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by

Pelotshweu Moepeng

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Pelotshweu Moepeng[2]

May 2013

[1] .A background research paper prepared at the Botswana Institute for Development Policy Analysis.

[2] Botswana Institute for Development Policy Analysis, Private Bag BR-29, Gaborone, Botswana, Email: pelotshweum@gmail.com .Dr. Moepeng is an Research Fellow II with BIDPA and a graduate of The University of Queensland

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For more information write to Professor Clem Tisdell, School of Economics, University of Queensland, St. Lucia Campus, Brisbane 4072, Australia. (e-mail: c.tisdell@economics.uq.edu.au)

Core Economic Issues in the Horticulture Sector of Botswana

ABSTRACT

Poverty and unemployment in Botswana are the major problems that the government is focusing its effort and attention on. The overall government aim is to eradicate poverty and diversify the economy away from diamond mining to create sustainable jobs. Agriculture is traditionally thought to be a primary sector that can help the country's disadvantaged community to escape from poverty and problems of unemployment. However, Botswana has experienced falling agricultural productivity and a fall in its GDP share from 40 per cent in 1966 at independence from Britain to 2.1 per cent 2001. This article demonstrates that although overall performance in the agricultural sector of Botswana has been falling and remains generally very low, in the sub-sector of horticultural production, production has doubled in the last decade and productivity has improved. This has led to improved achievement towards food self sufficiency at the national level in terms of availability of food from the nation's producers. However, this article argues that such improved productivity in horticulture only benefits a few rich companies and individuals who have the capacity to invest in the very high capital investment required in this sector and in the necessary transport (including refrigerated transport) that is needed to move horticultural goods from one place to the other. One of the major issues raised in this study is that the agricultural policy excludes the horticultural sector from its major priorities. Hence, most activities in the sector are influenced by geographical location and transport or logistics concerns, the market structure, and well intended government interventions that are sometimes used to crowd out the small-scale farmers and stakeholders. Government is also encouraged to re-look at the opportunities for marketing horticulture and take an active lead to create structures that can promote creation of sustainable jobs and participation of small-scale producers in this sector.

Keywords: Botswana, Botswana's horticulture market, employment creation, food self-sufficiency, horticulture, poverty alleviation.

JEL Codes: Q13, Q18, O13

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1. Introduction

This study of core economic issues in the horticulture sector of Botswana aims to discover trends in the performance of this sector and its potential to contribute to economic growth and diversification of Botswana's economy. Horticulture is a new form of agriculture in Botswana and given this sector's ability to generate value added jobs in other countries, such as China, this study intends to find out the role of this sector in contributing to economic growth, employment creation and poverty reduction in Botswana. Botswana is currently experiencing high rates of unemployment at more than 17 per cent, and the youth unemployment is nearly 50 per cent. Traditional agriculture has failed to increase productivity over the last four decades, despite concerted efforts and several government programmes to promote this sector. Annual national production in horticulture has doubled in the last 10 years. However, participation by small-scale farmers and employment of locals in the sector is not known to have increased proportionately to increases in production. This study will identify the core issues in the horticulture sector which require to be reviewed in depth so that appropriate improvements can be made to increase its potential to contribute to economic growth, sustainability, employment creation and poverty reduction. The current study cannot make firm conclusions on each of the core issues identified due to lack of detailed data and limited coverage because of limited available resources and time. However, the use of neo-classical economic theory in this study to explain the observations from key stakeholders confidently identifies the areas that Botswana can address in the horticulture sector to improve its contribution to economic growth, diversification, sustainable job creation and poverty eradication. The study begins with an outline of objectives, a discussion of core issues, limitations, conclusions and ends with recommendations.

2. Objectives

a) To review the data showing the performance of the horticulture sector in terms of local production and trends in national demand in the last ten years.

b) Identify the geographical regions and farm-scale conditions which are suitable for horticulture development.

c) Consider the impact of the role of horticulture in agricultural sector growth and in overall economic diversification.

d) Examine the impact of horticulture in employment creation and poverty eradication.

e) Recommend alternate policy approaches to horticulture that can have a greater positive impact on the Botswana economy.

3. Core Issues in Horticulture Sector in Botswana

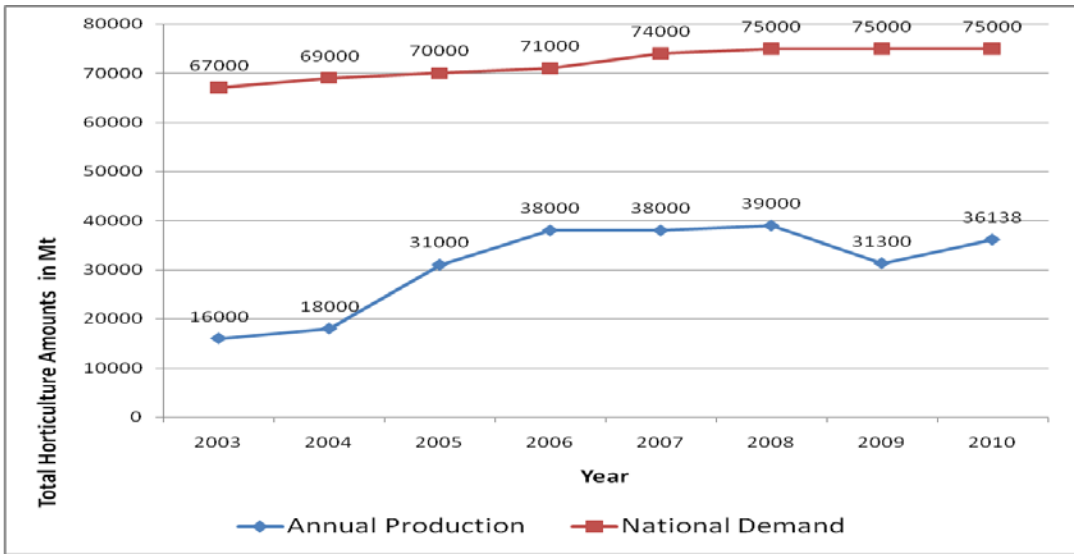
3.1 Horticulture Production Performance and the Botswana Agricultural Policy Position

Total annual horticulture production in Botswana has increased from 16,000mt in 2003 to 36,000 mt in 2010 (Figure 1). This represents an average annual growth rate of 18 per cent. However, after peaking at 39,000mt in 2008, production declined somewhat. Although Madisa et al. (2012) attributed the positive growth in horticulture production to substantial public support such as Financial Assistance Policy of 1982 to 2000 and the Citizen Entreprenuarial Development Agency which started in 2002, policy pronouncements do not seem to be explicit in their support for horticulture sector. Written government agriculture policy does not include the development of horticulture (Republic of Botswana, 1991). In addition, there are several government pronouncements supporting horticulture, especially to ensure increased production and reducing the import bill, but none of these provide a written framework that guides the development of the sector in terms of who should participate and how the benefits are expected to be distributed (Ministry of Finance and Development Planning, 2009; Ministry of

Agriculture, 2008; CEDA[3], 2011; National Development Bank, 2012). Horticulture sector is sometimes indicated in other government programmes such as NAMPAADD that promote irrigated agriculture. This programme's recommended crops for support including horticultural ones such as vegetables and fruits. One of main focuses of the NAMPAADD programme is to encourage small horticulture producers to work in clusters. The Integrated Support Programme for Arable Agriculture Development (ISPAAD) aims, among other things, to increase production levels, create employment opportunities, and diversify the agricultural production base relying on the development of the horticultural sector. The Citizen Entrepreneurial Development Agency (CEDA) provides financial assistance for all viable citizen enterprises but does not specify targeting of horticulture as a focus of its activities. The National Development Bank (NDB) target market is all agricultural projects, including game farming, and horticulture is listed among the sectors that can receive financial assistance from this bank. There is no overall government framework to promote the horticulture sector except for mentioning this sector as an addition to the overall objectives of increasing local food production. There is a need to re-visit the government's agricultural objectives and include the horticultural sector as a major part of the economic diversification and growth potential of Botswana's economy in order to create employment and eradicate poverty.

