extension services through officers in the districts But majority of famers did not receive extension advice from the Section
Local Enterprise Authority	Assists entrepreneurs across all sectors of the economy including horticulture Support provided is targeted to specific needs of an entrepreneur Mentors horticultural businesses to grow them into medium scale The Authority has clients it works with – it does not work with all horticultural farmers



# Financial and Insurance Services

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Provider	Services
Citizen Entrepreneurial Development Agency	Offers credit at subsidised rates to agribusinesses including horticulture. Credit to horticulture very low and most enterprises not performing well
National Development Bank	Offer credit to agriculture and currently implementing IAS on behalf of MoA
Commercial Banks	Commercial bank credit to agriculture has been low, from the farm survey no farmer took credit from commercial banks
Insurance	Agricultural insurance very underdeveloped, on demand side it appears that there is limited knowledge of the product. In fact, farm survey results indicate that farmers perceive insurance as expensive

# Education Training and Research and Standards

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Service	Providers
Education and Training , Research	BUAN, NARDI, Technical and Vocational Training Centres [Research conducted purely academic with limited demonstration at farmers' field]
Standards	BOBS – have set 33 standards for horticulture [Standards not mandatory]  There are companies that assist in building farmers' capacity for compliance in food and agriculture industries. These offer services to ensure that farmers meet generally accepted international standards

# Support Services – Advocacy and Marketing

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- Botswana Horticultural Council – umbrella body for horticultural associations
- Mandate is to provide advocacy to ensure that horticultural farmers work in conducive environment
- There are also farmers associations and clusters in different districts
- However, the associations appear to be weak
- Associations does have secretariat which they could help in achieving their mandate – including BOHOCO
- Another weaknesses reported is lack of commitment by members

# Other support partners

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- **Public Private Partnerships – Tokafala**
- Partnership between Government of Botswana, Anglo American and De beers
- Main objective is capacity development of small businesses across all sectors of the economy including horticulture
- Undertaken a study to identify the challenges facing the horticulture sector and has come up with several interventions to address these challenges
- The company is partnering with other stakeholders in the horticulture industry
- **Development partners** – GIZ with NDB floated invitation for proposals supporting green technology with founding up to P400,000.00 with 65% as grant and enterprises required to pay 35%.
- **FAO** – provided technical assistance to MoA for the national Horticultural Development Strategy

# Policy, Institutional and Regulatory Framework – Emerging issues

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- Supportive government interventions although no policy specific to horticulture
- Development of National Horticulture Strategy whose implementation should develop the sector further
- Several institutions offering support to the horticulture sector but support is uncoordinated
- Lack of enforcement of some regulations and some have been said to be outdated such as the Plant Protection Act
- Standards developed for the horticultural sector, but none of them are mandatory

