



MARKETPLACE FOR NUTRITIOUS FOODS PROGRAM: VALUE CHAIN & REACH ANALYSIS

VEGMAN CASE STUDY – CHIMOIO, MOZAMBIQUE

Prepared by Altai Consulting for GAIN – September 2017



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ABBREVIATIONS

EN	<i>Estrada Nacional (National road)</i>
g	<i>Gram</i>
GAIN	<i>Global Alliance for Improved Nutrition</i>
GDP	<i>Gross Domestic Product</i>
h	<i>Hour</i>
ha	<i>Hectare</i>
itv	<i>Interview</i>
kg	<i>Kilogram</i>
km	<i>Kilometer</i>
MNF	<i>Marketplace for Nutritious Foods</i>
MNFP	<i>Marketplace for Nutritious Foods Program</i>
MZN	<i>Mozambican Metical</i>
N	<i>Nitrogen</i>
NGO	<i>Non-governmental organization</i>
SA	<i>South Africa</i>
TA	<i>Technical assistance</i>
USAID	<i>United States Agency for International Development</i>
USD	<i>United States Dollar</i>
WS	<i>Wholesale</i>

EXECUTIVE SUMMARY

Under Global Alliance for Improved Nutrition's (GAIN) Agriculture for Nutrition Initiative and with support from the United States Agency for International Development (USAID), the Marketplace for Nutritious Foods (MNF) program was established to promote innovation and catalyze private sector engagement in producing and marketing more nutritious foods for lower income households in Sub-Saharan Africa. This is a case study assessment of the Vegman fruit and vegetable farm in Chimoio, Manica Province, Mozambique, supported by MNF since 2014.

Objectives

The purpose of the project is to assess to what extent GAIN's inputs via the MNF program in supporting Vegman have helped improve availability, affordability, ease of access, convenience and desirability of nutritious food products (in this case, vegetables, with a specific focus on cabbages¹) on local food markets.

Methods

Having faced delays in the procurement of an ethical clearance from the Government of Mozambique to conduct quantitative and qualitative surveys with consumers, the fieldwork shifted to key informant interviews with stakeholders of the vegetable value chains (over 30 interviews in July and a similar number in April), markets visits (nine markets) and price checks (over 50 data points collected). The fieldwork focused on:

- Mapping the distribution of Vegman;
- Determining value chains for Vegman's products depending on the distribution channel used;
- Analyzing the reach of Vegman's products;
- Understanding the local vegetable (and more specifically cabbage) markets in Manica Province.

Findings

- Kota Benade ("Kota"), owner of Vegman, is a skilled commercial farmer from Zimbabwe producing over 20 different varieties of vegetables and fruits in Chimoio, Manica Province, Mozambique;
- Vegman started receiving funding from GAIN in 2014 to upgrade his production (electrical water pump, greenhouse for seedlings, etc.) and distribution means (upgrade of his "Veg shop");
- While there is some variety in the vegetables and fruits available on local food markets in Manica Province (especially during the high season), some vegetables are hardly to be seen (broccolis, cauliflowers, beetroots, etc.);
- Vegman played an important role in spreading these "rare" vegetables in the region, hence adding more diversity the local food diet: he was indeed one of the first farmers to start producing and selling them to consumers. Their higher price per kg however prevents them from being consumed by low-income consumers, and the behavior change observed mainly impacts high-income consumers;
- Vegetable and fruit prices on local food markets greatly vary (they can be multiplied by five) depending on: i) season, ii) location of the market on which it is being sold / transportation costs

¹ Vegman produces a wide variety of vegetables and fruits, which have very different production costs, seasonality, distribution models etc. Since cabbages are one of Vegman's main products along with tomatoes and they were the most positively impacted by the GAIN input (according to Kota), it was decided with GAIN to focus the analysis on cabbages.

(and its distance from the closest vegetable supply source), iii) type of market on which it is being sold (wholesale vs. retail market), iv) size of the product, v) quality of the product;

- Vegman's activities had a positive impact on consumers: he is unanimously recognized for providing high-quality cabbages (bigger, fresher and healthier) for the same price as competitors, and for bringing more diversity on local markets;
- Vegman also impacted the 50 to 70 small retailers directly buying from him by increasing their revenues.
 - For cabbages, thanks to their high-quality, retailers buying from Vegman sell faster and have increased their revenues by up to 33% thanks to higher rotation of their products.
 - Tomatoes are of a more standard quality but Vegman managed to cut intermediaries and sell them directly to retailers at producer price from his easily accessible shop (located on the main road, in front of a bus stop). By cutting middle-men, retailers have been able to multiply their margin by two to three;
- However, this is not reflected in retail price and consumers do not benefit from Vegman's efforts to cut out middle-men (though in the case of cabbage they benefit from higher quality products for the same price);
- Vegman's distribution channels enable him to target different types of customers:
 - Direct sales from his shop (20% of his sales) mainly benefit high-end customers, who can afford to travel by car or bus to his shop, located 10km away from Chimoio;
 - Sales via retailers in Chimoio (40% of his sales) enable him to reach the average Mozambican urban consumer, purchasing vegetables from local markets;
 - Sales to wholesalers, further selling to retailers outside Chimoio (32% of his sales) enable Vegman to reach out to areas as far as 350km, where poorer rural customers can enjoy his products;
 - The rest of the production goes to institutional customers (restaurants, hospitals, etc.) or the upper-class in the main cities of Tete and Beira, via traders and supermarkets.
- Vegetable production depends on weather and seasonality has a major impact on vegetable supply and price. In some localities in Southern Manica Province, production of cabbages for example only occurs in July-August and they rely on Chimoio the rest of the year. In Chimoio itself, cabbage production only takes place between May and October. The rest of the year cabbages are either supplied from Angonia (Northern Mozambique, where the farming season for cabbages lasts longer) or even from Zimbabwe from January to March, when there is barely any cabbage production in Mozambique. The Zimbabwean agriculture is indeed much more developed and farmers there manage to produce all year-long;
- The seasonality (unfavorable climate and lack of inputs/means to bypass it) prevents Vegman from supplying cabbages during the low season, when availability is scarce and prices high, and hence when he would be the most needed on the market;
- 10,000 consumers eat Vegman vegetables each day a number which can grow but remains limited by the lack of awareness of Vegman and a demand for fresh vegetables which remains limited by the low disposable income available to most Mozambican consumers.

1. INTRODUCTION

The Marketplace for Nutritious Food Program (MNFP) was launched by GAIN in 2013 to promote innovation and catalyze private sector engagement in producing and marketing more nutritious foods for low income households in sub-Saharan Africa, adopting a two-pronged approach: i) a community of practice, with a network open to entrepreneurs, businesses, universities, regulatory bodies, NGOs, etc. interested in knowing more about running a business that helps transform agricultural potential into safe nutritious food and; ii) an innovation accelerator / grant making component, where the most promising proposals are selected to be eligible for Technical Assistance to support the development of feasible business plans, which, upon completion are reviewed by a Marketplace Investment Committee which selects the most investible and impactful concepts to receive grant funding as well as further technical assistance to support business plan implementation.

The program is operating in three countries: Mozambique, Kenya and Rwanda and as of today, 34 businesses have been supported. GAIN received funding from USAID to conduct a series of cross-sectional case study evaluations to assess how the MNF program and its business awardees have affected market-level availability and consumer-level access to nutritious foods.

Within the scope of this research, five case study evaluations were conducted across Kenya (two businesses), Mozambique (two businesses) and Rwanda (one business).

Table 1 – Table of studied businesses

Country	Mozambique		Kenya		Rwanda
Location	Chimoio	Maputo	Eldoret	Kisumu	Kigali
Project	KoBen / Vegman fresh vegetables	Alves & Companhia meat products	Tarakwo Dairies pasteurized milk	Pioneer fish farm	TRABAC egg production

In Mozambique, the ethical approval to conduct quantitative and qualitative fieldwork with consumers and vendors was not received in time to complete the project. As a result, GAIN and Altai Consulting decided to change the methodology of the case study and concentrate the study on the Road to Market aspects for which no ethical clearance was required, and which includes a detailed mapping of Vegman's distribution, value chain and reach analysis as well as observations of the vegetable markets in his area of operation.

This report covers the mapping of the distribution, value chain and reach analysis of Vegman, a vegetable and fruit producer in Chimoio, Manica Province, Mozambique, and includes inputs taken from observations on local markets, price checks and interviews done with participants at all levels of the vegetable production and distribution value chain between April and July 2017. In addition, since one focus group was conducted at the beginning of the project to help develop the tools, its main findings have been included in the report.

2. DESCRIPTION OF THE BUSINESS

KEY TAKEAWAYS

- Kota Benade, owner of Vegman, is a skilled Zimbabwean commercial farmer producing vegetables and fruits (some 20 varieties) on 12 ha in Manica Province, about 15km away from Chimoio;
- Kota received funding from GAIN starting in 2014, enabling him to improve his yields (thanks to improved electrical water pumping and the building of a greenhouse for seedlings) and upgrade his “Veg shop”, from where he sells retail to local consumers and wholesale to retailers and wholesalers from Chimoio;
- Vegman produced approximately 232 tons of vegetables in 2016, for a total revenue of 2.9 million MZN.
- Tomatoes and cabbages are his best sellers: tomatoes represented 47% of his sales and cabbages 37% over 2016.
- Vegman’s production costs are 4.53 MZN per head of cabbage, in line with other farmers in the area.
- His main difference is the use of agricultural inputs which enable Vegman to produce bigger and higher quality cabbages than competitors;
- Kota’s main challenges as a commercial farmer in Mozambique are access to capital (hence his praise of the GAIN funding), bureaucracy (all the more so as he holds a foreign passport) and limited demand for fresh vegetables, linked to the local population’s limited income.

2.1. BUSINESS MODEL

Kota Benade (“Kota” or “Vegman”) is a trained Zimbabwean commercial farmer who moved to Mozambique in 2004 and has been producing vegetables there since 2006. He owns a 350-hectare (ha) farm of which 12 ha are planted with various vegetables and fruits. It is located close to the Vanduzi river, some 15km from Chimoio.

Figure 1 – Vegman farm, on the bank of the Vanduzi river, July 2017



Kota's main products are cabbages and tomatoes, but he also produces over 20 different other types of vegetables such as carrots, zucchinis, potatoes, beetroots, broccoli, butternut squash, onions, cauliflowers and spinach, some of which used to be rarely consumed by locals and are now increasingly so. Kota notably claims to have been one of the first producers to introduce beetroots to the area.

He also produces fruits such as bananas, and has recently planted lychee trees.

Kota grew up on a farm in Zimbabwe and has been a commercial farmer his entire adult life. When he moved to Mozambique, like other Zimbabwean commercial farmers, he brought with him technical farming skills which were cruelly lacking in a country where commercial farming is still in its infancy compared to Zimbabwe. Thanks to his fluency in Shona, a language that he learned on the farm in Zimbabwe and that is also used by inhabitants of Manica Province, Kota has been able to develop excellent relationship with his labor force. He regularly employs dozens of locals to help him cultivate, harvest and sell his production.

Focus box 1 – Zimbabwean commercial farmers

Before the year 2000, Zimbabwe used to be called “the breadbasket” of Africa due to its capacity to feed its own population and export part of its agricultural production.

In the years 2000, Robert Mugabe's land redistribution policy led to the eviction of most of the 4,000 white Zimbabwean commercial farmers who used to own 70% of the country's cultivated land and the redistribution to black farmers.

Lacking technical skills, commercial farming experience and investment capital, Zimbabwean farms started to struggle to maintain their yield levels and the country's food production quickly dropped by 70%, costing the country's economy an estimated 8 to 12 billion USD over the span of a decade.

In the meantime, neighboring countries such as Zambia, Angola or even Mozambique encouraged the evicted white Zimbabwean commercial farmers to invest locally in the hope of benefiting from their technical and commercial farming skills, which were lacking there.

Sources: The breadbasket is still a basket case, Foreign Policy, July 2013; From bread-basket to basket case: Land seizures from white farmers have cost Mugabe's Zimbabwe £7billion, Daily Mail, August 2011; Zimbabwe's white farmers start anew in Mozambique, Al Jazeera, October 2015; Les fermiers blancs du Zimbabwe courtisés par les pays voisins, Courrier International, January 2007.

With funding from GAIN, Kota was able to reduce his production costs, improve his yields and upgrade his distribution system by:

- Connecting his farm to the electricity grid, which has made pumping the Vanduzi river to water his vegetable plots much easier, more reliable and less expensive than when he used diesel pumps;
- Building a greenhouse for seedlings;
- Purchasing a truck to deliver fresh vegetables from his farm to the shop (before this, he used his personal pick-up which was too small and limited his ability to conduct other tasks simultaneously);
- Upgrading his sales outlet, the “Veg shop” which he strategically located on the Beira corridor (see below for more details) and from where he sells all his products.

Thanks to these investments, Kota now manages a more modern, integrated business: seeds are locally grown into seedlings in his greenhouse, irrigation (and therefore production) is cheaper and more stable thanks to electrical pumping and his products are directly sold from his shop to local wholesalers, retailers and end consumers.

Each morning, Kota goes to his farm to harvest fresh fruits and vegetables. He loads them on his truck and transports them to his outlet, which is located a few kilometers away, to sell them to his customers.

Figure 2 – Vegman’s greenhouse for seedlings (left) and the truck he uses to deliver vegetables to his shop (right), July 2017



Kota’s outlet is strategically located in front of a bus stop, on the main road to Beira, the so-called “Beira corridor”, one of the only roads in central Mozambique which connects the coast to the inland.

Figure 3 – Vegman’s shop strategic location on the Beira corridor



Kota co-owns the Veg shop with Bill Creswell, another Zimbabwean commercial farmer who also has a large-scale farm producing vegetables and fruits in the area and who has been active in Mozambique longer than Kota. Even though they tend to produce similar vegetables and fruits (although with sometimes different varieties), they have a different distribution model, whereby Kota mostly sells to local wholesalers and retailers while Bill favors larger customers such as Shoprite.

Figure 4 – Kota and Bill’s Veg shop, July 2017



2.2. VEGMAN SALES VOLUMES AND MAIN PRODUCTS

When Kota wrote the business proposal he submitted to GAIN in September 2013, he was growing approximately 10 varieties of vegetables on his 12 hectares of land.

Table 2 – Evolution of Vegman’s vegetable and fruit offering between 2013 and 2017, July 2017²

2013 Before GAIN support	2014	2015	2016 After GAIN support	2017
Tomatoes				
Cabbages				
Spinach				
Beetroot				
Cauliflower				
Broccoli				
Cucumber				
		Lettuce		
		Chinese cabbage		
		Pumpkin		
		Squash		
		Butternut Squash		
		Bananas		
		Green peppers		
		Kale		
		Gem Squash		
		Sweet potatoes		
		Water melon		
		Sweet melon		
			Okra	
			Baby marrow	
			Kale	
				Lychees

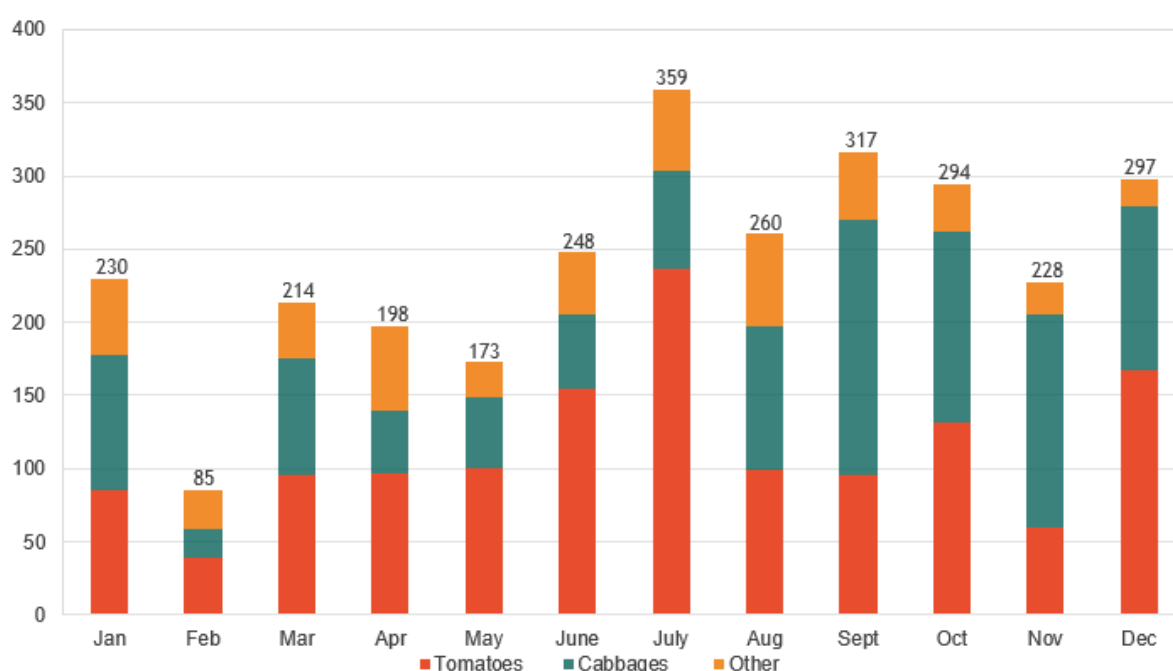
According to Vegman’s accounts, he produced approximately 232 tons of vegetables in 2016³ (or an average of 19 tons of vegetables per month) for a total revenue of some 2.9 million MZN⁴.