[3] Citizen Entrepreneurial Development Agency

Figure 1: Annual Production and National Demand Trends 2003 to 2010

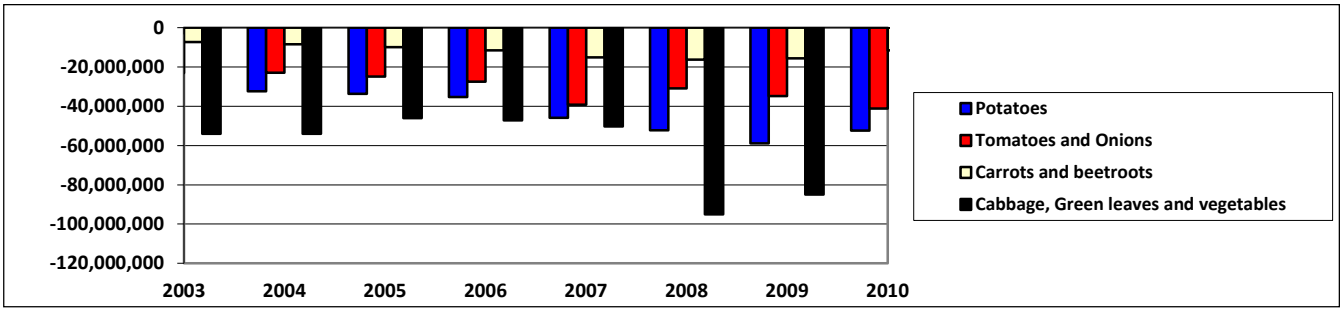


Source: CSO[4] (2011)

Currently the growth of horticulture is a direct market response to the considerable and growing demand for horticulture products in Botswana. Horticulture demand grew from 67mt in 2003 to 75mt in 2010. Growth in Botswana's horticulture demand is consistent with increased growth of global demand for fresh vegetables (Weinberger and Lumpkin, 2007). In response, local annual horticulture production doubled over the same period (Figure 1). Despite the impressive growth in local horticulture output, local production only caters for half of Botswana's annual demand (Fig. 1). The deficit between annual demand and local production has been met by growing imports (Fig 2). Reliance on imports, when such goods and services can be produced at home limits the local efforts towards the much needed economic diversification, development of sources of sustainable growth, exporting of the much needed jobs in the economy and limited capacity to eradicate poverty. Thus the government should consider including horticulture production as part of its agricultural development policy.

[4] Central Statistics Office

Figure 2: Trends in Trade Balance for Horticulture in Botswana 2003 -2010



Source: CSO (2011)

3.2 Horticulture, Improved Health and Productivity

Horticultural products are recognized for their high contribution to health in terms of a balanced diet. For instance, vegetables and fruits are rich in antioxidant compounds that can reduce the risk of chronic disease by protecting against free-radical mediated damage (Southon, 2000). Inclusion of horticulture products in regular diet can decrease spending on health facilities and medical training meant to treat people who become sick as a result of micronutrients deficiencies. Savings achieved as a result of increased use of horticulture products could be redirected to programmes that create employment and investment in human capital.

Botswana diet is generally characterized by inadequate micronutrients intake. For instance, the current design of primary school feeding programme lacks inclusion of fruit and vegetables. The nutrient composition of meals prescribed provides at least 30% of daily nutrient requirements for energy, protein and fat. Micronutrients deficiencies affect more than two billion people worldwide, increase disease susceptibility in all populations and compromise the development of cognitive capacity in children (Demment et al., 2003). This situation could lead to low passing rates in children and affecting their future negatively reducing their chance of getting better jobs and hence, increasing chances of them being poor at later date. Inclusion of horticulture products development in Botswana's agricultural policy can contribute to better population health outcomes such as increased life span, decreased costs of health treatment and improved productivity.

3.3 Growth of Horticulture Markets and Dominance of Large-Scale Producers

The demand for horticulture products in Botswana exceeds the capacity of local producers to meet it. This is demonstrated by a growing deficit between local production and demand (Figure 1). Hence, there is potential for new entrants into this sector to undertake sustainable investments and contribute the economy's economic diversification objectives. For more than a decade, local production capacity has not matched the growing demand for horticulture products. This growing demand has attracted large-scale producers into this sector who are largely responsible for the more than doubling the increase in production between 2003 and 2010 (Figure 1). Although, large-scale production has helped the country's efforts to increase local food production and improve local contribution to national food security, the trade balance for horticulture products is moving against Botswana. Thus, more needs to be done to promote local horticulture production. For this reason, Botswana should consider increased efforts to promote small-scale local horticulture products, to complement and not compete with large-scale producers. Promoting small-scale producers will increase the area cultivated for horticulture, which is the primary source of increased production in this sector, even in the most successful countries like China (Weinberger and Lumpkin, 2007). If support for horticulture development to small-scale farmers is accompanied by infrastructure development, this sector can contribute to increased employment creation in urban locations and urban villages and facilitate the ultimate objective of poverty eradication and ensuring availability of food from local resources, thus reducing the trade deficit.

Mr. Veg (Pty) Ltd is a fresh produce wholesale and distribution company that has been operating in Botswana for over 20 years. The company supplies the hospitality and catering industry, mining companies, chain store supermarkets and camps and lodges in the Okavango Delta. Mr. Veg sources most of its horticultural produce from the Botswana Horticulture Market in Gaborone. Mr. Veg has its own refrigerated transport fleet and imports fruit and vegetables not grown locally from South Africa. This company considers the quality and quantity of local horticulture produce to have been improved over time. Supplies of particular crops (such as green pepper, butternuts, onions, potatoes, oranges and cabbages) from local suppliers have been increasing over the years. Local produce prices are said to be competitive with those of imports and quality is improving all the time.