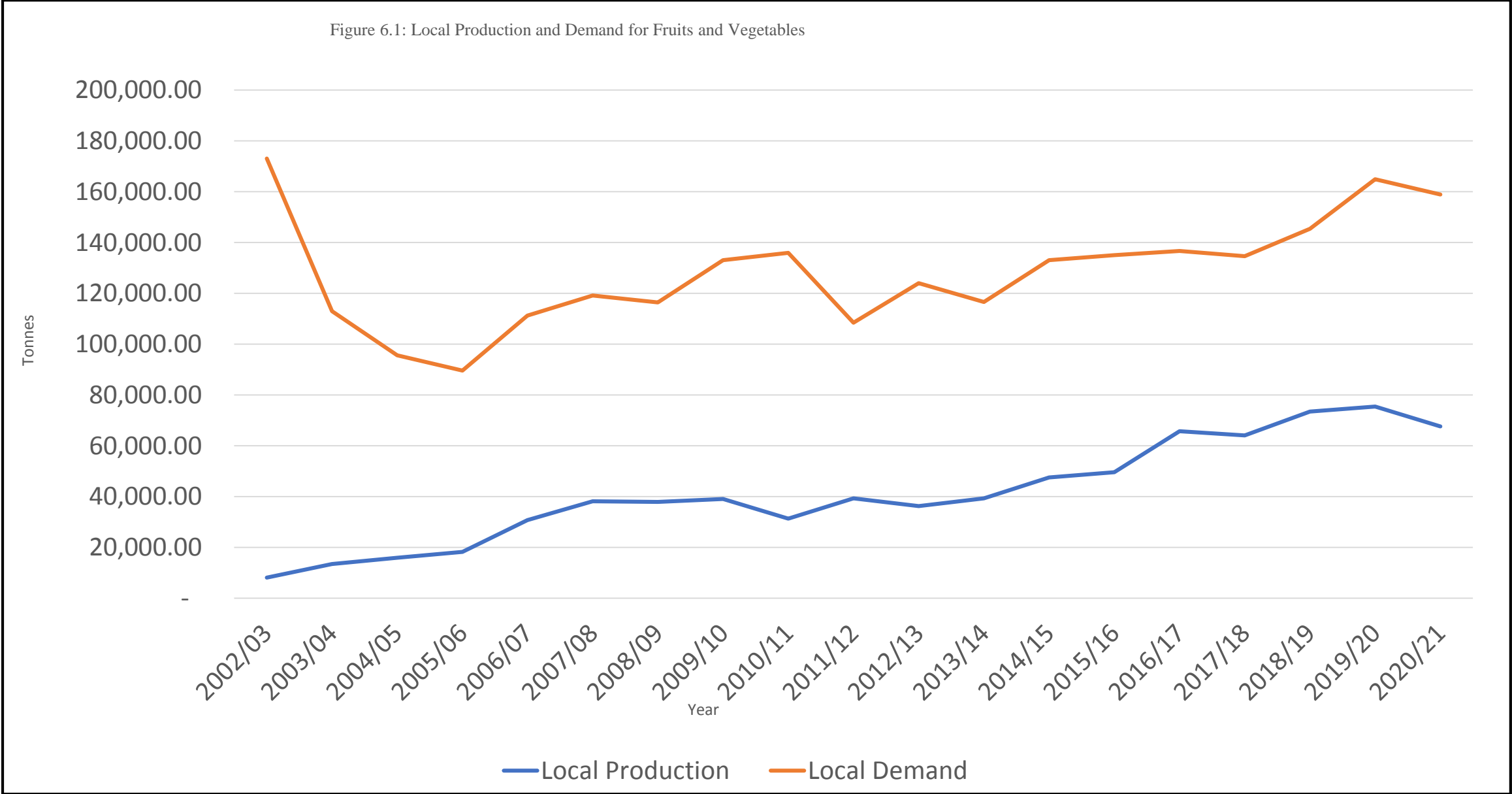
# Demand Analysis, Processing and Export Potential

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# Demand Analysis, Processing and Export Potential