² Source: GAIN’s “Compilation of Monitoring and Field Visit MNF Data” (data starts in Oct 2014 and finishes in Dec 2016); Vegman Business Plan, September 2013; Interview with Mr. Kota Benade, April 2017. The list is not exhaustive.

As can be seen in the graph below, his sales fluctuate widely by month, although 2016 was a milder year weather-wise than 2017 (and therefore with less fluctuations). Indeed during 2017's first few months he was completely unable to produce because of the weather. May to October tend to be Vegman's high producing months while December to April tend to be his low season (with significant yearly variations depending mostly on the weather).

Tomatoes and cabbages represent most of his sales, with tomatoes adding up to 47% of his sales in value and 30% in weight and cabbages corresponding to 37% of his sales in value and 63% of his sales in weight in 2016. These proportions also vary by month and other vegetables can go from 6% to 30% of total sales from one month to the other, depending on several factors including their production cycles, price variations of the different varieties etc. The "other" vegetables, which typically have higher retail prices than tomatoes and cabbages can account for a larger share of sales during the low months and can be a way for Vegman to smooth out seasonality in his sales.

Figure 5 – Vegman's monthly sales in 2016 (in 000s MZN)⁵, September 2017



2.3. PRODUCTION COSTS

It costs Kota Benade 4.53 MZN to produce one head of cabbage and to transport it to his shop. These costs are in line with those of other cabbage producers in the region, including small-scale family farmers. Indeed, while small-scale farmers tend to have higher costs associated to seedling production and watering (due notably to the lack of seedling houses and electricity to pump water to their plots), they do not or use very limited quantities of agricultural inputs (such as fertilizers and pesticides), conversely to Kota. These inputs represent a non-negligible part of his costs, and have to be imported (mostly from Zimbabwe) making Kota vulnerable to currency swings. At the same time,

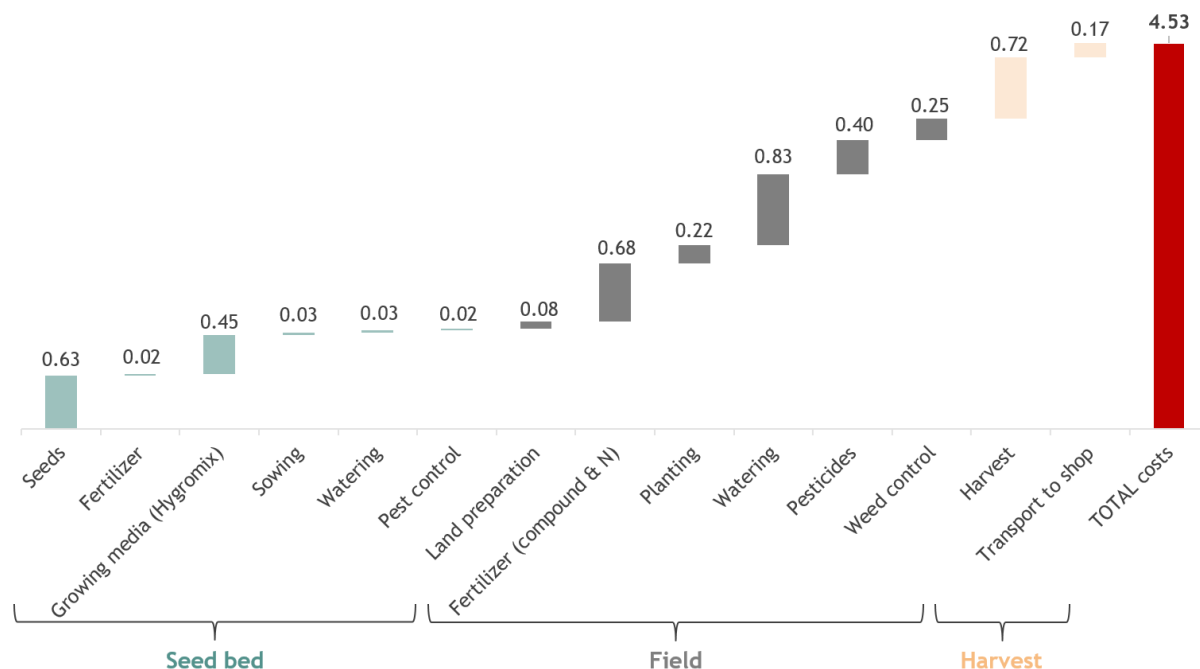
³ Source: Vegman's sales information. His units vary by type of vegetable (kg for most vegetables; heads for cabbages, broccoli, cauliflower and the like; bunches for kale and spinach), therefore average weights were assigned to "heads" and "bunches" in cooperation with him.

⁴ Ibid. The same source contains daily prices for each type of vegetable.

⁵ Ibid.

they enable him to produce much larger cabbages, of a higher quality (without diseases) and to have a longer production season. Production costs vary by season and tend to be higher in the summer, when water is scarcer and yields smaller. The figure below shows Kota's average production costs for cabbages in 2016.

Figure 6 – Vegman's production costs for one head of cabbage, in MZN (2016)⁶, July 2017



The production of the seed bed (i.e. growing seeds into seedlings that can later be planted in the field) costs Kota 1.18 MZN/head. Field operations (i.e. growing seedlings into cabbages) cost Kota 2.46 MZN/head. Finally, harvesting (i.e. gathering cabbages from the field to make them available for wholesale and retail sales at the shop) costs Kota 0.89 MZN/head.

2.4. CHALLENGES

According to Kota, he encounters three main types of challenges while farming in Mozambique: difficult access to capital, bureaucracy, and limited demand. These challenges were less pronounced in Zimbabwe and constitute barriers not only for him but for the development of the Mozambican agriculture in general.

In Zimbabwe, where commercial agriculture is more developed, banks have a long history of working with and trusting commercial farmers with regards to loans. Kota remembers a time back in Zimbabwe when he saw a nice new tractor at a shop, went to his bank counselor asking for funds to buy it and came home a few hours later driving his new tractor acquired thanks to a bank loan. Such an outcome would be impossible in Mozambique where banks are not used to dealing with farmers and do not trust them. Borrowing money from banks in Mozambique would cost Kota 32% in annual interest rate.⁷ This partly explains the praise Kota has for GAIN's funding, which enabled him to achieve his business goals without having to commit to such skyrocketing rates.

⁶ Calculation based on an output of 30,000 heads of cabbages per ha. "Growing media" refers to the substance through which plant roots grow and extract water and nutrients: it is often a mix of native soil, different raw materials and minerals. "Compound fertilizer" is a fertilizer that contains nitrogen (N), phosphorus (P) and potassium (K) while "fertilizer N" contains only nitrogen.

⁷ Based on Kota's experience requesting loans in Mozambique.

Bureaucracy is another major issue for commercial farmers (and businessmen in general) in Mozambique. Obtaining any permit or authorization from the State quickly becomes very time-consuming and expensive, all the more so for Kota who owns a foreign passport. For example, Kota admits that his shop was named “the Veg shop” (and not “the Vegetable shop” for example) because taxes had to be paid on every single letter painted on the shop front.

Finally, demand for vegetables in Mozambique remains limited compared to Zimbabwe. Kota estimates that if he were farming on the other side of the border in Mutare, just 85km away from Chimoio, his market would be five times larger. With a per capita GDP of 386 USD, compared to 1,009 USD in Zimbabwe⁸, Mozambicans tend to stick to cereals, roots and legumes, leaving little space for vegetables. The vegetables they do consume tend to be cabbages, tomatoes and cheaper vegetable leaves, especially during times of financial difficulty. Consumption of more expensive vegetable such as broccoli, cauliflowers or beetroots remains an exception.

⁸ Source: The World Bank, 2016, in current USD

3. METHODOLOGY

3.1. OBJECTIVES

The general objective of this case study is to evaluate whether and how GAIN's support to Vegman via the MNF program has helped improve availability, affordability, ease of access, convenience and desirability of nutritious food products (in this case, vegetables, with a specific focus on cabbages) on local food markets.

Vegman produces a wide variety of vegetables and fruits which have varying production costs and distribution models and are affected by seasonality in different ways. Faced with the array of possible study subjects represented by all these vegetables, Altai Consulting and GAIN decided to focus on cabbage as the main study subject: indeed, it represents a significant share of Vegman's sales, is one of the vegetables that are bought the most by low income consumers and Kota confirmed that its production and sales had benefited the most from GAIN's intervention. At the same time, during the course of the study, it was decided to hone in on specific aspects regarding a few other vegetables like tomatoes and beetroot when a finding was particularly relevant, to add depth to the study or, in the case of beetroot, to take into consideration diversity and consumers' propensity to try new vegetables.

More specifically, this report aims at:

- Mapping the distribution of Vegman's vegetables;
- Determining value chains for Vegman's products depending on the distribution channel used;
- Analyzing the reach of Vegman's products;
- Understanding the local vegetable (and more specifically cabbage) markets in Manica Province.

3.2. ANALYTICAL FRAMEWORK

Depending on the complexity of the industry and the distribution model of the studied business, it is estimated that 20 to 30 interviews with various stakeholders are necessary to get substantial results for value chains analyses.

By definition, such fieldwork is unpredictable (a precise map of the distribution and stakeholders involved must be established before the exact number of necessary interviewees can be identified) and needs to be conducted as a "paper chase" game of sorts, starting with the studied business as a first interview and then following the value chain until end consumers are reached for each of the identified distribution channels.

A similar questionnaire structure can be used with all the interviewed stakeholders:

Table 3 – Value chain questionnaire structure

Objective	Key Questions	Rationale
Mapping reach and distribution	Who are your customers? (name, contact person, phone number, email address, physical address/location)	Identify other stakeholders of the value chain and obtain their contact details to contact them and request an interview. Analyze the reach of products (where do they physically go?)
	What is the profile of your customers? (end consumers, retailers, wholesalers, traders, etc.)	Determine the number of intermediaries involved for each channel
	What percentage of your sales (in volume and/or value) does each customer represent?	Understand what volume/value of products flows through each channel
Determining value chains	What is your buying price?	Cross-check with the selling price given by the previous stakeholder
	What is your selling price?	Cross-check with the buying price given by the next stakeholder
	What are your costs? (breakdown of fixed and variable costs)	Calculate the margin taken at each step of the value chain by the interviewed stakeholders
Other contextual information	Do you have other suppliers?	Understand to what extent the stakeholder is dependent on one supplier (or buyer)
	Why do you buy from [studied supplier] specifically?	Collect information on the strengths of the previous interviewed stakeholder
	How has your business evolved recently?	Understand the general business context

Once all distribution channels have been identified and at least one stakeholder at each distribution stage of each identified channel has been interviewed, the fieldwork can be considered completed.

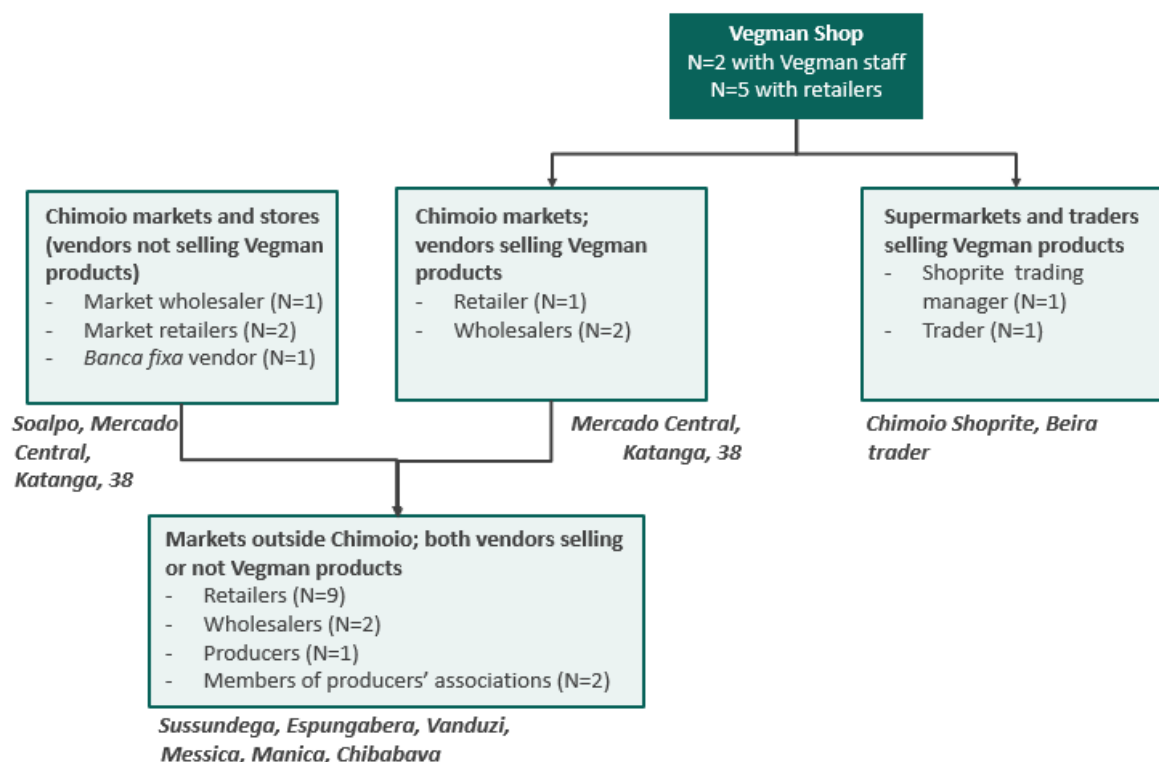
3.3. INTERVIEWS CONDUCTED AND VISITED MARKETS

Over 30 interviews with various stakeholders of the vegetable value chain were conducted in July 2017 (in addition to 25 interviews and one focus group discussion with consumers in April 2017). The interviewees include Mr. Kota Benade as well as competing producers, wholesalers, retailers and traders who buy or not vegetables/fruits from Vegman.

Table 4 – Interviews conducted in July 2017

Location	Number & type of interviews
Vegman shop	1 itv with Kota Benade, owner of Vegman 1 itv with Makabo, sales manager at the Vegman shop 5 itv with retailers buying from Vegman
Chimoio, Mercado Central	1 itv with cabbage retailer not buying from Vegman 1 itv with cabbage retailer buying from Vegman
Chimoio, Katanga Market	1 itv with Elisa, wholesaler and Vegman's largest client 1 itv with a cabbage producer selling on the market
Chimoio, Mercado 38	1 itv with José, wholesaler sometimes buying from Vegman 1 itv with Fabio, wholesaler not buying from Vegman
Chimoio, Shoprite	1 itv with Lucas Pita, trading manager Freshmark/Shoprite
Chimoio, Soalpo	1 itv with a "banca" (shop) manager selling cabbages
Sussundenga	2 itv with cabbage retailers
Espungabera	2 itv with cabbage and mixed vegetable retailers 1 itv with a local cabbage producer selling on the market
Beira	1 phone itv with a trader selling Vegman vegetables in Beira
Vanduzi	1 itv with cabbage retailer on the local market 2 itv with members of a local cabbage producers' association (7 Abril)
Messica	1 itv with cabbage retailer
Manica	2 itv with cabbage retailer at Mercado Central 2 itv with cabbage wholesalers at Mercado 37
Chibabava	1 phone itv with one of Elisa's (Vegman wholesaler) customers

Figure 7 – Diagram of value chain interviews, July 2017⁹



Nine local markets were visited and price checks were conducted in July 2017 (in addition to four market visits in Chimoio and 3 market visits in the town of Manica in April 2017):

Table 5 – Markets visited in July 2017

City	Market name	Type of market
Chimoio	Mercado 38	Main wholesale market in Chimoio for food and non-food items
	Mercado Central	Central retail market in Chimoio, mostly for food
	Katanga Market	Wholesale food market
	Soalpo Market	Small neighborhood market
Manica	Mercado Central	Central retail market in Manica
	Mercado 37	Wholesale market in Manica
Espungabera	Main market	Main retail market
Sussundenga	Main market	Main retail market
Vanduzi	Main market	Main retail market

In addition, visits were made to the Shoprite in Chimoio and to several “bancas” (shops selling vegetables among other goods).

Most market visits and interviews took place in Manica Province and were conducted face to face. Two interviewees located in Sofala Province (Beira and Chibabava) were interviewed on the phone.

⁹ Does not include over 25 additional interviews conducted in April 2017 and one Focus Group with 6 participants also conducted in April to refine the research tools. In addition, does not include “spot” interviews conducted with both vendors and consumers at various moments in places.