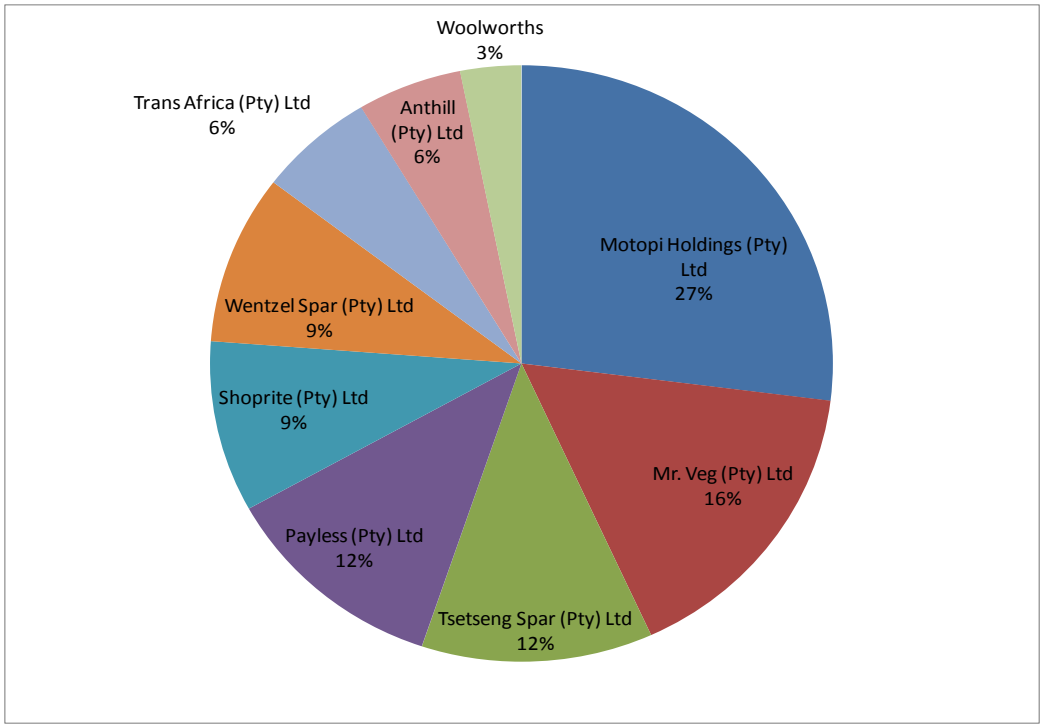
Box 1: Mr. Veg Wholesale Market

To date, the major proportion of horticultural production is by large-scale farmers, who operate in regions that might not be attractive to the unemployed youth. Currently, some important stakeholders[5] in the sector estimate that large producers supply 65 per cent of the local produce while small-scale producers supply the remaining 35 per cent. Horticulture development support must encourage increased land area cultivation; include provision of infrastructure development such as roads, finance mechanisms, and less rigid land use instruments and provide appropriate input and market-level support if it is to effectively contribute to both sustainable jobs and quality food availability.

3.4 Horticulture Market Structure, Government Intervention and Monopolistic Pricing

The horticulture market in Botswana is dominated by a few large traders and retail suppliers.

Figure 3: Top 10 Buyers at the Botswana Horticulture Market by Value 2011/12.

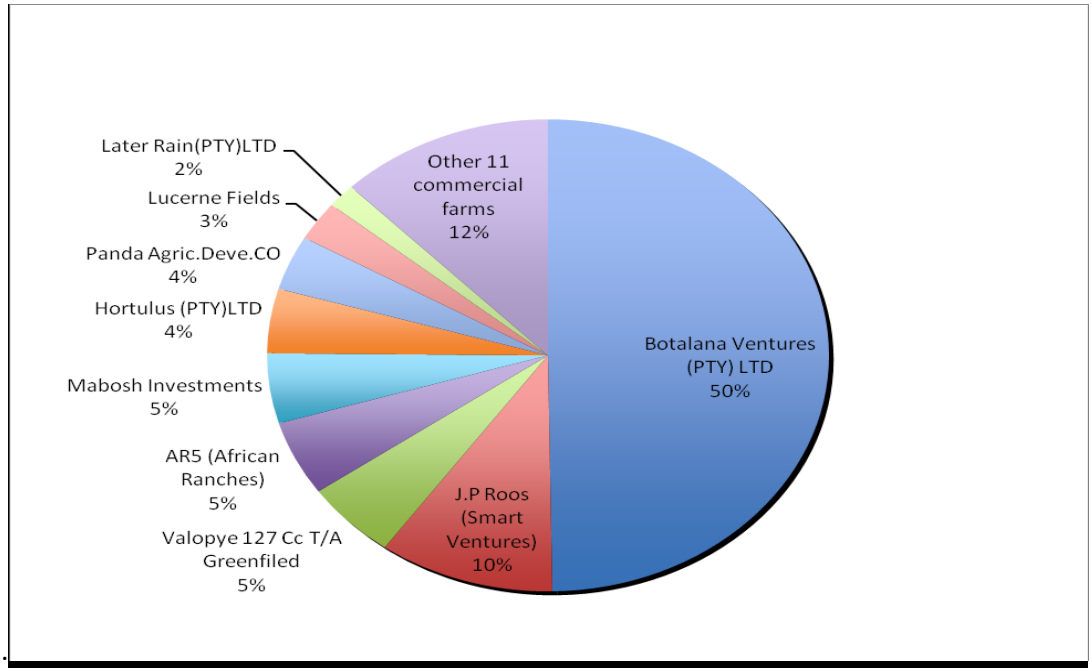


Source: Botswana Horticulture Market 2013

[5] Choppies Stores

Figure 3 shows the proportionate share of horticultural products that are routed through the Botswana Horticultural market by value among the top 10 buyers in 2011/12[6]. Motopi Holdings (Pty) Ltd, which is also a part of Choppies Chain Store holds a 27 per cent share, followed by Mr. Veg with a 16 per cent share and both Tsetseng Spar and Payless holding a 12 per cent share each. In Figure 4, the share of total deliveries to the Botswana Horticultural Market by the top twenty producers is illustrated for the year 2012/12. Botalana Ventures, also known as Talana Farms supplied 50 per cent of all the supplies by the top 20 producers. The second largest supplier to the Botswana Horticulture Market is J.P. Roos (Pty) Ltd at 10 per cent, followed by Greenfield (Pty) Ltd and AR5 – African Ranches (Pty) Ltd who supply 5 per cent each. All of these firms operate in the Tuli Block/Limpopo River area. Both Figures 3 and 4 demonstrate that the supply and distribution of the horticulture produce is dominated by a few large firms.

Figure 4: Share of 2012 Deliveries in Mt by the Top 20 Producers to the Botswana Horticulture Market



Source: Botswana Horticulture Market 2013

[6] Figures of total horticultural market share beyond the Botswana Horticultural Market data are not available.

The Government of Botswana believes that impacts of horticultural products from South Africa can result in unfair market competition for producers in Botswana. Hence, the government has introduced a regulation that protects local horticulture market from imported products competition. The regulation is through the *Control of Goods Import and Agriculture Products Act of 1996*. The Ministry of Agriculture undertakes monthly monitoring of local production and demand in order to determine whether or not to close borders for particular crops. The affected horticulture products include mainly vegetables such as root crops (beetroot, onion etc), cucurbits such as pumpkins, watermelon etc; solanaceous fruits such as tomatoes etc. Closing of the borders when local production is adequate to meet local demand is a positive incentive that aims to promote local production and ensure local producers have access to markets without competition from more established foreign suppliers. The assumption of the Botswana government is that local producers are many and can equally compete to enjoy benefits of the local market and also reduce the trade deficit in horticultural trade balance. On the side are the consumers. The government assumes that by supporting local producers, there will be a strong local competition environment that will result in competitive market prices. Hence price stability could be controlled through market forces and consumers will enjoy horticulture products at stable and low prices. Hence, the border closure regulation for horticulture imports is expected to benefit a large number of Batswana rather than a small number of them. However, only a few firms control the largest share of the horticulture market (see Figure 4). This occurs because of the existence of strong barriers to entry and limited information about the prices of the products of each firm in the industry. The barriers to entry include the fact that the investment in horticulture requires very high initial input costs, access to water in a water scarce country, long distances between the market and production areas and lack of credit facilities for small-scale farmers. Lack of information occurs because many private contracts between producers and retailers which are not in the public domain records and a lot of products that are in the markets are not captured in the national statistics records. Hence, small producers who are still struggling to have access to credit, pay their fixed costs, access the Botswana Horticulture Market in Gaborone and be accepted by the main traders as new (or additional suppliers to their established producers with existing contracts) are finding it difficult to enter the market. Hence this market is a near monopoly in character. Notwithstanding the difficulties that small-scale farmers experience, they are contributing to the objective of reducing the trade deficit in horticulture.