Figure 6.1: Local Production and Demand for Fruits and Vegetables



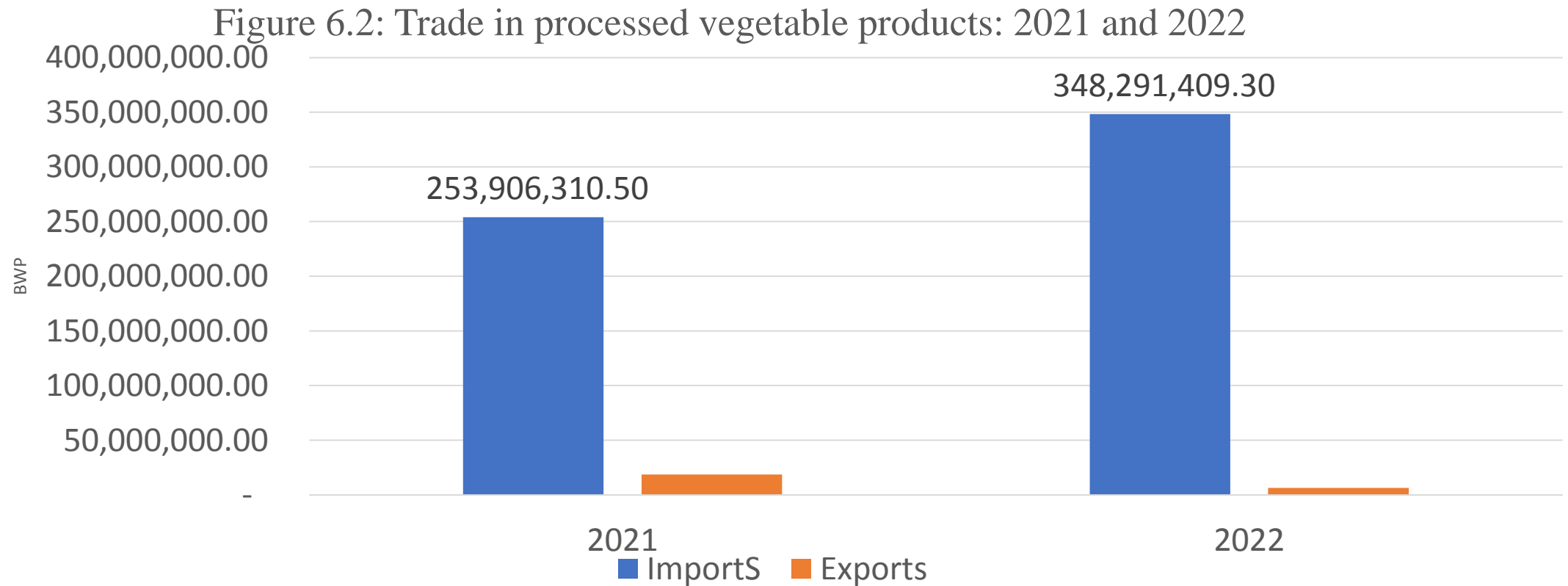
# Drivers of Demand

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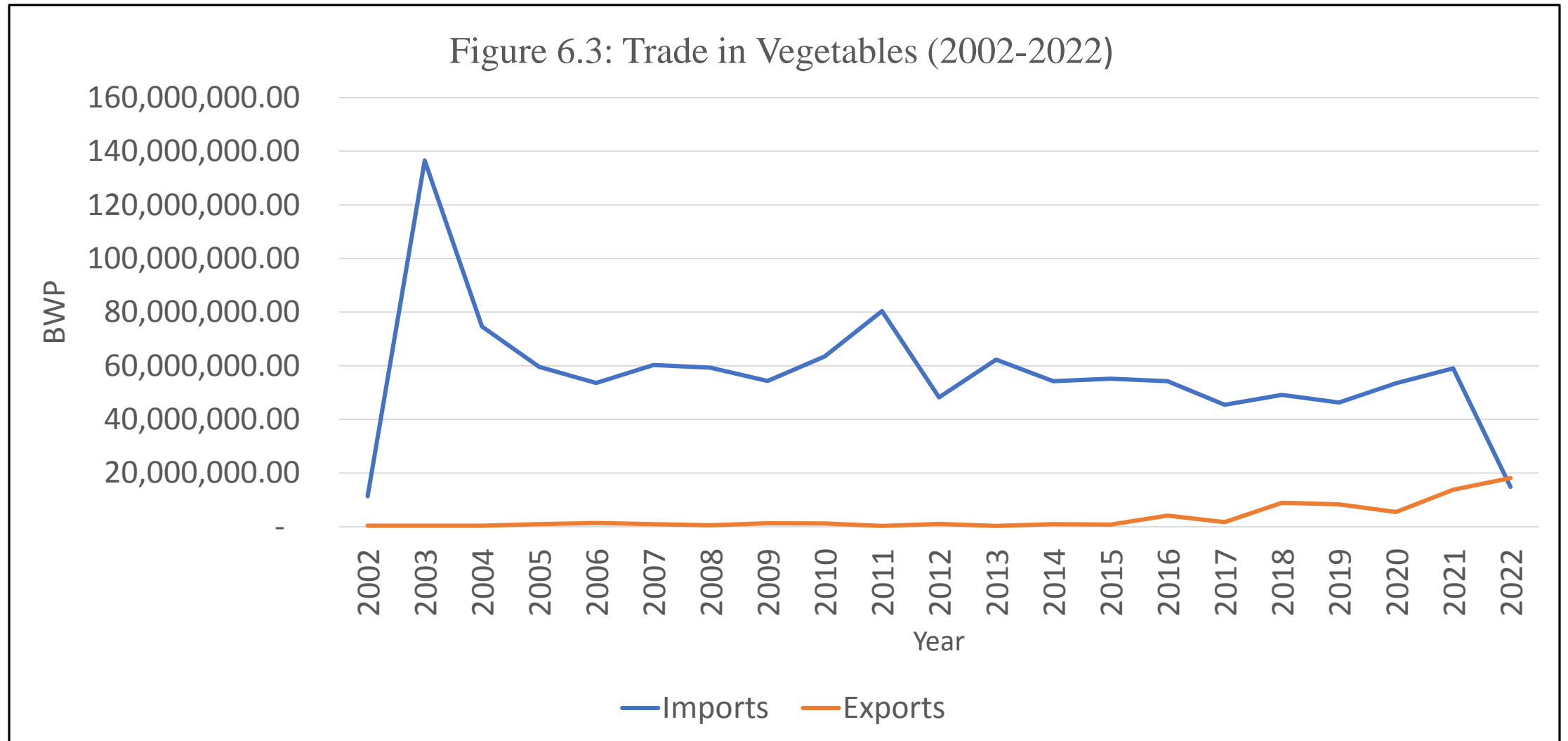
- Globally demand for horticultural products has been on the rise due to income and health consciousness of the consumers.
- It can therefore be concluded that the drivers of demand for fruits and vegetables are:
- Income – per capita income has risen over the years leading to improved affordability to buy fruits and vegetables
- Health consciousness – more messages on the importance of fruits and vegetables as part of a healthy diet, leading to increased consumption
- Increased supply through both local and imports – but supply for banned vegetables has to be through local production.
- Increase in population, although modest means that there are more people to consume the vegetables