Figure 8 – Locations of interviews and market visits, July 2017



3.4. CHALLENGES AND LIMITATIONS

By far the main challenge / limitation to this case study was the fact that the ethical approval was not received in enough time to be able to launch the quantitative and qualitative surveys and fully analyze them: indeed, this case study was designed to include quantitative and qualitative surveys with vegetable consumers and vendors. Several tools had been developed, tested and translated for the random quantitative survey, the POS survey, the vendor survey, ethnographic interviews of both consumers and vendors and focus group discussions with consumers. Guidelines and training material for enumerators had been produced; a significant amount of time had been spent on designing and explaining the protocol for the overall research; fieldwork had been planned and teams mobilized. Unfortunately, by the time an answer was given by the ethical board, not enough time remained to conduct the actual field work with human subjects and the focus of the study had to be amended to focus on the road to market aspects instead, basing most of the research on interviews with professionals, market observations and value chain and reach analysis, the results of which are presented in this report.

Another key challenge encountered during the research was the fluidity and lack of formalization of the vegetable value chain. For example, even though Vegman's sales manager has a sound notion of who his main customers are, he does not keep a formal record of his sales and customers' details. In addition, his customer base can quickly evolve depending on the season or customers' preferences and procurement options. For instance, Vegman used to have a regular wholesale customer based in Tete but, at the time of the research, neither he nor his manager had heard from him for over two months. In addition, the value chain and distribution models themselves varied greatly depending on the time of the year when the research was conducted, with different active producers, distribution channels, products sold and prices, as is described in the report.

The number of products produced by Vegman (he cultivates over 20 different varieties of vegetables and fruits) and their varying production costs, main customers, challenges and producing seasons, were a challenge. It was therefore decided to focus on cabbages (Vegman's second main production in volume) and to a lesser extent tomatoes (Vegman's best-selling vegetable). Some analysis on Vegman's "rare" vegetables, such as cauliflowers, broccoli or beetroots, was also included.

The informality of the market was also reflected in pricing schemes: it was difficult to compare vegetable prices as cabbages for example are often graded by size (big, medium, small). The grading is far from formal and is done manually by vendors by looking at and weighting the cabbages. This made it all the more complicated to compare price from one market or even one vendor to the other.

Similarly, vegetables are sometimes graded based on their quality, again a vague notion which relies mostly on vendors' estimations and renders comparison difficult.

The impact of seasonality on the cabbage business added another layer of complexity to the study: cabbage production depends greatly on the weather and the high and low season differ by a few weeks from one year to the other but also from one area to the other. As a result, when interviewees in Espungabera were referring to the "low season", they were not talking about the same period as interviewees in Chimoio. High and low seasons were therefore a very local and to a certain extent subjective phenomenon.

Inherent to any fieldwork is the refusal of some of the key stakeholders to be interviewed, even though it must be noted that in this case most interlocutors were remarkably cooperative.

Finally, the countryside outside of Chimoio regularly suffers from bouts of fighting between the Mozambican army and rebel groups. This fieldwork, which took place between April and July 2017, was not impacted by the security situation but some of the areas visited would have been closed a year earlier. We were told there had been fighting in the area as late as in December 2016. This situation should be kept in mind for potential future fieldwork in the area.

4. LOCAL FOOD MARKETS

KEY TAKEAWAYS

- There are four main types of places where consumers can buy vegetables in Manica Province: local retail markets, “*banca fixa*”¹⁰ (small shops selling both food and non-food items), roadside vendors and supermarkets (the latter being rare and oriented by their prices towards high end customers);
- Two main types of markets can be identified: i) retail markets where end consumers come to purchase their foods; they are generally clean and organized, and ii) wholesale markets, where larger volumes of products are traded at wholesale prices (cheaper); they are dirtier and generally less easily accessible (in the outskirts of the cities). On both types of markets, vendors must pay a daily market license fee to the city council;
- The product offering on local markets varies depending on seasons. During the high season (July-August), plenty of vegetables can be found everywhere.
- Vegman was one of the first producers to introduce “rare” vegetables such as broccoli, cauliflowers or beetroots, thus having a positive impact on vegetable diversity in the region. These vegetables’ higher price per kg, however, means they are still exclusively consumed by higher end consumers and can barely be found outside of Chimoio;
- Prices on local food markets are influenced by: i) season: producer price can double during the low season; ii) location (the nearer the city/village to the main vegetable supply source, the cheaper the transport costs); iii) market type (wholesale vs. retail); iv) product size; and v) product quality.

4.1. VEGETABLE CONSUMPTION IN MOZAMBIQUE

Mozambicans do not eat many fruits and vegetables; they have a rather unvaried diet composed mostly of cassava, maize, millet, sorghum and rice. These main staples are prepared as a traditional porridge and normally eaten with different stews made of green leafy vegetables, onions and tomatoes enriched with some groundnut, coconut milk, beans or fish. Meat is rarely eaten. Some fruits are consumed when in season: banana, mango, orange, paw-paw and pineapple, but in small quantities.¹¹

International nutrition associations recommend a daily consumption of at least five servings of fruits and vegetables but less than 5% of Mozambican meet this criterion. In 2005, the prevalence of a daily consumption of at least two servings was 17.8% for fruits and 18.7% for vegetables and nearly half of the adult Mozambicans reported usual fruit and vegetable consumption of one to six servings per week each, with no meaningful differences across sexes or urban / rural areas for fruit but with higher prevalence of vegetable consumption in urban settings (54.4 v. 39.5% among women; 61.1 v. 48.1% among men).¹²

The average food supply for Mozambican is mainly composed of 973g/day of starchy roots and cereals, which represents 84% of their daily amount of food, and the second most important part of

¹⁰ “*Banca fixa*” means “fixed stall” or “fixed stand” in Portuguese.

¹¹ Source: FAO Nutrition Country Profile 2011.

¹² Source: “Low fruit and vegetable consumption in Mozambique: results from a WHO STEPwise approach to chronic disease risk factor surveillance”, Research gate, July 2011.

their alimentation is 55g/day of fruits and vegetables, which represents 5% of their daily amount of food.¹³

There is not a great diversity in the fruits and vegetables consumed by Mozambicans. Staple vegetables are tomato, cabbage, kale/green leafy vegetables and onions. Staple fruits and vegetables represent 72% of the food expenses of Mozambicans for fresh products.¹⁴

This very low consumption of fruits and vegetables is due to several difficulties. First, these crops are costly to produce, farmers have to use crop protection chemicals, fertilizers which are expensive and imported, and irrigation systems which often do not exist. In addition, horticulture necessitates knowledge that is not easily available in Mozambique, and a certain localization of the farm: it should be set within 300 meters of a body of water to avoid pumping water costs, and farmers of perishables goods such as tomato and green leafy vegetables must reside within 100km of an urban market to sell them. Finally, the high variability of fruits and vegetables prices due to the varying weather conditions and seasons is an obstacle to their regular significant consumption.¹⁵

Focus box 2 – Qualitative insights from a Focus Group Discussion – Food consumption¹⁶

During the first field visit in April 2017, a Focus Group Discussion was held in Chimoio to develop and test the tools that would be used should the ethical approval be received in time. Six consumers, including five women and one man, aged 20 to 32, participated in the FGD. Some relevant themes emerged, which support some of the observations and analysis comprised in the rest of this report.

Predominance of starches and cereals in consumers' diets

Starches have a dominating presence in most consumers' food intake and meat is rarely mentioned, making vegetables an even more important addition to their diet.

"We like almost everything, rice, flour and spaghetti and sometimes we eat fish, eggs and milk." (Armanda Gandara)

"I like mostly porridge and pumpkin leaves." (Armanda Gandara)

"I like mostly rice and beans." (Abdul Cassamo)

"I like mostly potato chips, chicken." (Albertina Antonio)

"We eat principally flour, we eat rice but not on a large scale. Vegetables, eggs and fish are very frequent but the meats are not on a large scale." (Sifa Eduardo)

"We eat more rice and corn because they are products of first necessity." (Ines Tome Salimo)

Opinions on and consumption of cabbage

When asked what vegetables consumers mostly eat, cabbage is one of the main vegetables mentioned, along with other greens and leaves,

"We buy more kale, cow peas, cabbage. I buy more products of first necessity." (Ines Tome Salimo)

"We buy more cereal." (Sifa Eduardo – when asked specifically about vegetables)

"We like kale, cabbage and other types of cabbage. We have them in our yard so we don't have to buy

¹³ Source: FAO Nutrition Country Profile 2011.

¹⁴ Source: "Fresh produce production and marketing systems in southern Africa: A comparative assessment"; Michigan State University; February 2012.

¹⁵ Ibid.

¹⁶ "Tsunga" is a local green, leafy vegetable of the brassica family; "mboa" are local wild mushrooms.

them, we like them because they are rich in iron and because they are good for health.” (Sifa Eduardo)

“I buy cabbage because I like it and because it helps digestion; I use it to make salad.” (Ines Tome Salimo)

“I do not buy cabbage because I do not like it and it gives me stomach aches.” (Abdul Cassamo)

Affordability

Affordability is crucial. Especially following the economic crisis, consumers pay attention to price fluctuations and will look for the cheapest products.

“Prices at Market 38 are lower than in other markets [...] so everyone opts for Market 38.” (Ines Antonio)

“I buy in Market Katanga and also in Market 38, but much more in Market 38 because it is cheaper.” (Armanda Gandara)

“Because of the price [of beetroot] we only eat them once a month.” (Sifa Eduardo)

“There are markets that sell cabbage that are damaged. That is the case of Market 38: it has no sanitation, it is normal to find a cabbage on the floor, but even then, people buy there because the cost is low.” (Sifa Eduardo)

4.2. SOURCES OF VEGETABLE SUPPLY

There are about 1.4 million inhabitants in Manica Province. Subsistence vegetable farming remains limited in the province, especially in the towns. As a result, most inhabitants must buy the vegetables they wish to consume. There are four main types of places where consumers can buy their vegetables in Manica Province:

Figure 9 – Main places where consumers buy vegetables in Manica Province, July 2017



Local retail markets are popular. Vegetable retailer and even local producers during the high season directly offer various types of fresh vegetables to consumers there. The main retail markets are covered and stalls are numbered and delimited (retailers pay a fee to the city council to be able to sell on retail markets). They generally also have an “unofficial” selling area around the official market where small retailers place their products directly on the ground, on the plastic bag they used to transport them. Prices are generally low, and most importantly, it is possible to buy cheaper products either by buying lower quality products (e.g. old vegetables) or small quantities (e.g. only 3 tomatoes), both very important for lower income consumers who have limited funds at any given time and cannot afford to buy large quantities. Prices are generally not written (although they can be in some cases)

and it is possible to negotiate with retailers. Most types of local unprocessed foods can be found on retail markets which are generally organized by type of food (vegetables in one section, fish in another, etc.) Retail markets are generally located in the city centers and are visited by low income customers (compared to supermarkets for example) who live (or work) nearby and therefore do not have to incur transport costs to get there. For more details on market organization, see next section.

“**Banca fixa**” are small “mom and pop” type local shops, which usually sell various types of food and non-food items. Some also offer fresh vegetables. They are generally located in residential neighborhoods, mostly where poorer customers live. Product offering is limited to the most basic food and non-food items (hygiene products, wheat and maize flour, bread, a few vegetables). Banca fixa have concrete walls and floors but are very simple and basic. Products are presented in a much simpler way than in supermarkets for example. Prices are generally not advertised and it is usually possible to negotiate with the owner (mainly to pay on credit for example). Prices are low (products are not of the highest quality, hence they are cheaper). Banca fixa are mostly visited by poorer customers from the surrounding neighborhood who therefore do not have to pay for transportation (although middle income consumers can sometimes pass by and buy a product they need).

Numerous **roadside vendors**, especially on the main EN6 road, offer individual drivers and bus travelers fresh vegetables from the nearby fields. It is mostly an opportunistic endeavor: they live close to the road, have found products to sell nearby and/or have their own production, and go sell it directly on the road. Some, however, seem to do this on a permanent basis and have their regular location at strategic crossroads or bus stops. Products are generally displayed directly on the floor, on a plastic bag, or they have a small wooden stall on which they show their goods. They generally sell very small quantities of products. Their customers are either travelers driving by car on the road (i.e. higher income customers) or local customers getting off the bus at a crossroad and stopping at the roadside vendor to shop before going home (low income customers). Only common products are sold by roadside vendors (limited variety of vegetables, mainly cabbages and tomatoes). Prices are not advertised and are negotiable.

Supermarkets (in cities only) offer high end customers a wider variety of fresh vegetables, both local and imported (mostly) from South Africa. They are located exclusively in the main cities. Food (including sometimes vegetables) is generally sold packaged, which is a major difference with the other points of sales. All types of products can be bought there, which makes them one-stop shops. There is a much greater variety of vegetables available at supermarkets than on local markets but the quality / aspect is not always good, especially in the low season when produce has to be imported and can spend days on the road before reaching the shop. Prices are high, advertised and it is not possible to negotiate. They are exclusively attended by high income consumers as they are (very) expensive compared to other alternatives.

Focus box 3 – Qualitative insights from a Focus Group Discussion – Vegetable shopping

Importance of convenience / proximity for food purchasing

The FGD participants agreed that food shopping is done in the nearest neighborhood market and that transportation costs are a deterrent. Even for those who knew of Vegman and had a positive opinion of it, the distance outside the city made it a non-option.

"I buy beetroots in the markets in the streets where I live." (Abdul Cassamo)

"I buy vegetables at my place of residence because they are cheap and to avoid paying transport to Market 38." (Sifa Eduardo)

"I would not leave the city to buy products at Vegman because of cost. It's too far from my house." (Albertina Antonio)

"I would go there [to the Veg shop] only if I had a great quantity of products to buy, because from the city to the Veg shop, it costs 24 meticais round trip." (Ines Antonio)

4.3. ORGANIZATION OF LOCAL FOOD MARKETS

When focusing on food markets, where most of Vegman's products can be found, two main types of food markets can be identified:

- **Retail markets:** Mostly located in the city/village center, close to the bus stops, they are usually clean and well organized (it is not uncommon to see covered markets with numbered stalls). They are visited by local end consumers who travel up to a few kilometers to shop for food directly from small-scale retailers and/or directly from local producers who sell their produce there, mostly during the high season.
- **Wholesale markets:** Usually located in the outskirts of only the main cities (e.g. Chimoio or Manica), further away from the main bus stops, they are generally dirtier and stalls tend to be less organized. Most have a security service due to the large stocks of products that wholesalers leave on the market overnight. They are mostly patronized by retailers from both local and remote districts (up to 350km) who come to buy significant quantities of vegetables from wholesalers (and/or directly from producers) to resell in their home retail markets. The retailers from nearby districts tend to come to these markets two to three times a week while those from more remote areas will try to limit their trips, for instance to once a week, by ensuring they need to buy several products at the same time or by coming in groups to minimize transport costs.

Figure 10 – Retail market (Mercado Central) in Manica town (left) and wholesale market (Mercado 38) in Chimoio (right), July 2017



On both types of markets, vendors must pay a fee to the city council for the right to sell their goods. Fees are paid daily and collected by a city council officer circulating on the market once a day. In

retail markets, market license fees cost between 7 and 15 MZN daily whereas they are generally higher on wholesale markets (around 25 to 30 MZN a day).

Unofficial trading areas tend to develop around the official markets. They have no organized selling space and vendors tend to sit directly on the ground in the streets. Vendors in these areas do not pay any market license fee to the city council but face the risk of a city council control, in which case the officer either makes them pay the fee or confiscates their merchandise. Vendors in these areas tend to sell smaller quantities of products and offer less variety to be able to pack up quickly if they spot a controller.

“I only sell cabbages and a maximum of 18 to 20 heads at a time so that, in case of a control, I can easily and quickly pack my merchandise in a bag and leave.”

Linda, cabbage retailer in the unofficial trading area of Mercado Central, Chimoio

Figure 11 – Official (left) and unofficial (right) trading areas at Mercado Central in Chimoio, July 2017



With the exception of larger towns such as Chimoio and Manica, where retail and wholesale markets coexist, in most villages there is one single retail market. During the high season, local producers tend to directly come to this market to sell their crops.

Table 6 – Summary and description of the main local food markets visited during the fieldwork, July 2017

City	Market name	Type of market	Comments
Chimoio	Mercado 38	Wholesale	Located in the outskirts of the city. Main wholesale market in Chimoio for food and non-food items (notably clothes).
	Mercado Central	Retail	Central retail market in Chimoio, mostly for food. Located close to one of the main inter-city bus stops.
	Katanga Market	Wholesale	Wholesale food market near the center of the city.
	Soalpo Market	Retail	Small neighborhood market.
Manica	Mercado Central	Retail	Central retail market in Manica, located close to the inter-city bus stop.
	Mercado 37	Wholesale	Wholesale market in Manica, located a few hundred meters behind Mercado Central (further from the main bus stop)

Espungabera	Main market	Retail	Main retail market for food in Mossurize District. Very large during the high vegetable season.
Sussundenga	Main market	Retail	Main retail market for vegetables.
Vanduzi	Main market	Retail	Main retail market for food and non-food items.

4.4. OFFERING

The vegetable offering on local food markets varies greatly depending on seasons. During the high vegetable season (which peaks in July-August for most varieties), plenty of vegetables are available at affordable (compared to the low season) and comparable prices on all local food markets, including those outside the main cities. At that time, all producers (commercial and small-holder) reach their production peaks and local markets are flooded with products, driving prices down for consumers.