As indicated above, horticulture production requires high capital cost investment and many small producers in Botswana do not have access to the required credit. Hence, their production contribution

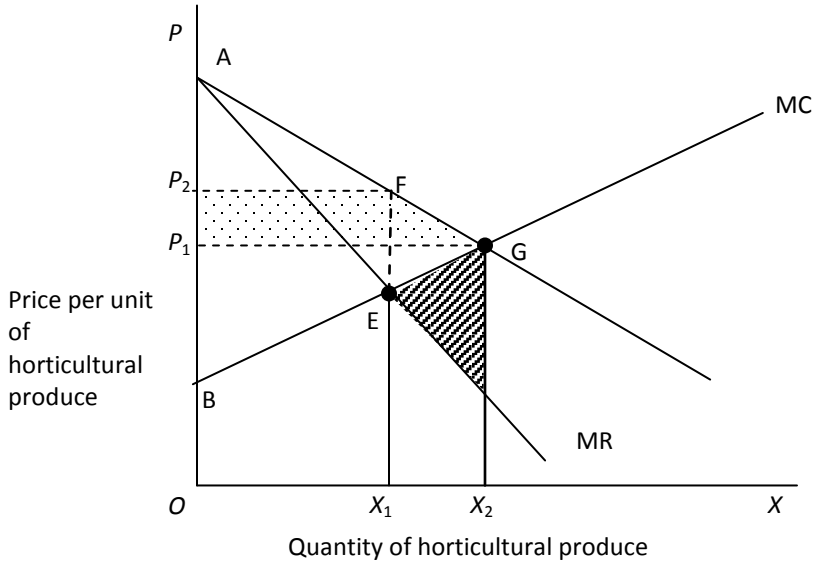
to the sector does not influence the closure of the borders. However, a few large horticulture producers have the capacity to produce enough to meet local demand of some products and motivate government to close the borders for import of those commodities. The ownership of these farms is concentrated and results in possible opportunities for collusion and monopoly pricing. Some of the stakeholders who were consulted reported that in practice, once borders are closed, local prices exceed the prices at which horticultural products can be imported. The tendency to increase prices of local products when borders are closed to promote local producers provides an incentive for local large retailers and other horticulture middlemen to stockpile imported products when information of closing of borders is released. That is, immediately traders receive information that borders would be closed, they stockpile lower priced imported horticulture products to avoid and reduce the impact of high prices anticipated from local producers. During, the period that the stockpile products are released to the market, local producers, especially small farmers, cannot have access to the market. Thus small-scale producers lose significant sales revenue due to wastage of locally produced horticulture through rotting. For this reason government intervention through closing of borders results in price distortions and is a major contributor of losses to small-scale farmers, because it exposes them to unintended outcomes such as stockpiling. There is a need to reconsider the effectiveness of this regulatory instrument and introduce free competition in this sector.

Although border closure tends to benefit a few large producers, this is at the expense of both the consumers and small-scale producers in Botswana. The barriers to entry conditions that exist in the horticulture sector prevent an existence of a freely competitive market environment in Botswana. Although the horticulture stakeholders such as producers and traders cannot be said to strictly characterize an oligopolistic structure or natural monopoly market structure, the inherent market failure prevent the existence of an efficient an efficient allocation of resources. Consumers generally face high monopoly pricing and at the same time are deprived a choice in terms of quantity and price (Figure 5). Though boarder closure is meant to increase economic gain, it ends up increasing the benefits of few large ranches and contributing to increased income inequality and exacerbating the poverty of the general population whose wages are not only stagnant but generally low.

Although the key horticultural producers in Botswana may not act as a profit-maximizing cartel, market concentration suggests that there could be scope for this. If they did act as a cartel, standard economic theory suggests the type of outcome illustrated by Figure 5 if Botswana is an isolated market. There *P*

represents the price of horticultural produce and *X* represents the quantity of its supply. The line AD is assumed to be the demand curve for this produce. The corresponding marginal revenue curve is AMR. The short-run marginal cost curve is indicated by the line marked BMC. Standard economic theory suggests that in a competitive market an amount X_2 of produce would be supplied and sold at a price per unit of P_1. This is because at G competitive market supply (corresponding to the marginal cost curve) equals market demand and market equilibrium is established at G. A profit-maximizing cartel would by contrast, restrict supply to X_1 and sell the produce at a price per unit of P_2. This is because at point E the marginal cost of production equals marginal revenue, and profit is maximized.

Figure 5: The potential negative market effects of monopolist pricing behaviour in Botswana's horticulture sector.



This type of monopoly behaviour has negative effects. Consumers are made worse off by an amount equivalent to the dotted area in Figure 5. This is the measure of the loss in consumers' surplus. Compared to a competitive situation, members of a profit-maximizing cartel increase their rent (profit) by an amount equal to the hatched triangle. There is a deadweight economic loss to the whole economy equal to the area of triangle EGF (see for example, Hartley and Tisdell, 2008, pp. 195-198).

Although there is considerable market concentration in Botswana's horticulture supply sector (see Figure 4), it is not clear that a cartel does exist. In any case, maximum prices for home-produced horticultural products are limited by the price of imports. It is probable that the largest horticulture producers cooperate to put political pressure on the Government of Botswana to limit imports when this is to their economic advantage. As pointed out above, this results in increased prices for consumers in Botswana and may be damaging to smaller horticultural suppliers. As stressed by Tisdell and Hartley (2008, pp. 194-195), the likelihood of political interference by a monopoly is greater than in the case of a competitive market. When an industry is concentrated, the largest firms can have an economic incentive to engage in political actions to restrict competition and this may occur in Botswana's horticulture industry.

3.5 Lack of Appropriate Infrastructure and Incentives for Unfair Horticulture Market Prices

Horticulture production in water scarce countries such as Botswana, require high cost inputs such as water, irrigation equipment, sheds for crop protection against excessive heat and cold temperatures. In countries with developed appropriate infrastructure, horticulture development is expected to generate economic benefits beyond the farm through associated services (University of California Davis, 2005). For instance, the horticulture sector can generate farm-related business such as provision of seeds, the development and maintenance of infrastructure such as irrigation and sheds, packaging, storing and transportation of products. In Botswana, there is a general lack of appropriate infrastructure and adequate extension services to support the horticulture sector and this is a major constraint to the sector's ability to experience the growth of value added services. As a result, a few large companies in the horticulture industry are involved in vertical integration investment that promotes oligopolistic horticulture business growth. For example, the roads to production centres are generally not well developed, the refrigerated freight vehicles for long distance require large capital inputs and there are no regional horticulture collection points which can attract small truck freight business to benefit from this sector. As a result, refrigerated transport used in the horticulture sector is owned by the major players such as Choppies, Mr. Veg, and others with the necessary capacity to raise capital investment to participate in associated horticulture service sector. Thus, lack of appropriate infrastructure provides an incentive for large-scale players in the horticulture sector to concentrate ownership of the different aspects of the production and marketing chain. The creation of a vertical integration horticulture sector

limits conditions for free market competition and opportunities for Botswana consumers to enjoy benefits of competitive prices set at the equality of average costs and marginal revenue level. Hence a horticulture development that occurs where there is a lack of appropriate infrastructure encourages concentration of ownership across the production and marketing channel. This creates an economic structure that promotes unfair pricing, limited food access to the poor and generation of excessive profits by a few large companies. Government should accelerate the development of appropriate infrastructure in the horticulture sector and also put into operation currently idle horticulture infrastructure in Lobatse, Francistown and Bobonong to reduce incentives for concentration of ownership in this sector.