# Processing potential



# Export potential



# Potential for Processing – Top 5 Vegetables

Crop	Potential Processed Products
Cabbage	shredded/sliced (coleslaw), shredded mixed vegetables, dried cabbage vegetable, vegetable soup and cabbage cuts, cabbage salads and wrapping cabbage heads in shrink wrap. Cabbage is also an important ingredient to different products such as vegetable atchar.
Tomato	tomato puree, tomato juice, atchar, mixture of vegetable juice, tomato sauce, tomato jam, tomato powder, tomato pickle, tomato soup, tomato paste and tomato chutney.
Potato	potato crisp, potato chips, potato flakes, potato fresh chips, potato starch, potato flour and potato wedges.
Onion	frozen onion rings, onion paste, dehydrated onion flakes, onion powder, onion oil, onion vinegar, onion salt, pickle onion and vacuum-packed onion.
Rape	shredded, dried, frozen, or mixed with other vegetables and canned



# Exports requirements

- Need to meet importing country requirements
- Botswana has been exporting fresh produce to RSA, a member of SACU
- Due demand for food safety, global exports require that Botswana meets the GLOBAL GAP as a minimum
- Botswana needs to have mandatory standards – could start with the local GAP which is already there and graduate to GLOBAL GAP
- Botswana has trade agreements with the rest of world which will make trade easier if it were to meet the importing country requirements

# Botswana's Export Destination for Fruits and Vegetables

Country	Value of Exports (BWP)	
	2021	2022
South Africa	103,211,002.00 (98%)	153,785,460.50 (99%)
Namibia	1,995,955.30	844,165.00
Zimbabwe	78.1	336,815.60
Other	8,6816.6	181,110.85
<b>Total</b>	<b>105,293,860.20</b>	<b>155,151,449.61</b>

**Exports to South Africa mainly comprise of leguminous vegetables – beans, while to Namibia exports comprise mainly of mixed vegetables, potatoes, cauliflower and lettuce**

# Impacts of the import ban



Production – number of farmers increased leading to increased production



Consumption – reduction in consumption as supply has been reduced



Prices – real prices have generally increased with a slight increase in the rate after the import ban



On trade – imports of fresh produced fell, as well as exports. Positive trade balance



On trade – imports of processed products increased as they were not banned, while exports of processed produce fell.