Figure 12 – Profusion of vegetables on Espungabera's retail market, July 2017

While a wide variety of vegetables is available on most food markets (cabbages, tomatoes, onions, carrots, garlic, various vegetable leaves, etc.) some types are hardly to be seen outside supermarkets and a few markets in the main cities. This is the case for example for broccoli, cauliflower or beetroots which started to appear on Chimoio's markets about three years ago, but are still unknown in the rest of the province.

"I don't know what beetroot is. I have already seen broccoli in Chimoio but I have never thought about buying it. It would not sell here; it is too expensive and people prefer to buy what they know."

Lack of awareness and the higher price per kg of these types of vegetables certainly play a large part in their limited desirability. On average, cauliflowers cost about three times, beetroots four times and broccoli up to twenty times more than cabbages per kg¹⁷. In a very price-sensitive market such as Mozambique, such high prices per kg (and hence also per food portion) discourage both retailers (who mostly do not have enough capital to buy such expensive products) and consumers.

¹⁷ Average observed price differences per kg for vegetables of similar quality bought at the same time on the same retail markets.

Although sales of these unusual vegetables remain limited, it is important to note that the situation has improved compared to a few years ago when they could not be found at all on local markets. Kota played an important role in introducing these varieties on the local markets and in educating consumers on ways to prepare and eat them. For example, after noticing that consumers were boiling beetroots, drinking the juice but throwing the vegetable away, Kota asked his wife to prepare beetroot salad to display in the Veg shop and show customers how to cook and consume beetroots. Thanks to such actions, wealthy customers who can afford buying such vegetables started to buy them and they can now be found on a few local food markets and at Shoprite in Chimoio.

Focus box 4 – Qualitative insights from a Focus Group Discussion – Beetroot

Opinions on and consumption of beetroot

Most participants had heard of beetroots but had not tasted them as there seems to be little curiosity about unusual food. Two of the participants did say they liked beetroots. The healthy reputation of beetroots is in line with other stories heard in Chimoio about consumers boiling beetroots and drinking the juice to avoid or cure malaria.

“I never ate beetroots but I eat cabbage.” (Albertina Antonio)

“I think dealers do not take beetroots seriously because people do not adhere to them so they are only sold in supermarkets. People only eat beetroots with prescriptions when they are said to have hemoglobin problems.” (Sifa Eduardo)

“I like beetroot because they are rich in iron and because they are good for health; moreover, beetroot increases hemoglobin as well as cauliflower for people with anemia,” (Sifa Eduardo)

“I began to eat beetroots at a friend's house here in Chimoio and at first, I disliked them. This was in April last year. I started to eat them and sometimes I make juice from the blender using the beetroots.” (Sifa Eduardo)

“Beetroots are difficult to find. This is perhaps because families in Mozambique are not used to eating them and therefore people do not produce them.” (Armanda Gandara)

“It is difficult to find beetroots on the market, but cabbage can be found anywhere; the price of beetroot is high compared to that of cabbage.” (Armanda Gandara)

Figure 13 – Beetroots at Katanga market (left) and Shoprite (right) in Chimoio, July 2017



4.5. PRICING

Vegetable pricing on local markets can vary greatly. For example, a cabbage sold in Manica Province can be bought for as low as 10 MZN or as high as 75 MZN. The main criteria leading to this massive price difference are 1) seasonality, 2) market location / distance, 3) type of market, 4) product size/ weight, and 5) product quality:

1) Seasons mainly impact the producer's sales price. During the low season (which varies across Manica Province but peaks between January and March for cabbages for instance), there is a shortage of products on the market. Small-holder farmers and even commercial farmers cannot produce due to the high temperatures or when they manage, production costs are much higher (more watering, etc.). Since this corresponds to the rainy season, they can also be hampered by floods. In early 2017 for instance, Kota was at some points unable to approach his farm because of the high waters and production was completely halted. The resulting shortage, coupled with constant demand (since cabbage is one of the main food products eaten in the area), drives prices up and producers' sales prices (to wholesalers) can easily double compared to the high season. Other costs (transport, market licence fee, etc.) remain the same.

Table 7 – Comparison of cabbage and tomato prices by season, July 2017

Product characteristics	High season price	Low season price
Wholesale		
Medium cabbage, sold wholesale by producers in Vanduzi	12 MZN/head	25 MZN/head
Big cabbage, sold wholesale at the Veg shop in Chimoio	20 MZN/head	40 MZN/head
Small cabbage, sold wholesale at Mercado 38 in Chimoio	15 MZN/head	25 MZN/head
Retail		
Medium cabbage, sold retail in Messica	25 MZN/head	50 MZN/head

Big cabbage, sold retail at Mercado Central in Chimoio	35 MZN/head	60 MZN/head
Big cabbage, sold retail in Muxungue (Chibabava district)	50 MZN/head	65 MZN/head
Tomatoes, sold retail at Mercado Central in Chimoio	800 MZN/crate of 30 kg	1,800 MZN/crate 30kg

2) Market location: mainly impacts transport costs, which can have a significant effect on prices to end consumers. The further away the market is from the nearest producing area, the higher the vegetable prices on the market are, due to transport costs for retailers. It is important to note that the distance to the nearest producing area can vary depending on the season, i.e. some markets can be close to producing areas during the high season, when local farmers are able to produce, but very far away during the low season, when there is no local production and the nearest supply source may be several hundred kilometers away. This is notably the case for villages in southern Manica Province, such as Espungabera for example, which has local production in winter but relies on Chimoio (located 230km away) in summer (see part 6 of this report for more details).

Table 8 – Retail price comparisons for cabbages, broccoli/cauliflower and tomatoes by market location, July 2017

Prices in MZN per head of cabbage/ broccoli/ cauliflower or crate of 30kg tomatoes

Product characteristics ¹⁸	Vanduzi	Chimoio	Sussund enga	Manica	Muxungu e	Espunga bera	Beira
Large cabbage, sold retail, high season	-	35	50	40	50	60	75
Medium cabbage, sold retail, high season	-	-	-	25	-	40	60
Small cabbage, sold retail, high season	15	-	35	-	40	15	30
Broccoli/ cauliflower, sold retail, high season	-	75	-	-	-	-	100
Tomatoes, sold retail, high season	-	800	-	-	-	1350	-

3) Type of market: wholesale markets are cheaper than retail markets since less intermediaries are involved. However, they are often also less accessible (not in the city center and/or far away from inter-city bus stops) which means higher transport costs for most consumers who thus prefer to go to their local retail markets. Part 5 of this report presents detailed value chains of a few vegetable products and the price increase due to each addition of a new stakeholder in the process.

Table 9 – Price comparisons of cabbage and tomatoes by type of market, July 2017

Product characteristics	Wholesale price	Retail price
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¹⁸ “-” means the data is not available or the product was not sold on the market on the day the prices were collected.

Large cabbage, sold in Chimoio, high season	25 MZN/head	35 MZN/head
Medium cabbage, sold in Beira, high season	50 MZN/head	60 MZN/head
Medium cabbage, sold in Manica, high season	15 MZN/head	25 MZN/head
Tomatoes, sold in Chimoio, high season	700 MZN/crate (30 kg)	800 MZN/crate (30 kg)
Tomatoes, sold in Espungabera, high season ¹⁹	930 MZN/crate (30 kg)	1350 MZN/crate (30 kg)

4) Product size / weight: most customers hold the cabbages before buying them to assess their weight. The heavier the cabbage, the higher the price. Retailers tend to grade and price the cabbages based on their estimated weight (there is no formal weighting of the products since scales are not available or part of customs). In the case of cabbage, the weight (and hence price) of a cabbage can decrease with time: retailers remove the external leaves as the vegetable grows older to maintain a cabbage's "fresh" appearance, hence downgrading the cabbage.

Figure 14 – Cabbage retailer on Vanduzi market offering small and medium-sized cabbages, respectively for 10 and 20 MZN per head, July 2017



5) Product quality: the main quality criteria for cabbages is freshness. Some cabbages can also be downgraded because of apparent defects such as split heads which tend to appear when cabbages are watered too much. The seed variety used and the use or not of inputs to prevent diseases can also influence the overall appearance, taste and healthiness of cabbages. All these quality criteria can affect the cabbage price. Lower quality cabbage are often downgraded and sold at a cheaper price by retailers.

Figure 15 – Difference between low and high-quality cabbages, July 2017

¹⁹ There is no wholesale market in Espungabera but producers come to the main retail market to sell wholesale to the local retailers.

Lack of freshness



Split cabbage



High quality cabbage



5. DISTRIBUTION, VALUE CHAINS AND REACH

KEY TAKEAWAYS

- Only 20% of Vegman's sales are direct sales to end consumers and, due to the location of his shop, about 15km away from Chimoio, it is mostly higher end consumers who manage to travel to the shop by car or pay for the local bus;
- Vegman, however, manages to reach different types of consumers, including average urban Mozambican consumers purchasing vegetable on local food markets (via retailers selling his cabbages in Chimoio) but also poorer rural customers from far away localities (thanks to wholesalers buying from Vegman and reselling to retailers from outside Chimoio);
- Vegman's effect on the 50 to 70 local retailers buying from him is very positive. Vegman offers the same wholesale price as its competitors for larger and higher quality cabbages which result in a higher rotation of products for retailers. Vegman hence enables most retailers to increase their revenues by up to 33%.
- With regards to tomatoes, Vegman is able, thanks to his shop, to cut out intermediaries (wholesalers) by selling tomatoes directly to retailers at producer price. This enables retailers to multiply their margins by two to three compared to purchases from wholesalers;
- Vegman's produce is consumed by an estimated 10,000 people every day, mostly in Manica Province.
- His product is sold via a wholesaler to other districts of Manica, some as far as 350km away. Kota also reaches the cities of Beira and Tete via his sales to Shoprite (2 to 5% of his production), and through a trader who supplies Beira's high-end consumers with "rare" vegetables (broccoli, cauliflower, beetroots, etc.).

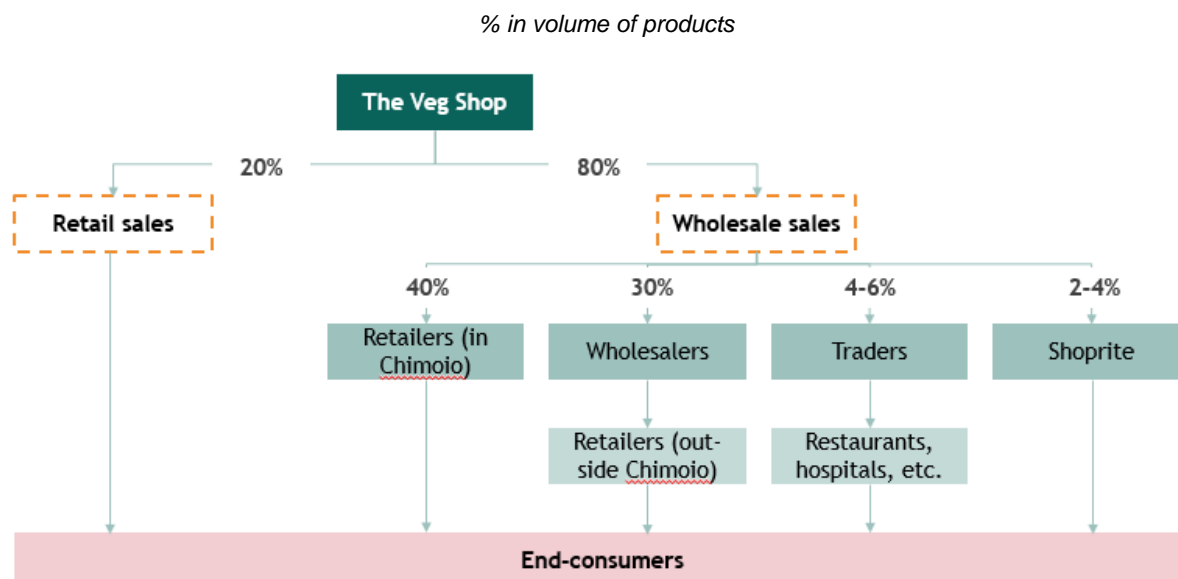
This section aims at using detailed distribution, value chain and reach analyses to better understand Vegman's value-added and influence on local food markets.

5.1. MAPPING THE DISTRIBUTION

All Vegman's products are sold via the Veg shop, which was upgraded thanks to GAIN's funding. The shop is split into two sections:

- **A retail section:** at the front of the shop, is a large, clean, well-organized area through which Kota sells some 20% of his overall production directly to individual customers;
- **A wholesale section:** at the back of the shop, where wholesalers and retailers (those who buy at least five cabbage heads for resale, for instance) can buy products at wholesale prices (cheaper than retail prices). Approximately 80% of Kota's production is sold wholesale to wholesalers, retailers or supermarkets.

Figure 16 – Vegman’s distribution model for vegetables (including cabbages)²⁰, July 2017



Although Vegman’s ambition by building the store was to grow the retail side of his operation, the business is still very much anchored in the wholesale side, positioning Vegman closer to the top of the vegetable and fruit value chain as a producer / supplier to wholesalers and retailers (for 80% of its volume) and as a retailer for the remaining 20%. Increasing the share of his volume going directly through the retail channel would give Vegman more control on prices and better margins. With regards to processing, there is very little of it in Mozambique: in this case, the value added and resulting mark-up in processing the produce would likely result in prices that would be even less affordable for low income consumers.

Figure 17 – Vegman’s position in the value chain, July 2017



5.2. VALUE CHAINS

This section of the report details the value chains corresponding to the different distribution channels used by Vegman. Prices are those of July 2017 and can vary by season (see section 4.5 and 6 of the report for more detail on the impact of seasons on pricing and value chains).

²⁰ The percentages were calculated for vegetables. Since cabbages represent a large proportion of Kota’s vegetable volumes, the distribution flows for cabbages are estimated to be the same. These percentages are averages over a year. The estimates can greatly vary from one day/week/month to the other.

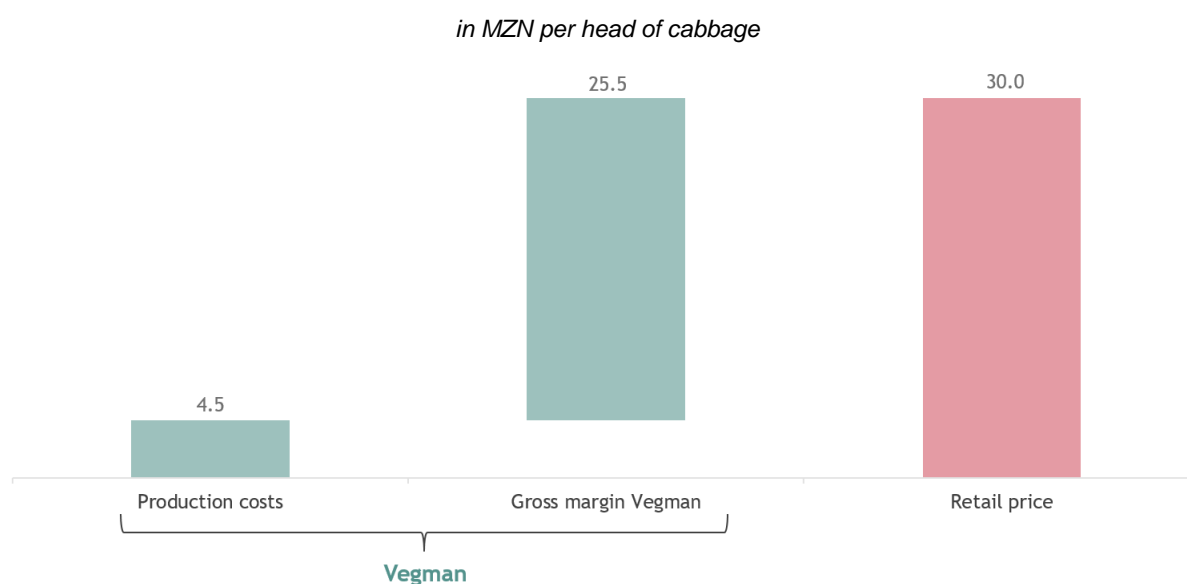
5.2.1. DIRECT SALES

Direct sales to end consumers represent some 20% of all Vegman sales (in volume and value). Kota uses a double-pricing model, whereby retail sales are priced higher than wholesale sales. This enables him to:

- Encourage purchases by wholesale customers thanks to whom he sells higher volumes by offering them competitive wholesale pricing;
- Prevent competition on price with his wholesale customers for retail sales;
- Make higher margins when he sells directly to end consumers;

As of July 2017, Vegman's wholesale price for one head of cabbage was 20 MZN vs. 30 MZN for the same cabbage sold to retail customers. The markup between wholesale and retail prices varies by vegetables and depending on various other factors including season, production, stock and sales.

Figure 18 – Vegman value chain when selling directly to end consumers at the Veg shop, July 2017²¹



While the shop location is very convenient for local business customers (whose business entails travelling to source their products from producers/intermediaries), it is less so for individual customers. The shop is located some 15km away from Chimoio, a distance which the city inhabitants can only travel by individual car (which few own) or by bus, at a cost of 12 MZN per trip (24 MZN per person both ways). For most inhabitants of Chimoio, buying directly from Kota's Veg shop is therefore not an option.