3.6 Botswana Horticulture Market and Crowding out of Small-Scale Farmers

The Botswana Horticulture Market (BHM) is owned 51 per cent by Botswana Horticultural Council (BHC) and 49 per cent by Botswana Development Corporation (BDC). The 51 per cent share of the BHC was wholly paid for by the Ministry of Agriculture on behalf of Botswana Government. The accounting officer for the 51 per cent share owned by the BHC is the Permanent Secretary of Ministry of Agriculture and the accounting officer of the 49 per cent owned by the BDC is the Permanent Secretary, Ministry of Trade. The BHM operations are directed by a board that is chaired by a BDC representative. Currently the board comprises four members representing Ministry of Agriculture and BDC, two members representing the BHC, one representing the four trading agents[7]. The eighth member represents the main traders[8]. In terms of both share-holding ownership and control of the board, the BHM is a wholly owned government institution and it may not be driven by market and business objectives.

The official mandate of the BHM is to stimulate the growth of the horticulture sector. Previous to the establishment of the BHM, there was no central market for horticulture in Botswana. The BHM stimulates the growth of the horticulture market through the provision of a central market infrastructure for horticultural products. BHM also facilitates the transportation of products by linking transporters and producers. This service is mostly enjoyed by the large-scale producers, due to capacity issues. BHM further provides appropriate storage in the form of cold storage and general storage equipped with evaporative coolers to provide ideal temperature necessary to prolong the shelf life of

[7] Fresh (Pty) Ltd, Potato World Botswana (Pty) Ltd, Planet Veges (Pty) Ltd, and Temo Fresh Produce (Pty) Ltd
[8] Motopi holdings (Pty) Ltd, Mr. Veg (Pty) Ltd, Tsetseng Spar (Pty) Ltd, Payless (Pty) Ltd, Shoprite (Pty) Ltd etc.

products. The BHM is open and accessible to small-scale farmers and large-scale farmers alike. Some small-scale farmers consulted during this study feel that the market price at the Horticultural Market favours the large-scale farmers and crowds them out. This happens because the fixed costs of small-scale farmers tend to be high, contributing to high input costs and an uncompetitive farm gate prices. However, large-scale farmers enjoy economies of scale which enable them to have lower farm gate prices. The BHM does not take into account, the differences in production costs between small- and large-scale producers. The small-scale farmers feel that as part of the diversification objective, government should subsidize their input costs such as fertilizer, pesticides and interest rates to facilitate their growth and effective participation in the sector.

BHM is based on a commission model. The commission model requires producers to deposit their products at the market, continue with the ownership of products before they are sold and bear all the risks that are associated with products before they are sold. The products are sold by agents appointed by the BHM board. The market charges producers 5 per cent commission and the agents charge a maximum of 7.5 per cent for their service. The farmers are therefore required to pay 12.5 per cent of the total value of the produce they deliver at the BHM, if they are all sold to customers. This cost, excludes transport costs to the BHM. Under this model, since the product remains the property of the producer until it is sold by the BHM, the overall risk is borne by the producer. For small-scale horticulture farmers, the commission based market model is not attractive compared to a market system where producers deal directly with traders and sell their products at the time of delivery.

Presently, small-scale horticulture farmers in and around Gaborone are over 100 but only 45 of these farmers route some of their produce through the BHM. The 45 small-scale farmers who supply the BHM simultaneously supply traders directly. The proportion of small-scale producers who participate at the BHM indicates that the commission based market model is not ideal for small-scale farmers. A different market based on a wholesale model is considered the most appropriate for small-scale producers in Botswana. Under this model, farmers transfer ownership of produce to the wholesale market immediately they off-load their produce. This arrangement would transfer the risk of products immediately to the wholesale market. Thus, the market prices would respond appropriately to the supply and demand conditions at any point in time. The current arrangement at the BHM crowds out small-scale farmers who are risk averse and those operating in distant places from Gaborone are completely and technically excluded as a result of very high transport costs as well.

Of the top ten suppliers to the BHM, only Talana farms sell all their produce through BHM. Other major producers are contracted to specific traders and retailers even though some might deliver part of their produce to the BHM. The implication is that not all produce from Botswana is marketed through the BHM and, moreover, the total production under the current market arrangement is not known. Thus the supply to the market is constrained by lack of direction from the government. Therefore, inadequate market supply information limits the effectiveness of the free market system to determine appropriate and efficient prices. As a result, the BHM is not an efficient distributor of horticulture products if the principles of supply and demand under a freely competitive market conditions are considered. Hence, the prices consumers pay at the supermarket are higher than they should be. The main beneficiary is the large horticulture producer and traders. This arrangement should not be allowed to continue because it is a major source of impoverishment of the majority of Botswana society and an important contributor to widening income inequalities.

Government should intervene and take appropriate decisions to draw a policy or amend the current agriculture policy to provide guidance to the growth and development of the horticultural sector. First government should request all the large producers to sell their produce through a BHM. The new arrangement would promote free access to information about locally produced product availability trends, facilitate BHM to monitor accurate product availability and provide government with regular and accurate records of product availability to inform policy decisions. The proposed arrangement would also enable BHM to inform decisions of whether to close or open borders. Access to more accurate information about local produce would minimize perceptions that current decisions to close borders are meant to benefit a few large-scale producers at the impoverishment of the working class through inflated and uncompetitive producer prices.

Currently, the BHM operates only in Gaborone and this excludes many small-scale farmers in distant places from the market in the capital. Consequently, many small-scale farmers in Tonota, North East, Maun, Chobe, Southern District and many parts of the Central district where there is no access to a sustainable central market [Box 2]. The many small-scale horticulture farms that operate across the country have a high potential to create sustainable jobs that can attract many rural women and directly address high problems of rural poverty. Provision of access to a central effective market would reduce the high risk of wastage that small-scale farmers face as a result of lack of appropriate storage and marketing skills.

In an interview with a small-scale farmer in the Gulushabe Horticultural area of Tonota, Mr. Letang Kenosi, said that he is constrained by lack of credit to acquire appropriate technology and equipment he needs to increase yield productivity. He also said that there is lack of a reliable market in the Francistown area. Mr. Kenosi depends on traders in Francistown such as Metsef Wholesale, other general dealers and the women in the informal sector. This kind of market has very limited capacity. In the year 2012, he produced 50, 000 head of cabbage but was only able to sell 25,000 heads, with half of his produce going to waste and rotting because there was no market to absorb such produce. The absence of a central market such as the Botswana Horticultural Market and lack of an extension service targeting this sector means that such information is not recorded and the country is not aware of available produce and as a result we continue face very high comer prices even though there is surplus produce in the country. To the surprise of our researchers, Mr. Kenosi expressed no knowledge of the existence of the BHM. Among the major challenges faced by small-scale producers, he expressed serious lack of access to extension service. The current extension service is only trained and targeted to livestock farming and rainfed arable subsistence agriculture. Mr. Kenosi also expressed concern that school feeding programme that promotes purchase of local produce excludes horticulture farmers even when subsistence rainfed farming has failed to produce, especially maize cobs. Another concern was that the water authorities had begun to request small-scale farmers to reduce their water usage and wondered whether this treatment is also applied to large-scale farmers in the Tuli block area. He hoped that government would alter its policies to include them in the procurement of supplies to hospitals in Francistown, Army Barracks and Schools as an incentive to ensure their growth and sustainability. Currently, Mr. Kenosi employs 10 people, five of whom are women. He also decried the huge expenses of over P3000.00 they are required to pay for a single migrant worker when Batswana refuse to take up employment with them, preferring to work in Ipelegeng or back yard garden programmes.