# The SWOT Analysis



**Table 7.1: SWOT Analysis of the Horticulture Value Chain in Botswana**

**Strengths**

- Supportive government programmes
- Availability of land
- Availability of cheap labour

**Weaknesses**

- Food safety issues
- No mandatory standards and certification
- Lack of bio-security laws
- Lack of market access, and corrupt marketing system.
- Poor technical and business management skills of farmers
- Poor extension services; Uncoordinated production and Unorganised farmers

**Opportunities**

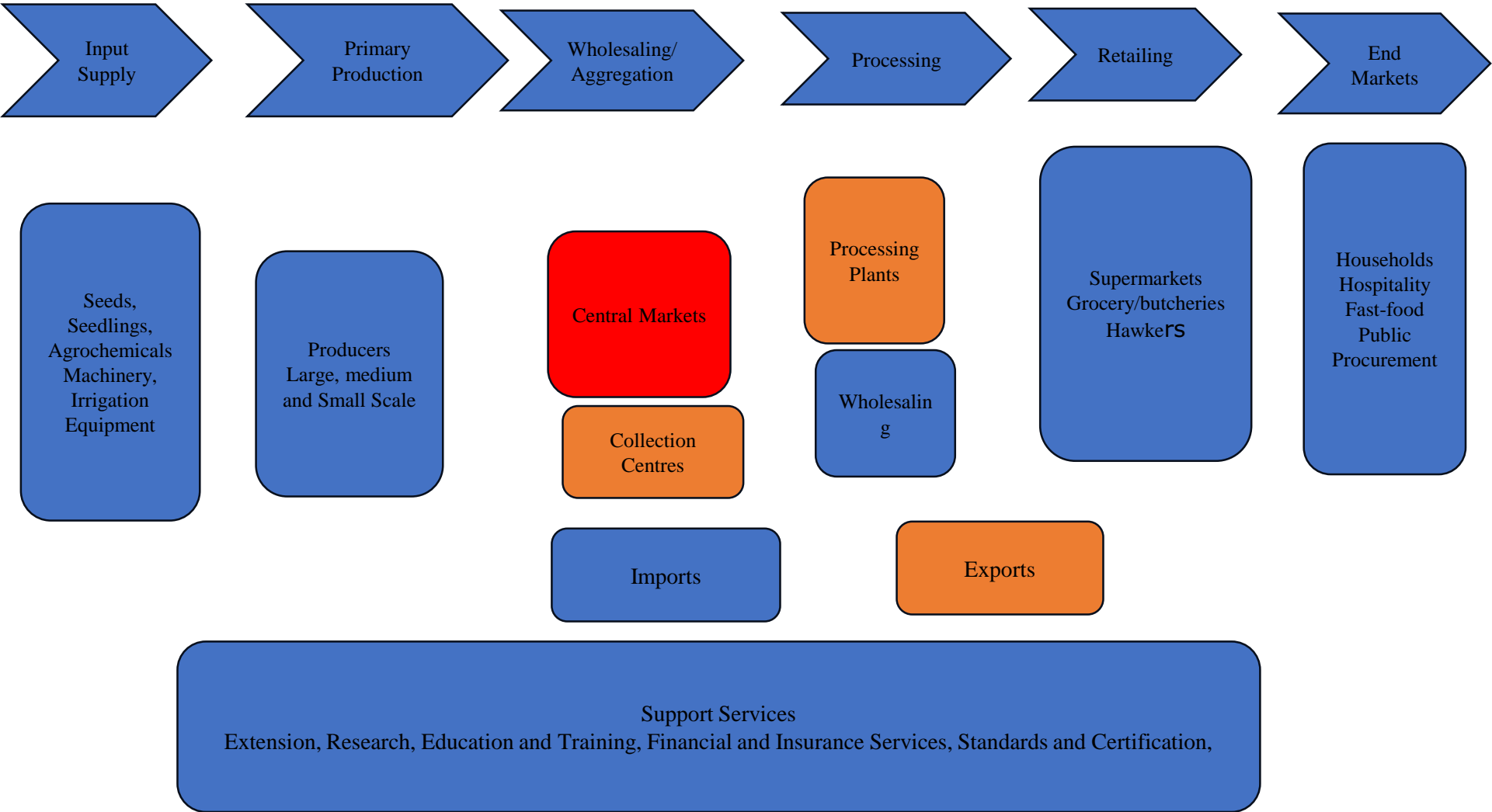
- Unmet local demand
- Public procurement
- Processing potential