As a result, those customers who directly buy retail from Kota's Veg shop are mostly high-end customers who travel by car and stop on their way (e.g. nurses visiting nearby villages, border guards on their way to work at the border post with Zimbabwe, expatriates, etc.) Students and staff from the close-by agricultural institute also sometimes stop at the shop, as they, in any case, have to pay for the bus to travel from Chimoio to the institute.

Inhabitants of the local community behind the Veg shop also sometimes drop in, but it seems that some of them are too intimidated to enter the shop as they see that it is mostly visited by higher-end customers (e.g. presence of imposing cars in front of the shop etc.) and they feel it is "not for them". Since Kota's retail prices are not necessarily cheaper than the ones offered by local retailers (some of whom buy produce from Kota at the wholesale price and resell at the same retail price), they prefer to

²¹ Note for all value chains that only variable costs are included, i.e. for instance, labor costs for staff at the Veg shop are not included.

stick to their habits and buy from their usual retailers (who tend to be roadside vendors or small banca fixa in the village).

One of the difficulties encountered by Kota in growing his retail business is lack of awareness: very few inhabitants of Chimoio are aware of the shop and his wholesale customers generally ensure not to talk about it to their customers in order not to lose them to Kota.

Focus box 5 – Qualitative insights from a Focus Group Discussion – Awareness of Vegman, April 2017

Awareness and opinion of Vegman

Most FGD participants did not know about the Veg shop. Only two did and they had positive opinions. One of them, a teacher, frequents it. The fact that it is located outside the city is a deterrent for most consumers as one return ticket to the shop costs almost the same as one cabbage.

“The shop is better known as “pata fora” [NB. Feet outside, because “he is always barefoot”] than as Vegman. I buy there because the food is well-kept, fresh and clean, and the owner always exchanges it when it withers.” (Sifa Eduardo)

“I do not buy in the market because of the lack of hygiene and the use of fertilizers, I buy in the store located in the Antennas called Veg-Shop, better known as Pata Fora.” (Sifa Eduardo)

“I bought products there once because I was near a friend's house. They are fresh and have good quality compared to the city and the prices are low. Another reason is that the resellers buy there to sell in the city, and during the transportation vegetables get crushed.” (Armanda Gandara)

“I would not go there because of cost. It's too far from my house.” (Albertina Antonio)

5.2.2. SALES VIA RETAILERS IN CHIMOIO

50% of Kota's wholesale sales are to small retailers from Chimoio who travel to Kota's shop by bus, buy products and go sell them on Chimoio's retail markets. There are an estimated 50 to 70 of these retailers regularly buying from Kota.

Every morning at around 9:30am, when Kota or his staff come back from the field with a truck full of fresh vegetables, a dozen small retailers from Chimoio are generally waiting for him. As soon as the products are off-loaded, retailers start selecting them. Once they have made their choices, they call Makabo, Kota's shop manager, to check the merchandise and collect their payment. They then go back to Chimoio by bus and resell the vegetables on the city's retail markets, at a margin.

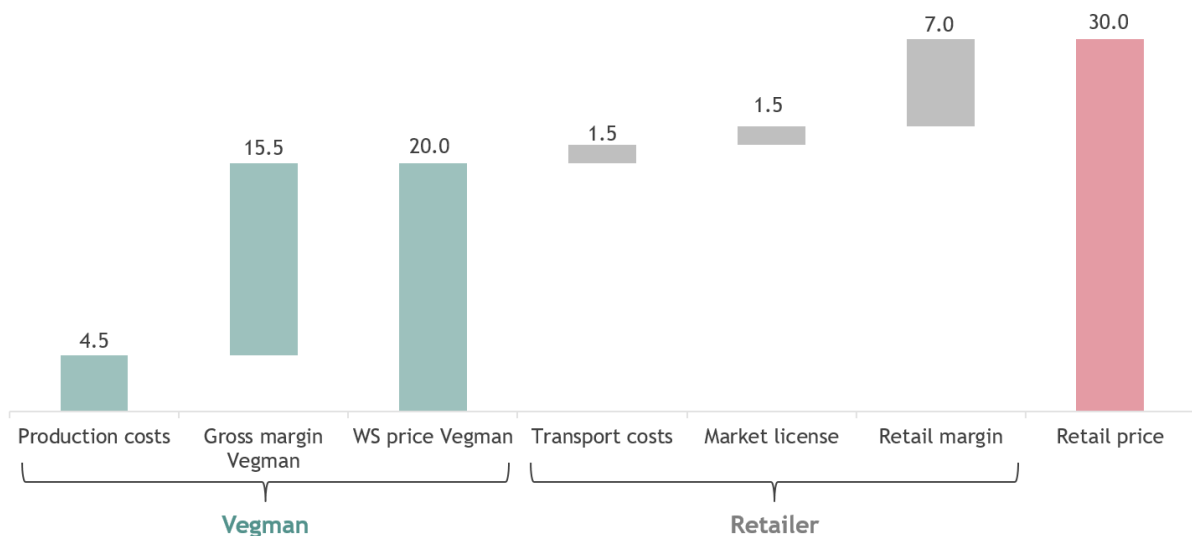
Figure 19 – Retailers in the wholesale section of the Veg shop (left) and Makabo, Veg shop sales manager, collecting payment from a wholesale customer (right), July 2017



Small retailers have a simple business model. Their main costs include transport (from Chimoio to the Veg shop and back) and a market license fee to be allowed to sell on the city markets.

Figure 20 – Sales in Chimoio via retailers buying from Vegman, July 2017

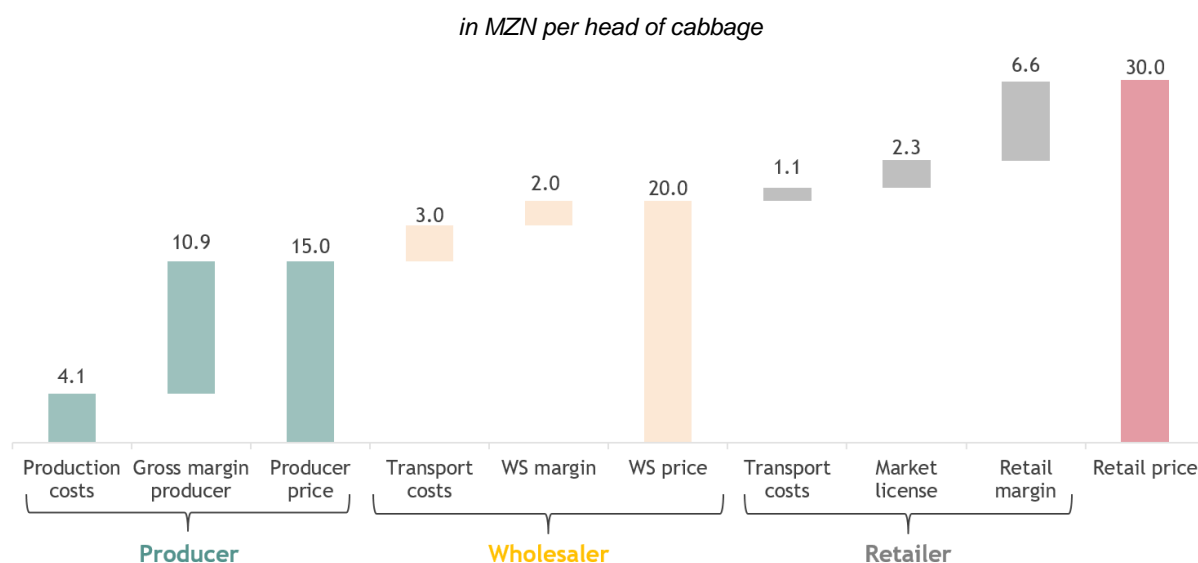
in MZN per head of cabbage



Before Kota opened the Veg shop, or when retailers cannot travel there, their alternative to get merchandise is to buy it from the wholesale markets of Chimoio, mainly Mercado 38.

Wholesalers at Mercado 38 buy large quantities of cabbages from various small-holder farmers (from around Chimoio or further away). They rent trucks to travel to the different farms and transport cabbages to the market, where they sell them to small retailers coming from the city's retail markets.

Figure 21 – Sales in Chimoio via retailers buying from wholesalers at Mercado 38 (main alternative for retailers not buying from Vegman), July 2017



When comparing the two alternatives for Chimoio's retailers (buying from Vegman or via wholesalers), it is worth noting that Kota's value added is not on price as he sells cabbages to retailers at 20 MZN, the same price they get at Mercado 38. In addition, for retailers the transport costs associated with buying from the Veg shop are higher (1.5 MZN/cabbage vs. 1.1 MZN/cabbage if they buy from Mercado 38).

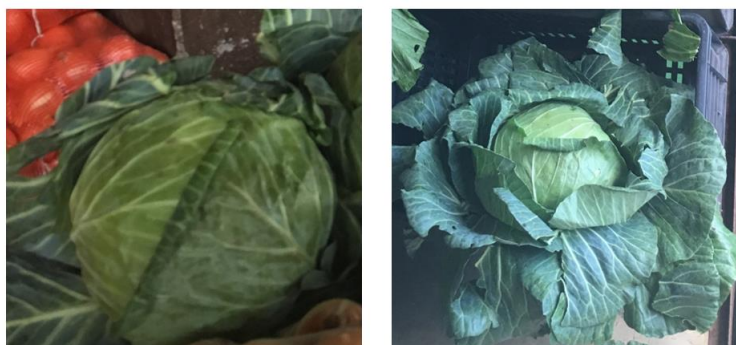
However, retailers unanimously recognize that Vegman's cabbages are larger and of a much better quality than other cabbages (they are freshly cut from the morning whereas cabbages can spend several days at Mercado 38, often after having travelled a few more days). As a result, Vegman cabbages sell much faster: two days on average to sell 20 Vegman cabbages vs. 3 days for the same amount of Mercado 38 cabbages, which enables retailers to better amortize their market license fee (1.5 MZN/cabbage with Vegman cabbages vs. 2.3 MZN/cabbage with Mercado 38 cabbages).

In addition, since Vegman cabbages sell faster, retailers are overall able to sell approximately 33% more volume with them than with Mercado 38 cabbages, resulting in 33% more in revenues per day for them thanks to Vegman.

"I prefer Vegman cabbages. Although they are more expensive for me in terms of transportation, his cabbages are fresher, bigger and hence sell faster, meaning more money for me."

Linda, cabbage retailer, Mercado Central, Chimoio

Figure 22 – Cabbages from Mercado 38 (left) and from Vegman (right), July 2017

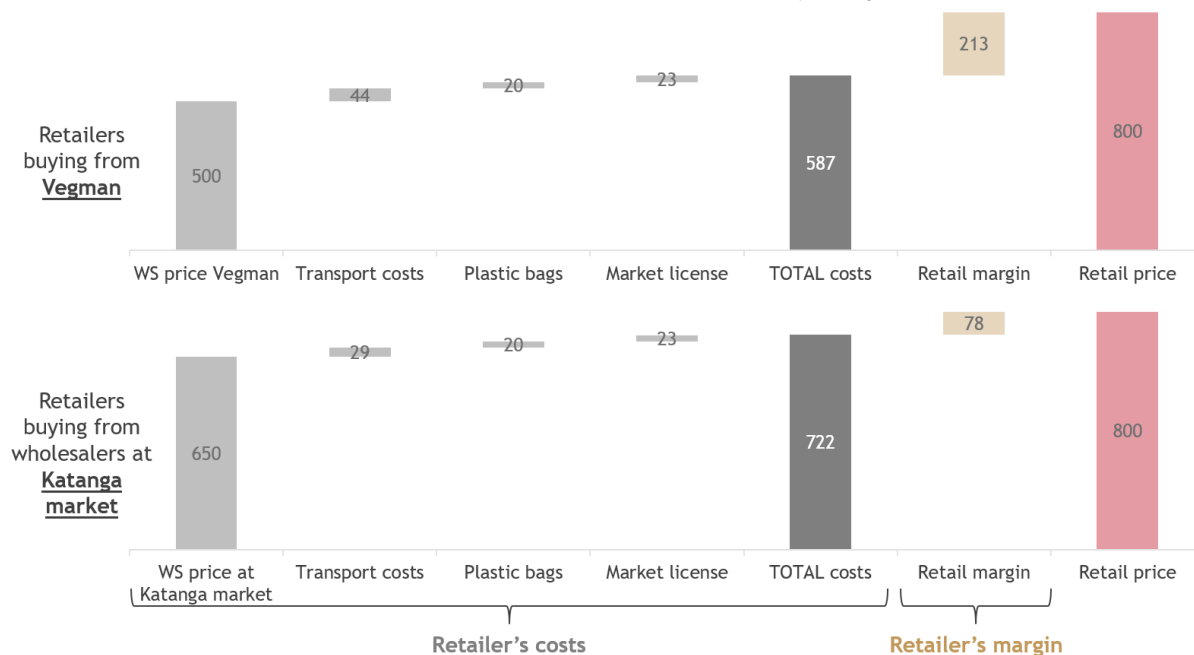


For tomatoes, however, Vegman’s value-added is mostly on price (in terms of quality, his tomatoes are like others), thanks to the suppression of intermediaries.

Retailers come to the Veg shop to buy crates of tomatoes (30 kg) at producer price (500 MZN) and resell them in Chimoio’s retail markets in piles of four to six tomatoes, which they pack in plastic bags. Before Vegman (or for those not buying from Vegman), the alternative consisted in buying from wholesale markets in Chimoio – such as Katanga market for instance – where prices are much higher (650 MZN/crate), as they include the wholesaler’s margin. Thanks to Vegman, tomato retailers are able to benefit from much higher margins by buying directly from the producer without going through any middlemen.

Figure 23 – Comparison between retailers buying tomatoes from Vegman and retailers buying from wholesalers at Katanga market, Chimoio , July 2017

in MZN per crate of tomatoes (approximately 30 kg)



Through this channel, Vegman manages to reach the average urban Mozambican customer who purchases his vegetables from local food markets.

5.2.3. SALES OUTSIDE CHIMOIO VIA WHOLESALERS

40% of Vegman’s wholesale sales (30% of his total sales) are done through wholesalers. Even though wholesalers also come to the Veg shop to collect their products, the sales process differs from the one used with retailers and described above. Indeed, wholesalers buy much larger quantities of

products than retailers. They hence generally order from Kota by calling him in advance to ensure he picks enough vegetables from the field in the morning to fulfill their orders.

Vegman has two main types of wholesale customers:

- **Regular wholesale customers:** Kota has only one customer in this category, Eliza, a wholesaler at Katanga market. She is by far Kota's largest customer, buying 600 to 1,000 heads of cabbage a week from him as well as large quantities of tomatoes. As a large and loyal customer (she has been working with Kota for eight years), she gets some advantages from him (e.g. she is given priority on some products, is offered credit, etc.).
- **Non-regular customers:** Kota also works irregularly with other wholesalers who move very large quantities of produce (up to a few thousand heads of cabbage a week) and cannot be supplied by Kota alone. They therefore work with numerous producers (including farmers' associations – see details on this type of production in section 6 of the report) and occasionally buy a few hundred heads from Kota to meet their objectives. Kota is generally reluctant to serve them and does not treat them as a priority, as he prefers to serve first the small retailers who are more loyal than these big businessmen and who do not try to negotiate his prices down as the latter do.

Focus box 6 – Portrait of José, cabbage wholesaler

José is a cabbage wholesaler in Manica Province. In addition to his stall at Mercado 38, he has a big contract with the military to supply the barracks of Manica with cabbages. Overall, he moves some 9,000 heads of cabbage a week. José's success relies on constantly having cabbages available and on his capacity to move large volumes of product. As a result, José has diversified his cabbage sources: he sometimes buys from Kota but also from a producer association in Vanduzi (20km from Chimoio); he also goes to Angonia (northern Mozambique) at times; and imports from Zimbabwe and even Malawi when necessary.

Eliza, who represents by far the biggest share of Kota's sales to wholesalers, mostly sells to retailers outside of Chimoio from her base in Katanga Market. She typically calls Kota in advance to let him know the exact quantities of cabbages and tomatoes she wants to collect at a given time. She then rents a truck for 1,500 MZN to go to the Veg shop to collect her merchandise and bring it back to Katanga. There, she pays casual workers a lump sum of 50 to 100 MZN to help her off-load the truck. In addition, like all vendors operating on city markets, she pays a market license fee to the city council (20 MZN per day) and security guards (20 MZN/day) who watch the market "24x7".

Eliza's customers buy from her (rather than directly from Kota) because they are not aware of Kota (and Eliza purposely does not advertise for him) and/or they do not have the money or the time to go to the Veg shop. Indeed, most of them come from other districts and already travel by bus to Chimoio. It would be too time-consuming (and costly) to take yet another bus from Chimoio to Kota's shop while they can directly buy from Eliza in Chimoio. Most of them come to Eliza because they appreciate the quality of Kota's cabbages, which enables them to differentiate themselves on their local markets.