Box 2: An account of Mr. Letang Kenosi's Experience, Small-scale farmer. 14th March 2013

3.7 Horticulture and Lack of Credit

Small- and medium-scale horticulture farmers in Botswana experience lack of access to credit and this prevents them from investing in necessary capital required to improve both productivity and quality of their products. Lack of credit for small-scale farmers contribute to their failure to grow their production units from small- to large-scale competitive units because liquidity constraints are binding and investments cannot be financed from savings (Bardhan and Udry, 1999). Some farmers interviewed in this study said that although have enough savings to start their horticulture units, access to credit in the horticulture sector is difficult because:

a) Most credit facilities in Botswana are not designed to support horticulture sector. They are designed for monthly salaried workers and exclude customers who derive their incomes from production activities that are seasonal like agriculture. For horticulture for example, loan repayments schedules could be designed for a three months or relevant schedule, which will be in line with production schedules of the crops produced. However, nearly all loans are designed to be paid on a monthly basis.

b) In general, commercial banks charges for loan application administration are high, and these discourage small- and medium-scale horticulture farmers to apply for credit because they do not afford the cost of applying for loans.

c) Both commercial and government supported institutions do not carry out regular independent research to identify the nature and needs of potential new clients in horticulture. For example, one of the farmers reported that the monitoring and evaluation of CEDA projects concentrate on their existing clients and does not cover small-scale farmers who do not enjoy their loans cover. As a result, these institutions' information is limited to projects that they fund and lack vital information about horticulture projects that are not CEDA supported. This information gap contributes to a failure by the credit system to bring on board those clients not already sponsored.

Since Botswana's credit market is not designed to support horticulture sector, the government could consider financial regulations that require commercial banks to allocate a certain percentage of their total loans to agriculture. In addition, the government could consider guaranteeing agricultural loans to reduce commercial bank risks and subsidizing interest rates of these loans to provide incentives for farmers to increase total production in horticulture to meet the growing national demand. In this way, such intervention can increase the supply of credit and facilitate increased production of goods and services in the economy, and hence result in greater economic diversification. Secondly, the government could encourage the Bank of Botswana to increase its supervision of the credit market and ensure that private credit transactions are not used to promote uncompetitive behaviour, similar to the effects of vertical integration, in the horticulture sector. Increased local horticulture production will contribute to economic growth, diversification, productive employment creation and availability of healthy nutritious food. In addition, when more horticulture products are produced locally, Botswana will reduce her trade balance deficit that is currently increasing for some horticulture products (Figure 2).

Some of the participants[9] in the industry argue that, currently, the per unit price of horticulture products in Botswana is high because local horticulture producers are paying for both fixed and variable costs, whereas for more established foreign horticulture producers, they could be paying for variable costs only.

3.8 Horticulture Production, Access to Water and Urbanization

Most horticulture products in Botswana are supplied by large-scale producers who use rainwater harvesting from sand river catchment areas in eastern Botswana (DWA, 2006). The main sources of irrigation water for horticulture in Botswana are Motloutse, Tati and Shashe Sand River resources. Most of these sources are used by large-scale farmers. There are other emerging sources of water supply such availability of re-used water in cities, towns and urban settlements that can be put to use for the development of horticulture in Botswana. Schutte and Mudge (2004) report actual and potential re-use of treated waste water (including Glen Valley) as shown below. About 19 per cent of total treated waste water for re-use is currently used. Re-used water for agriculture purposes was only 5 per cent of the total potential reuse water available for this sector.

Table 1: Treated waste water use

Reuse type	Current reuse (m^3/day)	Potential reuse (m^3/day)
Woodlots	236	636
Sports / Golf courses	5 044	6 044
Agriculture	1 555	29 751
Other	60	60
Total	6 895	36 491

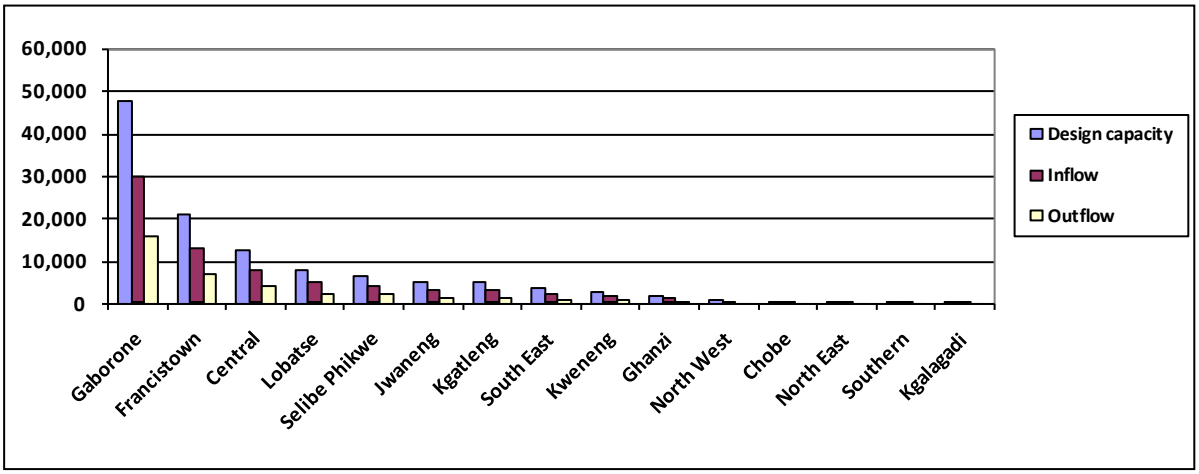
Source: Schutte and Mudge (2004)

The 2006 review of the National Water Management Plan (NWMP2) has revealed availability of an estimated 26,747 cubic metres of treated effluent water resources that can irrigate a possible area of 2,229 ha (DWA, 2006). Among other uses, treated waste water can be used under regulation as a source of water for horticulture. Following rapid urbanization in Botswana, since 1980, the growth of waste water resources is concentrated in Gaborone, and Francistown; and to some extent in the Central District. Current treatment plants have relatively large design capacity to collect at least 10,000 m^3/day

[9] Choppies Head of Vegetable section.

of waste water (Figure 6). The main concern about available treated waste-water resources is whether the country has capacity to monitor quality for acceptable standards for human re-use. This area require more government involvement and assurance so that this new water resource can be effectively used to promote horticulture production, especially by small-scale farmers to increase the national production capacity to meet excess demand and reduce the current trade deficit.

Figure 6: Availability of Waste Water Resources in Treatment Plants in m^3/day by Districts[10]



Source: DWMP[11] (2012).