**Threats**

- Programmes mainly focused on primary production
- Limited water resources; Lack of interest from the youth
- Stiff competition from imports; Smuggling of banned products
- Pests and diseases; Lack of technology adoption in the face of climate change
- Vertical integration of some retailers into production



# Figure: Ideal Value Chain Map





# Conclusions – Value Chain Upgrading

# Value Chain Upgrading

Recommended Interventions	Specific Upgrading objectives	Challenges	Expected Outcomes
<b>Strategic Intervention 1: Increase productivity</b>			
<b>a. Improve farmers access to high quality extension services</b>	<ul style="list-style-type: none"><li>a. Provide targeted extension services</li><li>b. Improve the capacity of extension services</li><li>c. Increase technology uptake, especially protected environment</li><li>d. Have a dedicated institution offering support to horticulture</li></ul>	<ul style="list-style-type: none"><li>- Poor and untargeted extension services</li><li>- Limited technical and business skills</li><li>- Poor technology uptake</li><li>- Uncoordinated support to the sector</li></ul>	<ul style="list-style-type: none"><li>- Quality extension services</li><li>- Improve productivity through adoption of appropriate agronomic practices</li><li>- Adoption of appropriate technology</li></ul>

# Value chain upgrading

## Strategic Intervention 2: Reduce post-harvest losses

### a. Improve post-harvest handling techniques

- a. Train farmers on proper post-harvest handling techniques
- b. Provide cold storage facilities at central collection centers
- c. Formulate seed policy and regulations to ensure good quality and safe seeds

- Poor harvesting and poor harvest handling techniques
- Lack of storage facilities
- Supply of uncertified seeds by unlicensed seed suppliers

- Improved harvesting and post-harvest handling techniques
- Improved storage facilities for fresh produce
- Safe and quality seeds being supplied leading to increased productivity

### Strategic Intervention 3: Increase market access

- |                                                                                                                                 |                                                                             |                                                                                                    |                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>a. Set up a central market and regional collection centres for farm produce</b>                                              | - Reduce farmers' losses due to unavailability of market                    | - Farmers face difficulties when selling their produce                                             | - Reduction in difficulties faced by farmers in marketing their produce             |
| <b>b. Come up with regulations the guide the operation of the market and prevent producers from selling directly to traders</b> | - Have accurate information on production and other activities in the chain | - By-passing of farmers and selling direct to the supermarkets thereby denying the market business | - Improved performance of the central market                                        |
| <b>c. Develop a data collection and management system</b>                                                                       |                                                                             | - Reduce instances of crop shortages                                                               | - Improved access to information for informed decision making by value chain actors |

# Value chain Upgrading

## Strategic Intervention 4: Improve Quality and Food Safety Standards

### **c. Develop and enforce quality and food safety standards**

- |                                                                      |                                                                                                                   |                                                                     |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| a. Make BOBs standards in horticulture mandatory                     | - No mandatory standards hence produce of different quality being sold at the same price                          | - Set quality standards enforced                                    |
| b. Train farmers on GAP                                              | - No guarantee that products have been produced safely and hence safe for human consumption                       | - Guaranteed product quality and safety                             |
| c. Set-up certification standards and laboratories and accredit them | - No accredited certifying facilities, therefore difficult to confirm safety of products used, e.g. agrochemicals | - Prepare farmers to meet export requirements                       |
|                                                                      |                                                                                                                   | - Certified products being used in production of safe fresh produce |

# Value chain upgrading

## Strategic Intervention 5: Increase the Level of Aggregation and Processing

a. Improve processing capacity	a. Set a central market and regional collection centres Setup processing facilities Intensify research on varieties suitable for processing – especially for tomatoes	- Low level of aggregation for fresh produce Limited processing capacity Local tomato varieties not suitable for processing	- Improved product aggregation Increase processing capacity Produce varieties suitable for processing
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## Strategic Intervention 6: Improve coordination of support services

Improve the effectiveness and efficiency of the support services

- a. Reinstate the Department of Agribusiness Promotions in the Ministry of Agriculture
- b. The mandate the BAMB should focus on promotion of agronomy sectors – including horticulture

- Uncoordinated support from various ministries, departments and organisations leading to ineffectiveness and inefficiencies

- Coordinated effective and efficient support to the horticulture sector



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Thank You So  
Much