"I sell my cabbages at about 60 MZN per head. But we also have local producers from areas around Chibabava who sell cabbages at cheap prices, around 40 MZN per head. So my only way to differentiate myself is to have large, high quality cabbages like the ones I buy from Chimoio. People here prefer the cabbages from Chimoio; the ones from Chibabava sometimes cause stomach pain."

Cabbage retailer in Muxungue, Chibabava District, Sofala Province, buying Vegman cabbages from Eliza at Katanga Market, July 2017

Figure 24 – Sales of Vegman cabbages via a wholesaler (Eliza) in Chimoio, selling to retailers outside of Chimoio, July 2017

Example of cabbages sold in Sussundenga - in MZN per head of cabbage, July 2017



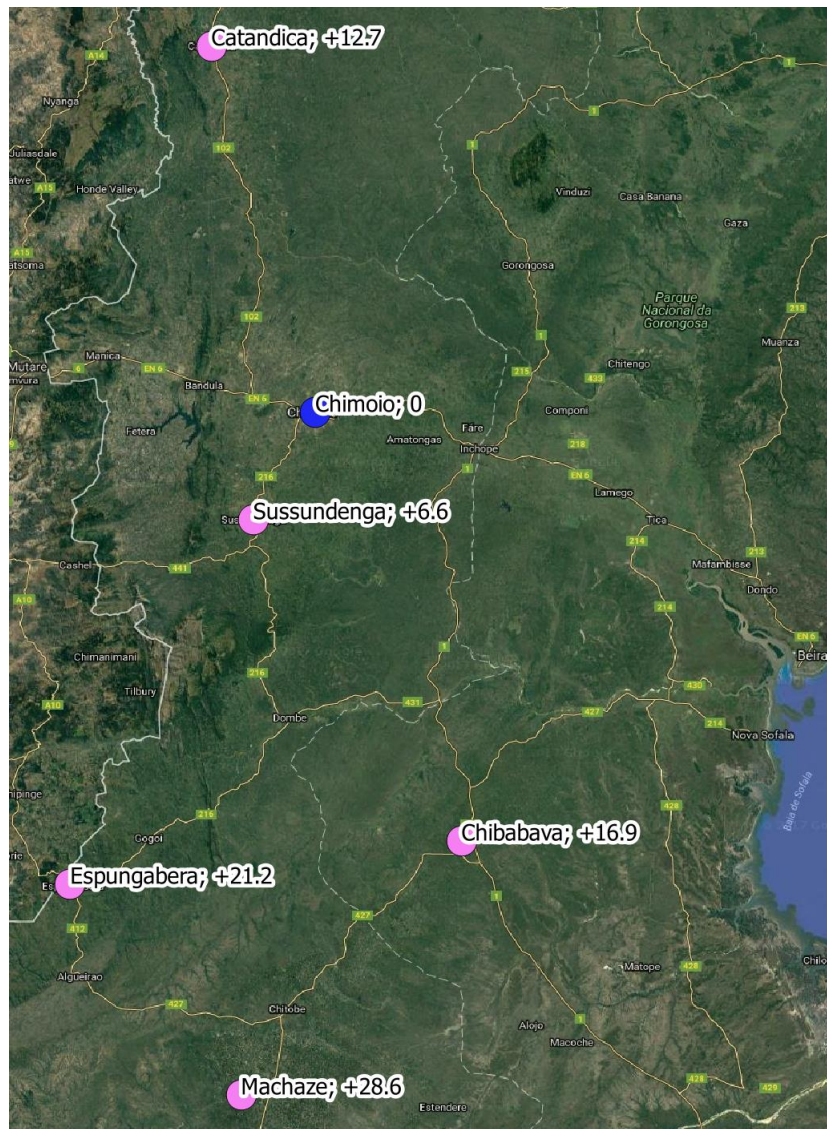
Retailers buying from Eliza come from various districts outside Chimoio, mostly located in Manica Province, with a few also coming from the nearby Sofala Province, the capital of which is Beira. Overall, they mainly come from:

- Mossurize District // capital: Espungabera // Manica Province;
- Barue District // capital: Catandica // Manica Province;
- Machaze District // capital: Machaze // Manica Province;
- Sussundenga District // capital: Sussundenga // Manica Province;
- Chibabava District // capital: Chibabava // other city: Muxungue // Sofala Province.

Depending on their districts of origin and their distance from Chimoio, retailers' transportation costs vary. Other costs (1.5 to 2.3 MZN per cabbage on average for market license) and retailers' margins (10 to 15 MZN) are similar across districts. As a result, the final retail price to consumers is mostly influenced by transport costs to Chimoio and can reach 60 to 70 MZN in some localities (vs. 30 to 35 MZN in Chimoio).

Figure 25 – Retailers’ additional transport costs depending on their cities of origin, compared to cabbage costs in Chimoio (no additional transport)²², July 2017

in MZN per head of cabbage



Despite high transportation costs, through this channel, Vegman provides high quality cabbages to poorer rural inhabitants from remote places where high quality commercial products are rarely available and where local production takes place only a few months a year.

5.2.4. SALES VIA TRADERS

Traders represent 5 to 8% of Kota’s wholesale sales (and 4 to 6% of his overall sales). There are few traders in general. Typically, they do not sell their goods on wholesale markets but have their own networks of end customers to whom they sell directly: these customers tend to be institutional customers (e.g. restaurants, hospitals) or “exclusive/high-end” Mozambicans and expatriates.

One of Kota’s main trader clients is Jordão, who serves the Beira market with “rare” vegetables that he sources from Kota (broccoli, cauliflower, beetroot, etc.). Indeed, the Beira area has poor farming

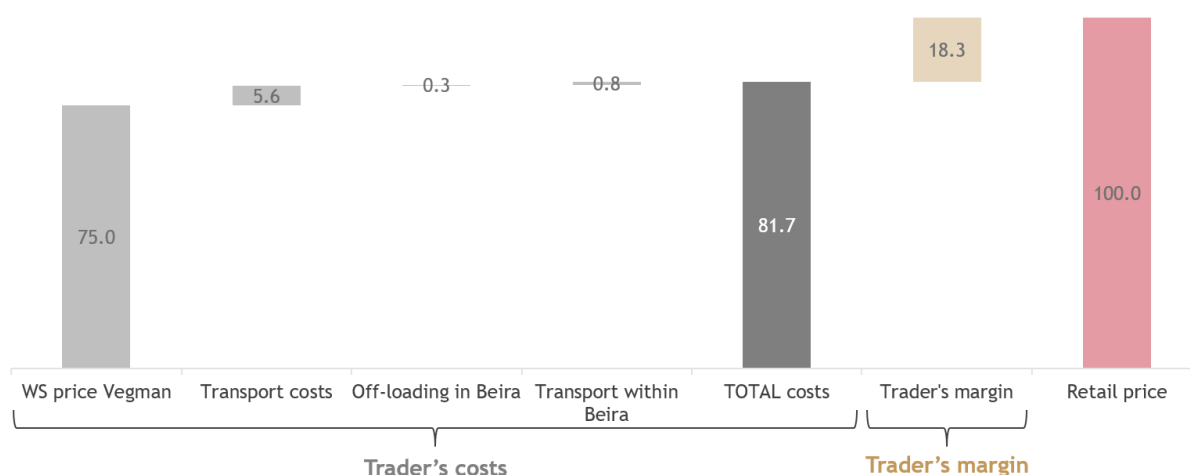
²² Calculations based on the assumption that transport is made by bus. For each trip, retailers transport 2 bags i.e. approximately 60 cabbages.

production and mostly relies on Manica Province for fresh vegetables. Jordão has two main types of businesses. The first one consists in buying broccoli and cauliflowers from Kota and reselling them to his network of some 15 “exclusive/high-end” expatriate customers – mostly Indians, Chinese and Europeans – who work in the Beira area and want fresh, high-quality vegetables which are difficult to find on Beira’s markets.

Jordão transports products from Chimoio to Beira by bus. When he arrives in Beira, since he tends to transport large volumes, he usually pays casual workers to help him off-load his produce from the bus and on-load it onto other transportation means (taxi, motorbike, sometimes city bus) to move it to his storage space. Customers generally come to pick up their goods from his storage area or he sometimes delivers at their place of work or home.

Figure 26 – Sales of Vegman’s broccoli and cauliflowers in Beira via traders, July 2017

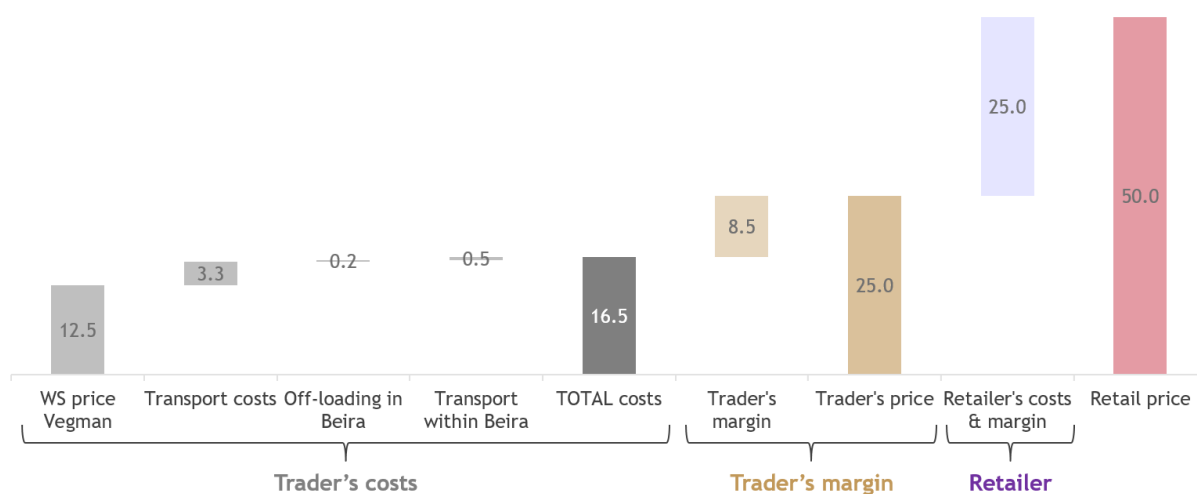
in MZN per head of broccoli/cauliflower



Jordão’s second business consists in the sale of beetroots to retailers who buy them from him and resell them on Beira’s retail markets. The exact costs of the beetroot retailers and their margins are unknown (no fieldwork was conducted in Beira).

Figure 27 – Sales of Vegman’s beetroots in Beira via traders and retailers to end consumers, July 2017

in MZN per beetroot



5.2.5. SALES VIA SHOPRITE

Between two and five percent of Kota's wholesale sales go to Shoprite (and 2-4% of his total sales), which buys on average 400 heads of cabbage a week for the region, regardless of the producer (varies depending on season).

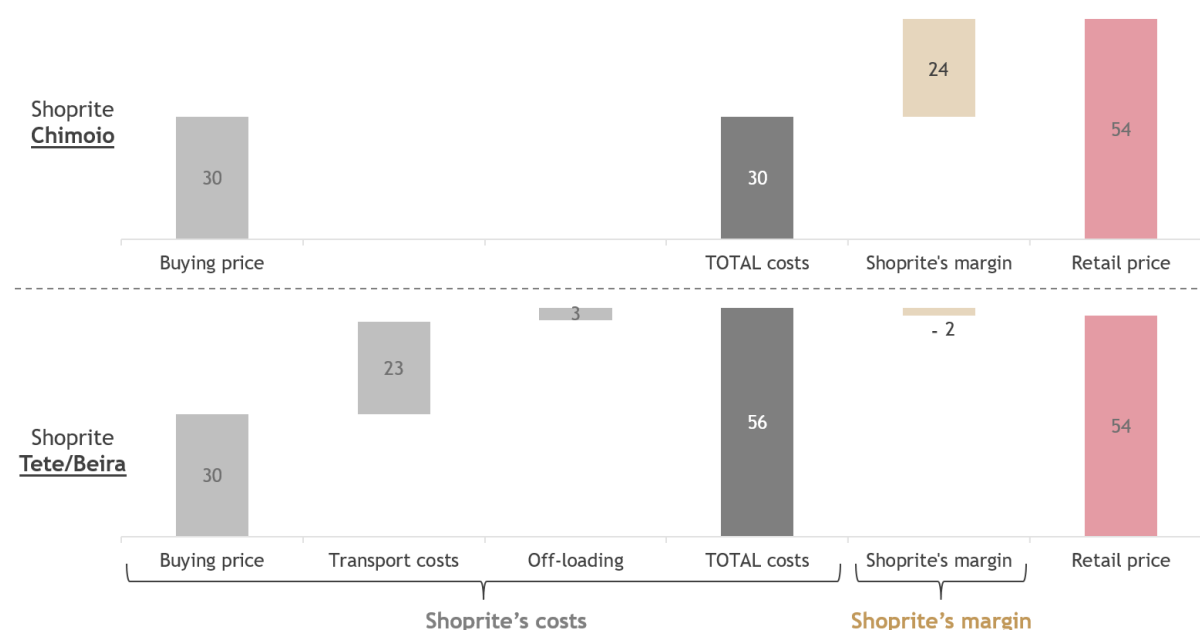
Freshmark is Shoprite's trading branch for fruits and vegetables. It is organized by regions: in each region, there is a team responsible for the supply of fruits and vegetable to the region's supermarkets, and within each region retail prices are similar across the stores. In central Mozambique, the Freshmark region is comprised of Chimoio (one store), Beira (one store) and Tete (two stores, plus one which is to open in November 2017). The logistical node for the region is located in Chimoio.

Bill Creswell is Freshmark's biggest vegetable supplier, accounting for some 45% of their supply. Kota also holds a significant share, supplying 10 to 15% of Freshmark's needs for the region²³ (mainly cabbages, tomatoes and bananas, sometimes spinach).

Freshmark buys cabbages from farmers at 30 MZN per cabbage but asks them to deliver the products at their logistic node in Chimoio. For cabbages ending up on Shoprite Chimoio's shelves, Shoprite's costs are limited and they make a significant margin (above 40%). The cabbages travelling to the Tete and Beira supermarkets, however, give Shoprite no (or negative) margins as they incur very high transport costs.

Figure 28 – Sales of Vegman's cabbages via Shoprite, July 2017

in MZN per cabbage



In summer (approximately December – January), when local producers from Chimoio, including Kota and Bill, cannot produce, Freshmark sources cabbages and other vegetables from South Africa, where Shoprite has a wide network of over 200,000 farmers to whom they provide agricultural inputs and who they help to produce year-long. South African cabbages arrive in Chimoio at a cost of 28 MZN/head (including production, border clearance, transport, etc.). Such low prices can be obtained thanks to Shoprite's massive bargaining power in South Africa which it gets from buying enormous quantities. Despite cheaper prices for South African cabbages, Freshmark favors local cabbages from Chimoio when they are available due to their longer shelf-life. Indeed, cabbages have a shelf-life of

²³ According to Freshmark, based on an interview conducted in July 2017 with the Freshmark trading manager in Chimoio.

about 10 days and it takes South African cabbages some 6 days to reach Chimoio, hence a remaining shelf-life of only four days.

5.3. REACH

It is estimated that some 10,000 persons eat Kota's vegetables every day²⁴. Most of them live within a 350km radius of Chimoio, especially in Manica Province. Taking the average size of a household in Mozambique as 4.5²⁵, the number of households reached would equal 2,222. Consumers reached under the age of 5 would be 1,700 and consumers under 18 around 5,100 (given they represent respectively 17% and 51% of the population²⁶). Considering an overall male/female ratio of 0.96²⁷ in Mozambique, male consumers reached would be 4,898 and female consumers 5,102. Given an overall poverty rate in Mozambique of nearly 50%²⁸, with a higher concentration of low income populations in the northern provinces (including Manica), it can be inferred that half or more of all consumers reached by Vegman may be living in poverty.

Table 10 – Approximate number of people reached by Vegman products, September 2017

	Source	Results
Number of people reached by Vegman	Estimation	10,000
Average household size in Mozambique	Michael Bauer Research, 2015	4.5
Percentage of Mozambique population below 5	CIA World Factbook, 2016	17%
Percentage of Mozambique population below 18	CIA World Factbook, 2016	51%
Male/female overall ratio in Mozambique	CIA World Factbook, 2016	0.96
Percentage of Mozambique population living in poverty	World Bank, 2016	50%
Percentage of female population between 15 and 49 of overall population	CIA World Factbook, 2016	22%
Number of households reached by Vegman	Calculation	2,222
Number of consumers under 5 reached by Vegman	Calculation	1,700
Number of consumers under 18 reached by Vegman	Calculation	5,100
Number of female consumers reached by Vegman	Calculation	5,102
Number of low income consumers reached by Vegman	Calculation	5,000
Number of low income households reached by Vegman	Calculation	1,111

²⁴ Kota's own estimation, based on an average daily consumption of 200g of vegetables per person. Average daily expenditure for fresh or chilled vegetables other than potatoes in Mozambique was equal to 2.12 \$PPP in 2010 (Global Consumption Database, World Bank).

²⁵ Michael Bauer Research, 2015.