Promotion of horticulture as part of (peri-) urban agriculture development, that take advantage of availability of existing treated waste water resources, will contribute to economic diversification through increased production of goods and services, increased sustainable job opportunities, and increased national and household food security. Horticulture development can also absorb some of the challenges brought about by the changing demographic patterns, where more than 60 percent of the population is resident in cities and urban villages. In order for horticulture growth to occur as part of the economic diversification process, there must be appropriate coordination between institutions responsible for water availability and use; institutions responsible for land use; institutions promoting horticulture production; health safety and the facilitation of markets.

[10] Figure 6 illustrates the current capacity of treatment plants, amounts of waste water inflow and their outflow a day.
[11] Department of Waste Management and Pollution Control.

3.9 Horticulture Production and Lack of Contract Farming – Small-Scale Farmers

Contract farming is an important institution in horticulture sector because it promotes a smooth flow of products to the market and facilitates smooth planning by traders. Contracts in horticulture trade also bind buyers to assure the market to farmers and access to support services. This institution also assures buyers of supplies guarantee so that they could plan ahead how their sale or processing of horticulture products is organized. The key benefits of contract farming for farmers can be summarized as:

1. improved access to local markets;
2. assured markets and prices (lower risks) especially for non-traditional crops;
3. assured and often higher returns; and
4. enhanced farmer access to production inputs, mechanization and transport services, and extension advice

Additional key benefits for contract partners and rural development often include:

4. assured quality and timeliness in delivery of farmers' products;
5. improved local infrastructure, such as roads and irrigation facilities in sugar out grower areas, tea roads, dairy coolers/collection centres, etc. and
6. lower transport costs, as coordinated and larger loads are planned, as an important feature in the case of more dispersed producers.

Notwithstanding these benefits, a majority of small-scale horticulture farmers in Botswana who supply Mr. Veg Distributors do not want to sign contracts. The risk of supply is possibly a major factor that influences small-scale farmers not to enter into contracts with distributors and as a result, there is limited trust between the two. Thus, such an environment suggests that the Market Master should intervene, and improve the conditions, including price determination, for small-scale farmers. This could include development of clusters and the setting up of relevant collection points. The clusters could be responsible for entering contracts with the distributors, and assure traders of supply, and gain from reduced transport costs as a result of engaging on a large-scale.

3.10 Horticulture Products, the Informal Sector and Female Employment

Horticulture products are an important part of the informal sector in many urban and rural urban villages in Botswana. The people involved in the informal sector generally have low levels of education and employ little capital, especially in the sale of horticulture products in Botswana. As urbanisation increases, the modern sector is unable to absorb all the surplus labour drawn from the agricultural sector (Bardhan and Udry 1999). The unemployed therefore engage in the informal sector such as informal trade, craft production and urban agriculture to earn a living. In recent times, increasing unemployment of youth has become a serious problem. As a result of lack of the economy's capacity to absorb both new job entrants and existing pool of the unemployed workers, the urban informal sector has become an important sector that absorbs those with initiatives for starting micro-businesses.

> In one of the key stakeholder interviews, a female aged 45 years in Gaborone West revealed that she left her domestic worker position in 1999 to begin an informal trade business in vegetable sales of spinach, rape and tomatoes. She immediately doubled her income from P500.00 to P1000.00 per month. She said that increased income from trading in horticulture products enabled her to adequately pay for children's school fees, monthly rentals and utilities. She was also able to send transfers back home to support her mother in Molepolole. She is the only bread winner in her family. She sourced her supplies from Glenn Valley horticultural farmers because it was near to Gaborone. This reduced problems of transport costs and a need for expensive storage facilities.

Box 3: The Experience of an Informal Horticulture Trade Woman in Gaborone

The Central Statistics Office (2008) found that women accounted for *60.5 percent* of the informal sector employees in Botswana, and most of these *(60.3 percent)* women were self-employed. Women dominated the retail trade employees not accounting for *55.5 percent* of the total employed in this sector. Women account for a major part of employment in horticulture retailing, especially in informal horticulture retailing. Thus promoting productivity and competitiveness in the horticulture sector will have a direct impact in improving the wages of women and addressing problems of poverty [Box 3].

3.11 Horticulture Products, Formal Employment Generation and Product Grading

Horticulture production units in Botswana are constrained by an acute shortage of labour. This situation reflects the general experience in most agricultural sectors in Botswana. It is not clear why agriculture in

Botswana experiences extreme shortage of labour when there are high rates of unemployment. Some suggestions are that:

a) As most agriculture sector remains traditional and unproductive, wage rates in this sector are not attractive.

b) The education system prepares students for white-collar jobs and many unemployed people will look for employment in agriculture as a last resort.

c) There are various safety nets in Botswana that helps people to smooth out their consumption patterns and cope with food insecurity such as the Ipelegeng programme. This programme provides labour-based work for cash and pays returns close the minimum wage in agriculture. Many unemployed and poor people are likely to choose to register and work for Ipelegeng jobs because they are mainly within the villages, the working hours are fixed at six hours a day and despite the low wages, the incomes are guaranteed. Hence the negative side effect of some safety net programmes is to draw away poor farmers and agricultural farm labour from alternative employment.

d) Botswana has experienced labour resource redistribution as a result of rapid urbanization since the 1980s in favour of urban areas where the marginal product of labour is higher than in rural areas. Productivity in traditional agriculture remains low.

e) Labour laws are very restrictive on importation of agricultural labour, even when labour in this market is abundant. Currently, most workers in the sector are illegal immigrants, and the process and the cost of immigrant work permits are very expensive and their issue involves much red tape.

Horticulture products can generate additional formal employment such as in cleaning, packaging, sorting, and grading which are labour intensive and can absorb many of the unemployed, especially people with low skills. These employment opportunities are very relevant in addressing poverty eradication as most of the jobs usually attract low skills female workers, and in Botswana, poverty is more prevalent amongst women than males. Weinberger and Lumpkin (2007) have shown that in China, Ecuador, Guatemala, Kenya, Mexico, South Africa and Zimbabwe, women accounted for at least 50 per cent of the employment in value added horticulture industry. Since, most Batswana do not want to work

in the farms, work permits restrictions for immigrants could be relaxed for those who work in farms and locals can be absorbed in value added jobs.

Botswana, should introduce an appropriate grading system, and provide incentive to farmers who produce quality products. Farmers could invest in technologies that facilitate high quality and best grades, such as development of greenhouses for tomato production. Introduction of a grading system will help to diversify the job market and create additional formal employment required to absorb the unemployed and to offer consumers more choice. In order to increase opportunities for hiring more people, government should facilitate the setting up horticulture collection points in production areas or as well as sorting and packaging centres.

4. Limitations

The findings of this study are only indicative of the core issues in horticulture that need further investigation in Botswana. The study could not provide detailed and definitive findings because it was largely limited to the Gaborone area and relied highly on qualitative information. Lack of quantitative data limited the study. The resources available were restricted and did not permit in-depth data collection methods to be applied. Information about backyard gardens (which also participate in horticulture production) was not collected. The main focus of the study was to review the commercial horticulture sub-sector in Botswana.

5. Conclusions

This study has identified core economic issues in Botswana's horticulture sector that need further investigation to contribute to the policy debate about economic diversification, employment creation and poverty eradication. This involved going beyond reliance on the diamond revenues and safety nets. The core issues in the horticulture sector include its lack of inclusion in the National Agricultural Development Policy, whether the economic fundamentals of supply and demand justify its support and development, and the importance of taking account of the fact that horticultural products have high health benefits needed to reduce the micronutrient deficiency in the diet of the residents of Botswana.