²⁶ CIA World Factbook, 2016.

²⁷ CIA World Factbook, 2016.

²⁸ World Bank, 2016, poverty defined as people living with under 1.90 USD per day.

Number of females between 15 and 49 reached by Vegman	Calculation	2,200
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Kota's vegetables also travel the EN6 up to Beira, Sofala Province (Beira corridor), where they start to meet competition from northern Mozambique (mainly Angonia for cabbages) north of Beira and from South African imports south of Beira. Kota's cabbages can also be found in Sofala Province, in districts such as Chibabava, which are well connected to Chimoio by road (500 MZN per person by bus both ways) and where local vegetable production is scarce.

In Manica Province, Kota's cabbages are mostly and regularly found in Barue District (Catandica), Machaze District (Machaze), Mossurize District (Espungabera) and to a lesser extent Sussundenga. All these districts are mostly served by Eliza (a wholesaler on Katanga market and one of Kota's main customers whose business is described in Section 5.2.3).

To a lesser extent, it is estimated that Kota's cabbages also reach Messica and other districts of Manica Province via large wholesalers from Mercado 38 who, although irregularly, buy part of their supply from Vegman and resell to retailers from the entire Province (see section 5.2.3). Kota's cabbages, however, do not reach Manica town and the nearby areas along the border with Zimbabwe as farming is well developed in these areas and, during the low season, inhabitants rely on Zimbabwe for vegetable supply rather than Chimoio.

In Chimoio, Vegman cabbages can be found on most retail markets thanks to the numerous local retailers directly buying from the Veg shop to resell on the city's markets.

In addition, Kota's cabbages can be found at Shoprite supermarkets in the cities of Beira (200km away from Chimoio) and Tete (390km from Chimoio). While Beira is in the natural sphere of influence of Chimoio for vegetable supply, serving Tete will most likely remain exceptional for Kota (partly due the very specific logistics and supply organization of Shoprite, which deals with the Chimoio, Tete and Beira supermarkets as one – see section 5.2.5). Indeed, Tete usually mostly relies on northern districts such as Angonia rather than Chimoio for vegetable supply, although Kota's great vegetable diversity (and especially his production of "rare" vegetables such as broccoli, cauliflowers or beetroots) may offer an opportunity to target higher-end customers in the Tete area looking for diversity (through a similar model to the one used by Jordão, Kota's trader working in Beira – see section 5.2.4).

Finally, it is important to note that Kota's geographical reach varies by season (see section 6 for details). Kota's cabbages travel the furthest (to Espungabera, Machaze or Beira for instance) in May-July and August-October when:

- There is no local production in other Manica districts (only commercial farmers in Chimoio manage to produce);
- Kota's production (though not at its peak) is substantial and he is able to serve more customers.

In July-August, Kota's production is estimated to mostly remain in Chimoio (local production is at its peak everywhere so retailers have no incentive to travel from the districts to Chimoio) and its prices tends to drop since the market is flooded with vegetables.

From November to March, Vegman only manages to produce very limited quantities of products, meaning his geographical reach is much more limited.

Figure 29 – Reach of Vegman vegetable products, July 2017



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6. SEASONALITY & ALTERNATIVE SUPPLY

KEY TAKEAWAYS

- Vegetable production depends on weather and hence varies by season. For cabbages (and other vegetables), the peak season in Mozambique is reached in July-August, while the low season generally happens in January-March;
- Seasonality has an impact on i) prices, which are higher during the low season and ii) supply, since production locations vary by seasons (most farming areas in Mozambique cannot produce all year long and different regions produce at different times);
- Angonia, a district in northern Mozambique, has a more favorable climate for farming and hence a longer cabbage season than Chimoio (March to December in Angonia vs. May to October in Chimoio). During the low season in Chimoio, cabbages tend to come from Angonia (as long as it can still produce), and then from Zimbabwe;
- Zimbabwe, able to produce all year long, is the last resort for vegetable supply when Mozambican farmers cannot produce at all, i.e. mostly between January and March;
- In the localities of the south of Manica Province, small-holder local farmers manage to produce during a few weeks in July-August, at which point they do not rely on Chimoio for supply;
- Other types of local supply include associations of small-holder farmers and some small “commercial” farms around Manica town, which does not rely on Chimoio for its vegetable supply as it can meet its population’s needs most of the time and import from Zimbabwe – which is just a few km away – the rest of the time.

6.1. IMPACT OF SEASONALITY

Vegetable production is highly dependent on the weather. Some seasons are more favorable than others to produce: for cabbages, the high season reaches its peak in winter (July to August), while the low season, when production is almost non-existent, occurs in the hot, rainy summer (January to March), when temperatures reach 35°C and heavy rains can often lead to floods (and make it impossible to cultivate the land).

Seasonality has an impact on:

- **Price:** During the high season, markets are flooded with products and prices are driven down (see section 4.5. for a detailed analysis on prices). Conversely, during the low season, producers have more bargaining power as demand remains constant (cabbages are a common food for most inhabitants) while merchandise is scarce, hence prices rise.
- **Supply:** Depending on location (local climate, type of soil, etc.) and the use or not of agricultural inputs, producers have different farming seasons. In Zimbabwe, where agricultural inputs are easily available, farmers successfully produce cabbages all year long. In Angonia, a district in Tete Province, at the border with Malawi, where temperatures in summer do not exceed 28°C, farmers manage to start their cabbage season earlier and end it later than in Chimoio. In Chimoio, where some farmers like Kota use agricultural inputs, the farming season is extended compared to those of other small-holder farmers from Manica Province who barely manage to produce outside of the months of July and August.

Figure 30 – Cabbage season depending on location

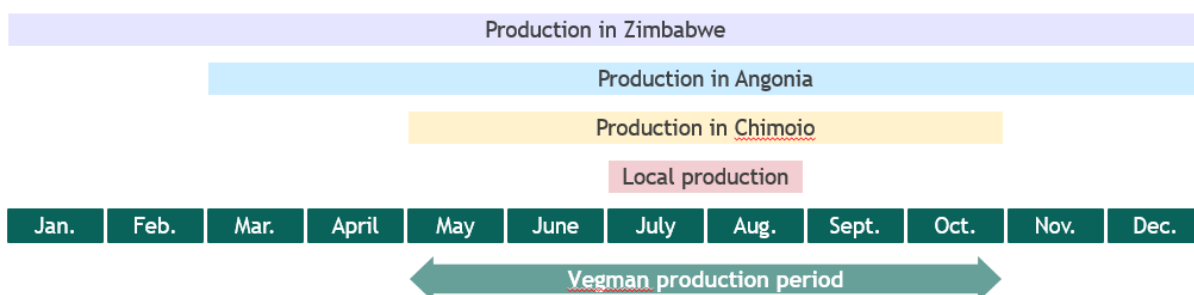


Figure 31 – Angonia district, Tete Province, Mozambique



Focus box 7 – Qualitative insights from a Focus Group Discussion – Seasonality, April 2017

Seasonality and impact on food purchasing and consumption

The effect of seasonality is felt in both the availability and the affordability of products, including vegetables.

“In summer, there are no greens and in winter there are more greens such as bananas, madumbe (yam) and hardly any meat is consumed.” (Armanda Gandara)

“In January and February, it is difficult to find vegetables.” (Ines Antonio)

“In winter, there are a lot of greens and vegetables and in dry weather, in summer, there are only a few vegetables which are very expensive, so fish and beans are consumed.” (Sifa Eduardo)

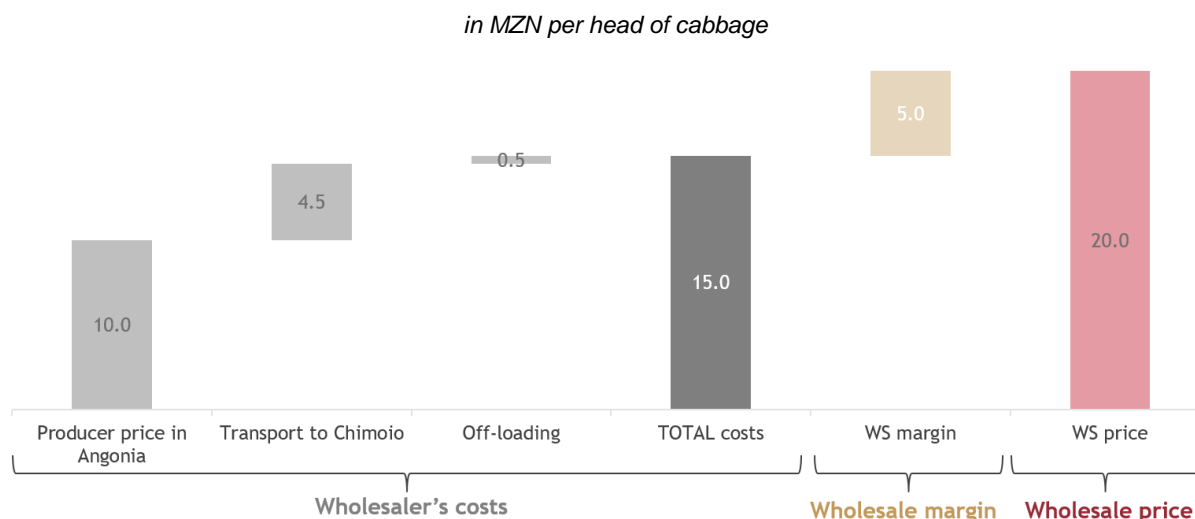
[When there are no cabbages available] *“We eat pumpkin leaves and sweet potato leaves because they are always available in markets.”* (Sifa Eduardo)

6.2. SUPPLY FROM ANGONIA

Angonia, in Tete Province, northern Mozambique, is a big farming area, specifically for cabbages. Thanks to more favorable temperatures than Chimoio, the cabbage season lasts longer, from March to December (vs. May to October in Chimoio). Angonia is therefore the first alternative option for most wholesalers when Chimoio runs out of cabbage supply.

Wholesalers generally send trucks to Angonia (or work with local traders who have contacts with Angonian producers and buy directly from them) and transport goods back to Chimoio (250 MZN per bag of 50 to 60 heads of cabbage) to resell at wholesale markets in Chimoio.

Figure 32 – Supply of cabbage from Angonia by wholesalers from Chimoio, July 2017²⁹



6.3. SUPPLY FROM ZIMBABWE

Zimbabwe, once the bread-basket of Africa³⁰, has much more experience with and infrastructure for farming than Mozambique. Thanks to its long farming history, and despite its most recent setbacks in the agricultural field, Zimbabwe, compared to Mozambique, still has larger farms, more skilled farmers with experience in commercial farming, easier access to capital for farmers, and better access to agricultural inputs, all of which favor the development of commercial agriculture.

Looking at the border between the two countries at Espungabera for example shows the striking difference: with the same climate and the same soil, one country has managed to cultivate large areas of land (Zimbabwe) while the other has not (Mozambique).

²⁹ "Producer price" includes producers' costs and margin.

³⁰ "Zimbabwe, The Former Bread Basket of Africa", Pauline Nyikadzino, Continental News Network, April 2011.

Figure 33 – Satellite view of the border between Zimbabwe and Mozambique, Espungabera, August 2017³¹



Figure 34 – “Fields are the border”, border between Zimbabwe and Mozambique, Espungabera, July 2017



In addition to the lack of an enhancing environment, the civil war and the recent and recurring fighting between rebels and the Government in the region have also hindered the development of farming in Manica Province.

³¹ Satellite view, based on Google maps, consulted in August 2017.

Focus box 8 – Fighting in central Mozambique

Although the security situation has greatly improved since the end of the civil war in 1992, sporadic fighting continues to take place occasionally between the Mozambican army (controlled by the ruling party FRELIMO) and the armed branch of its historical adversary RENAMO, notably in Manica Province.

A year ago, the small town of Espungabera, Mossurize District, was completely empty after the population had fled following the resurgence of conflict between the two groups.

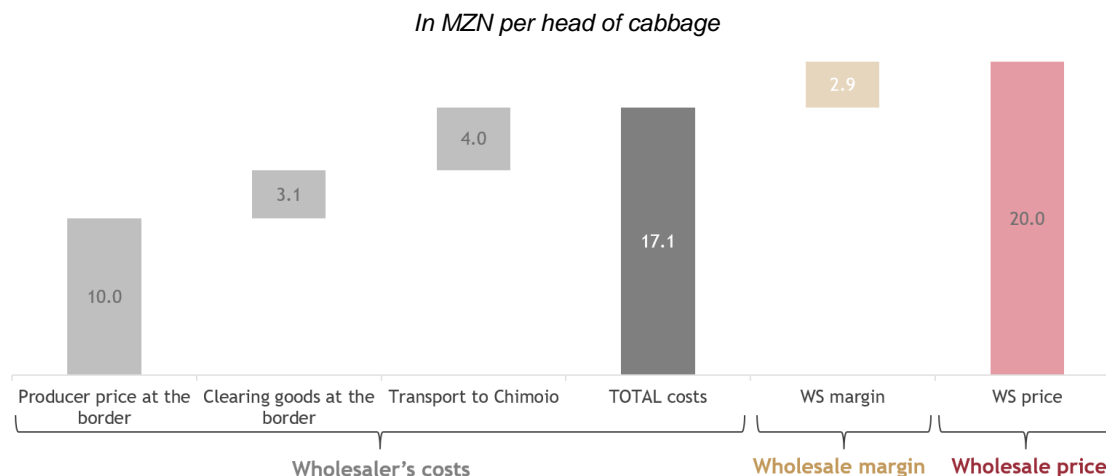
The regular bouts of conflict obviously have a negative impact on agricultural production: farmers are reluctant to invest in farming knowing they might have to flee at any moment and lose their entire harvest. In addition, when they do flee, lands are left uncultivated and open to looting for varying amounts of time. Finally, farmers tend to prefer to live closer to the roads and highways than their lands because the former are perceived as safer. This means an additional effort to travel each day to their lands with all their equipment.

This situation partly explains why there is limited farming in Espungabera, while on the other side of the border, in Zimbabwe, vast areas are cultivated.

Vegetable imports from Zimbabwe can be organized in different ways:

- **Through large wholesalers officially importing goods:** From January to March, when production in Mozambique (be it in Chimoio or Angonia) is almost nonexistent, wholesalers get their cabbages from Zimbabwe. They are either bought in Harare (Zimbabwe's capital, located 350km away from Chimoio) or at the border town of Mutare (87km from Chimoio). The cheapest cabbages are found in Harare (as low as 7 MZN per head of cabbage³²) and producers generally agree to pay for the transportation of their cabbages to the border with Mozambique (average price of 10 MZN/head for cabbages delivered at the border). From the border post, Mozambican wholesalers take over: they clear the goods (100 USD for 2,000 heads of cabbage) and rent a truck to transport the vegetable up to their storage area in Chimoio (8,000 MZN per trip). Margins for wholesalers are small (2.9 MZN per head on average), but their business lies in moving large volumes and ensuring they can supply their customers all year long, hence they accept small margins when they have to get their supplies from Zimbabwe.

³² Source: Interview with a wholesaler buying cabbages from Zimbabwe, July 2017, Chimoio.

Figure 35 – Supply of cabbage from Zimbabwe by wholesalers from Chimoio, July 2017³³

- **Through Zimbabwean farmers smuggling goods:** Small Zimbabwean farmers living close to the border with Mozambique illegally cross the border through the fields with products to sell to Mozambican retailers. It is notably the case for tomatoes in Espungabera (which is 4km from the border);
- **Through Mozambican retailers going to Zimbabwe:** Exceptionally, Mozambican retailers will go to Zimbabwe, illegally crossing the fields separating the two countries to get their goods. They, however, generally prefer to wait for Zimbabwean farmers to come to Mozambique as smuggling goods through the fields is a cumbersome process;
- **Mozambican traders:** In some areas such as Manica town, goods from Zimbabwe reach local markets through Mozambican traders who have their networks of suppliers in Zimbabwe. They go there to buy, bargain and organize transport and then, they resell the goods to retailers on the markets of Manica town.

Despite the distance they have to cover, cabbages from Zimbabwe are generally well-liked by Mozambicans as they stay fresh longer than most Mozambican cabbages (probably due to the higher use of agricultural inputs in Zimbabwe compared to local small-scale production in Mozambique).

6.4. LOCAL SUPPLY

Most localities in Manica Province locally produce some vegetables, at least some of the time. However, depending on their location, the local vegetable producing season may be very short and the resulting vegetable of a poorer quality than the ones produced in Chimoio and / or Zimbabwe. This is notably the case for areas located in the southern part of Manica (Espungabera, Machaze) or in Sofala Province (Chibabava).

Farming in these areas is non-commercial and operated by small-holder farmers, each generally cultivating parcels of one hectare or less. The production season lasts a few weeks during the months of July and August and vegetables are generally smaller and of lesser quality (more inclined to disease due to the lack of chemical inputs) than those of commercial farmers like Vegman. During the high season, local farmers flood the local markets with their production, hence lessening the local reliance on Chimoio for supply. When the local farming seasons ends, retailers go back to Chimoio to get products or buy them from Zimbabwe.

Figure 36 – Farmer from around Espungabera selling his cabbages on the local market, July 2017

³³ "Producer price at the border" includes both production and transportation costs.



Focus box 9 – Case study: sources of supply for a tomato retailer at Espungabera market, July 2017

Ana is a vegetable retailer at Espungabera market. She sells, among other vegetables, tomatoes. Depending on the seasons, she gets her tomato supplies locally, from Chimoio or from Zimbabwean farmers.

Ana's choice of supply source is based on seasons and availability, which both drive affordability.

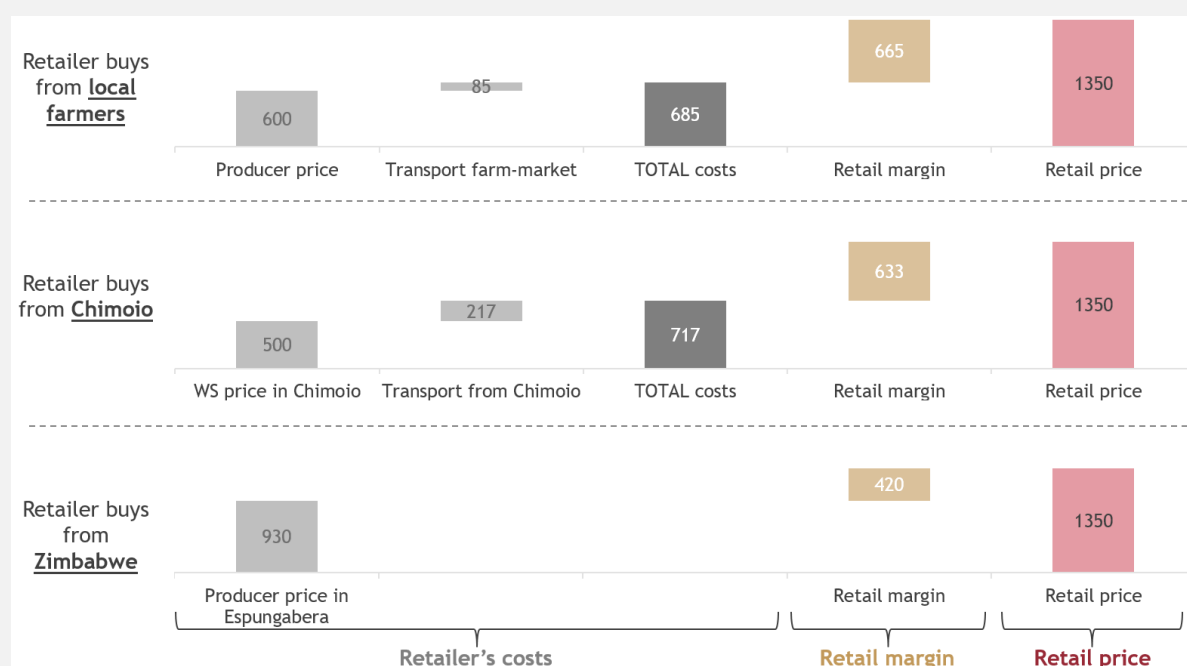
During the high local season, Ana buys her tomatoes from local farmers from nearby areas. She goes directly to their farms and transports the goods to the market to resell them. This supply source guarantees her a higher margin but is only available a few weeks a year.

When local farmers stop producing, Ana travels to Chimoio. It is expensive (Chimoio is located more than 230km away) and time-consuming (3h30 to 4h by bus) but Ana likes it as it enables her to also buy other products that she cannot find locally (onions, potatoes, garlic, etc.)

When the supply in Chimoio decreases (including supply from Angonia sold in Chimoio), Ana buys tomatoes from Zimbabwean farmers who come to Espungabera to sell their goods to local retailers. Her margin is smaller when she buys from Zimbabwean farmers but the positive side is she has nothing to do in this case (farmers directly come and sell their goods to her; they organize and pay for transport).

Figure 36 – Value chain comparison of a tomato retailer on Espungabera market depending on the supply source for tomatoes, July 2017

in MZN per crate of tomatoes (30kg)



In addition to small-holder farmers (with similar profiles to the ones described above) and commercial farmers like Kota or Bill, a third type of local supply exists: producers' associations, which can be found mostly around Chimoio. A few of them (Associação 7 Abril, Nyaubue, etc.) are located along the Vanduzi river. They are generally composed of a few dozen small-holder vegetable farmers who each cultivate one to five hectares of land. Each association designates a president whose main role is to find markets for the association's members. The president is in touch with large wholesalers (such as José, a trader selling his goods in Beira mentioned above, for example) who are interested in buying several thousand heads of cabbage (or large quantities of other vegetables). While

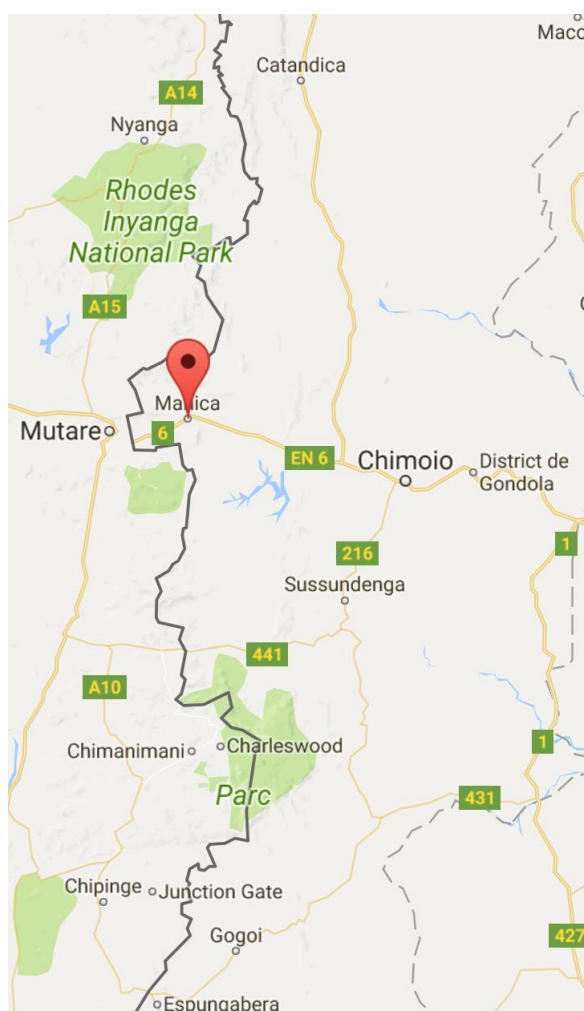
individual small-holder farmers cannot supply such quantities, together they are able to serve these large clients. Wholesalers directly come to the associations' fields (all farmers are generally located in the same area) with their own trucks and can buy from the different members willing to sell their production on that day. Each member will sell a few dozen heads, enabling the wholesaler to meet his quotas of a few thousands.

Each association member pays a monthly membership fee of approximately 50 MZN, independent of his production or sales via the association. In addition, members pay a 50 MZN fee for each sale they make thanks to the intermediary of the association (regardless of the amount of the sale).

Vegetables produced by associations are similar in size and quality to those produced by the small-holder farmers (few members can afford to pay for fertilizers and other inputs). The associations also have a shorter producing season than commercial farmers like Vegman.

Finally, there are a few areas in Manica Province, mostly around Manica town that have a solid local production thanks to the presence of small local "commercial" farmers, and hence never rely on Chimoio for their supply: they either produce locally or supply vegetables from Zimbabwe.

Figure 37 – Location of Manica (town) in Manica Province, Mozambique³⁴



These small "commercial" farmers cultivate farms covering a few hectares and use some fertilizers. They either sell their products on local wholesale markets or organize transport to sell them up to Beira. Three or four farmers from Manica typically come together and rent a truck (15,000 MZN a day)

³⁴ Black line indicates border between Mozambique (right) and Zimbabwe (left).

to sell their products at very high prices (50 to 70 MZN per head of cabbage vs. 15 to 25 MZN on local markets) in Beira. During the high season, they mostly sell locally (at Mercado 37 in Manica for example) as prices are low and it is not worth them going to Beira (where prices are also low during the high season).

Figure 38 – Cabbage farmer selling her production at Mercado 37 in Manica town as it is not worth going to Beira in the high season, July 2017



7. CONCLUSIONS

With his experience as a commercial farmer in Zimbabwe Kota Benade has developed a clear vision for his vegetable business in Mozambique: providing quality products, reducing the number of intermediaries and favoring local retailers and end consumers at his shop:

- GAIN's inputs via the MNF Program have mostly allowed Vegman to:
 - Offer a supply of high quality products (in the case of cabbages): there is a clear consensus on the fact that his cabbage are larger, fresher and largely free of diseases compared to other cabbages available on the market;
 - Contribute to encourage diversity in the local food diet: Vegman was one of the first producers to introduce such vegetables as cauliflower, broccoli and beetroot, all of which were barely known in the region before he started cultivating and selling them. While they remain more expensive than other more traditional vegetables (and hence mostly accessible to upper class customers), there has been a clear improvement in vegetable diversity on Chimoio's markets since Vegman introduced these new produces.
- Vegman's positive influence is most likely to be felt by the 50 to 70 local retailers regularly buying from him. Indeed:
 - On cabbages, they make higher revenues thanks to higher product rotation: by selling high quality cabbages at the same wholesale price as competitors, Vegman has enabled retailers to increase their rotation and hence sell their merchandise much faster than they used to, allowing them to make more money;
 - On tomatoes, they make higher margins thanks to the suppression of intermediaries, Chimoio retailers can directly buy from Vegman (at producer price) whereas they used to rely on wholesalers who would take their own margins for collecting produce from farms that are hardly accessible to retailers;
- Direct sales to consumers from the Veg shop, however, mostly benefit high-end consumers. Its location on a main road, approximately 15km from Chimoio, implies that customers need to either have their own transport or pay transportation costs to get there, which can dissuade poorer customers. In addition, the large, clean shop, which is managed by a foreigner, can also be daunting for low income consumers;
- At the same time, through its sales to retailers, Vegman cabbages are consumed throughout Chimoio by average Mozambicans purchasing his vegetables from local food markets;
 - Poorer consumers may still not be buying Vegman's cabbage as they are more likely prefer smaller, older cabbages which – through their sheer smaller size – cost them the least;
- Thanks to his distribution channels through wholesalers like Eliza who resell outside Chimoio, Vegman is able to reach localities up to 350km away, hence providing his high-quality cabbages to the more remote areas of the region. Through this channel, Vegman products reach out to poor rural customers (compared to wealthier urban consumers of Chimoio), who generally do not have access to high quality commercial farming products;
- As a commercial farmer, Vegman has a much longer producing season than small-holder farmers in the region. However, like other farmers in Chimoio, his production capacity stalls between November and April, when the low season peaks and prices of vegetables skyrocket. His impact is hence limited when it would be needed the most;
- Awareness of Vegman's offer remains limited due to the structure of its distribution model: wholesalers and retailers prefer to keep secret their source for high-quality cabbages and cheap tomatoes and hence are reluctant to talk about Vegman to other vendors/consumers;

- Vegman's efforts to remove intermediaries are unfortunately not reflected in the retail price of his products. While, consumers benefit from purchasing higher quality cabbages for the same price as regular cabbages, the story is not the same for tomatoes where Vegman's efforts to cut intermediaries solely benefit retailers;
- With an estimated 10,000 consumers eating Vegman vegetables and fruits every day, Kota's impact on the availability of vegetables and fruits in the Manica Province (1.4m inhabitants) is certain (especially since, as a commercial farmer, he has a longer farming season than most small-holder farmers), but remains modest.

Thanks to GAIN's funding, Kota was able to develop his company, and to positively reach local consumers and vendors. His continued growth remains limited, however by, amongst other things, Mozambique's market environment (lack of an enabling commercial farming environment enabling year-long production, limited disposable income of consumers limiting demand for fresh vegetables, etc.).

8. APPENDIX

PRICE CHECKS

Price checks were collected in July 2017 on various markets in Manica Province. When several prices were available, the average price is indicated.

Important note: Prices mentioned are those paid by customers for the products. Depending on the relationship between seller and buyer and on the division of responsibility among the two sides, some prices may include transport while other may not. For detailed analysis of the prices and costs at each stage of the value chain, please refer to part 5 of this report.

Product	Size	Location	Market	Type	Season	Price (MZN)
Beetroot	Bunch of 4 beetroots	Beira	Retail market	Retail	High	200
Beetroot	Bunch of 4 beetroots	Beira	Sales via trader	Wholesale	High	100
Beetroot	Bunch of 4 beetroots	Chimoio	Katanga	Wholesale	High	65
Beetroot	Bunch of 4 beetroots	Chimoio	Veg shop	Wholesale	High	50
Broccoli/cauliflower	1 head	Beira	Direct sales via trader	Retail	High	100
Broccoli/cauliflower	1 head	Chimoio	Veg shop	Wholesale	High	75
Cabbages	Large	Beira	Direct sales via trader	Retail	High	75
Cabbages	Large	Chimoio	Katanga	Wholesale	High	30
Cabbages	Large	Chimoio	Katanga	Wholesale	Low	45
Cabbages	Large	Chimoio	Mercado 38	Wholesale	High	20
Cabbages	Large	Chimoio	Mercado 38	Wholesale	Low	40
Cabbages	Large	Chimoio	Mercado Central	Retail	High	35
Cabbages	Large	Chimoio	Mercado Central	Retail	Low	60
Cabbages	Large	Chimoio	Veg shop	Retail	High	30
Cabbages	Large	Chimoio	Veg shop	Wholesale	High	20
Cabbages	Large	Chimoio	Veg shop	Wholesale	Low	40
Cabbages	Large	Espungabera	<i>Banca fixa</i>	Retail	High	75
Cabbages	Large	Espungabera	City market	Retail	High	60
Cabbages	Large	Manica	Mercado Central	Retail	High	40
Cabbages	Large	Muxungue	City market	Retail	High	50
Cabbages	Large	Muxungue	City market	Retail	Low	65

Cabbages	Large	Roadside	-	Retail	High	35
Cabbages	Large	Roadside	-	Retail	High	35
Cabbages	Large	Sussundenga	City market	Retail	High	50
Cabbages	Medium	Beira	Sales via trader	Wholesale	High	50
Cabbages	Medium	Chimoio	<i>Banca fixa</i> in Soalpo	Retail	High	25
Cabbages	Medium	Espungabera	City market	Retail	High	40
Cabbages	Medium	Manica	Mercado 37	Wholesale	High	15
Cabbages	Medium	Manica	Mercado Central	Retail	High	25
Cabbages	Medium	Messica	Roadside market	Retail	High	25
Cabbages	Medium	Messica	Roadside market	Retail	Low	50
Cabbages	Medium	Vanduzi	City market	Retail, directly from producers	High	12
Cabbages	Medium	Vanduzi	City market	Retail, directly from producers	Low	25
Cabbages	Medium	Beira	Direct sales from producer	Retail	High	60
Cabbages	Small	Beira	Direct sales via trader	Retail	High	30
Cabbages	Small	Chimoio	Katanga	Wholesale	High	15
Cabbages	Small	Chimoio	Mercado 38	Wholesale	High	15
Cabbages	Small	Chimoio	Mercado 38	Wholesale	Low	25
Cabbages	Small	Chimoio	Mercado Central	Retail	Low	35
Cabbages	Small	Espungabera	City market	Retail	High	15
Cabbages	Small	Manica	Mercado 37	Wholesale	High	12
Cabbages	Small	Messica	Roadside market	Wholesale	High	15
Cabbages	Small	Muxungue	City market	Retail	High	40
Cabbages	Small	Sussundenga	City market	Retail	High	35
Cabbages	Small	Vanduzi	City market	Retail	High	15
Tomatoes	1 crate (30 kg)	Chimoio	Katanga	Wholesale	High	750
Tomatoes	1 crate (30 kg)	Chimoio	Katanga	Wholesale	High	650
Tomatoes	1 crate (30 kg)	Chimoio	Mercado Central	Retail	High	800

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Tomatoes	1 crate (30 kg)	Chimoio	Mercado Central	Retail	Low	1800
Tomatoes	1 crate (30 kg)	Chimoio	Veg shop	Wholesale	High	500
Tomatoes	1 crate (30 kg)	Espungabera	City market	Retail	High	1350
Tomatoes	1 crate (30 kg)	Espungabera	City market	Wholesale	High	930

LIST OF PARTICIPANTS IN FOCUS GROUP DISCUSSION

The participants in the Focus Group Discussion held in Chimoio in April 2017 were the following:

- Ines Tome Salimo is a 32-year-old woman who lives in the 7 de Abril neighborhood with her husband and her 3 sons. She studied for 5 years, completed class 12 and is a teacher.
- Sifa Eduardo is a 26-year-old woman who lives in the IAC neighborhood with her husband and their 2 children. She is a merchant and is trained in public management and environmental health.
- Armanda Gandara is a 22-year-old student in basic level; she is single and does not have any children.
- Abdul Cassamo is a 23-year-old student in college; he is single and does not have any children.
- Albertina Antonio is a 20-year-old student in class 12; she is single and does not have any children.
- Ines Antonio is a 25-year-old teacher, she is single and does not have any children.

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