Horticulture production has doubled in Botswana in the last decade, but this growth is also associated with concentration of output among a few suppliers. This promotes a monopolistic market structure and

incentive for pricing above competitive price levels. This has negative effects on the general price levels and limits access of the poor to horticultural products. There is a need to develop input support to encourage both large-scale and small scale producers to benefit from increasing demand of horticulture products. Currently, the agricultural extension service is strong in livestock and rain-fed arable production but nearly non-existent in horticultural production. There is a need to re-design our extension services and make provisions for its coverage to include the horticulture sector beyond the Gaborone region.

Most horticulture production in Botswana depends on rainwater catchment through sand rivers. However, there is new treated waste water supplies generated from rapid urban development and improved lifestyles which could be considered for re-use in horticulture. Currently very little of this water resource is utilized and government should take the lead to ensure the safety of this water before it can be widely used. The main concern here is poor coordination between the stakeholders responsible for horticulture growth, waste water management, land use and the Ministry of Health.

The Botswana Horticulture Market model favours large-scale producers and crowds out the small-scale producers. This model also encourages monopoly pricing behaviour which enriches the large produces and impoverishes the consumer and small-scale farmers. One of the reasons for this is a general lack of relevant infrastructure required to promote the development of horticulture in Botswana. It is critical that government should privatize the central horticulture market and change from a commission-based model to a wholesale model. An alternative would be to consider reforming the current cooperative marketing structure.

The BHM should also become a custodian of information that informs policy regarding the promotion and development of the horticulture sector as an integral part of an economy wide sustainable diversification process. When support for this sector is accepted, the Economic Diversification Drive is expected to treat this sector under the infant industry status and support it through the various safety net programmes such as supplementary feeding programmes. As a result, some critical objectives such as employment creation, price stability and quality of products could be compromised when there is limited competition in this sector.

The banking system in Botswana is relatively developed but the private sector does not promote agricultural investments by small-scale farmers. Although the government credit interventions have

been introduced (such as CEDA and the National Development Bank) to address imperfections in the credit market, most of these facilities are not effective to accommodating a large number of small-scale producers. One of the reasons is that these measures are not designed to cover new sectors such as horticulture production. Government could influence the financial sector to dedicate a proportion of their total loans to the horticulture sector.

Horticulture can be an important source of employment in the formal and informal trade sector, and especially for women. But the government needs to increase its visibility through facilitating the implementation of instruments that can generate more value added jobs in this sector. Measures could include the abolishment of border closures, a requirement that traders purchase a certain proportion of horticultural product locally, development of a grading system, the introduction of collection centres and a reduction of restrictions on access to imported labour by those who need it. In addition, government safety nets such as Ipelegeng[12] programme could be better targeted to influence able bodied individuals to take up job openings in the agriculture sector.

6. Recommendations

a) The following policy changes could be considered

   i) Horticulture sector development should be included in Agricultural Development Policy.

   ii) Alternatively, a detailed policy framework should be drawn up that gives a direction on how the horticulture sector should develop and how the benefits should be shared.

b) Horticulture production should be part of the objectives of Public Health Policy.

c) Small-scale farmers should be encouraged and supported to enter commercial horticulture production with more targeted institutional and capacity development programmes.

d) Introduce a more focused provision of extension service for small-scale horticulture producers.

[12] This is a labour based work for cash programme in Botswana

e) The Botswana Horticulture Market should reach out to all areas of potential and facilitate marketing to all producers including small-scale farmers distant from Gaborone, using a wholesale model and not the commission model.

f) Government should provide appropriate infrastructure in horticulture sector that can facilitate increased small-scale farmers participation in the horticulture sector and bring into operation existing idle infrastructure meant to contribute to horticulture development.

g) Government should re-consider requirements for providing credit support small-scale horticulture projects and remove the major constraints preventing many to have easy access to loans.

h) The use of treated waste water for horticulture production should be promoted and government should develop appropriate water quality assurance structure to ensure the safety of such products.

i) Undertake research into the possible greater use of contract planning in horticultural production and marketing.

j) Government should introduce instruments that will facilitate the development of a grading system in this sector and introduce incentive for investment in value adding sectors such as processing that will target youth businesses.

k) Reduce labour restrictions in the agriculture sector that prevent farmers from importing willing labour from elsewhere.

7. Acknowledgements

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Names of the Stakeholders Consulted

1. Mr. Koswane, Market Master, Horticultural Market, Botswana
2. Mr. Halaabi, Head of Choppies Vegetables Department, Mogoditshane. October 2012.
3. Mr. Hemant Kotcha, Managing Director, Mr. Veg Horticultural Trading, Gaborone. October 2012.
4. Mr. Ranjang Mmusi, Small Scale Horticulture Farmer, Matebeleng, Kgatleng District. October 2012.
5. Mr. Tamasiga, Chairman of Glenn Valley Horticulture Farmers, Glenn Valley, Gaborone. October 2012.
6. Mr. Edson Woto, Deputy Permanent Secretary, Ministry of Agriculture. November 2012
7. Mr. Masilo, Director, Department of Agri-Business, Ministry of Agriculture. August 2012.
8. Mr. Mathemabe, Principal Scientific Officer, Agri-business Unit, Ministry of Agriculture. December 2012.
9. Ms. Dineo Motebajane, Informal Sector Trader in Vegetables, Gaborone West. January, 2013
10. Mr. Stephen Sabata, Informal Sector Vegetable Trader, Gaborone West. January, 2013.
11. Mr. Letang Kenosi, Small Scale Farmer, Gulushabe Horticulture farms, Tonota. February and March 2013.

ANNEXES

Annex 1. A Questionnaire sent to the Ministry of Agriculture Officials. The Director, Agribusiness.

Please provide me with the following data:

1. Statistical history of horticulture products by local producers [last 10 to 20 years].
2. Horticulture imports [quantity and value] by name of importer [last 10 to 20 years]
3. Horticulture sales [quantity and value] by name of buyer [last 10 to 20 years]
4. Horticulture damages (waste) by quantity [last 10 to 20 years]

In particular, please provide me with answers to the following questions:

1. What is Botswana policy objective on horticulture?
2. List the major horticulture production areas that supply your market.
3. List the major markets of horticulture in Botswana other than yourself.
4. What percentage of horticulture supplied in Botswana is produced locally [provide 10 to 20 years data]
5. What share of the total market do you supply?
6. What are existing incentives that you provide to local producers?
7. What are constraints you experience with to marketing horticulture in Botswana, especially local produce?
8. What initiatives do you have or use to address these constraints and what have been your successes?
9. What other approaches do recommend can be put in place to support more market access to local horticulture producers in Botswana?

Annex 2: A questionnaire for small scale farmers.

In particular, please provide me with answers to the following questions:

1. What do know about Botswana policy objective on horticulture?
2. List the major horticulture products that you supply to market.
3. List the major markets of horticulture in Botswana that you know
4. List the markets that are accessible to you.
5. What percentage of horticulture supplied in Botswana is produced locally [provide 10 to 20 years data]
6. What share of the total market do you supply?
7. What are existing incentives that you use to access the market?
8. What limits your optimal access to markets?
9. What constraints do you experience to access markets of horticulture in Botswana?
10. What initiatives do you have or use to address these constraints and what have been your successes?
11. What instruments are available to address producers constraints and what can you say about their performance?
12. What other approaches do recommend can be put in place to support more market access to local horticulture producers in Botswana?

Annex 3

Questionnaire that was sent to Market Master Botswana Horticultural Market

1. What is BH Market?
2. Describe the institutional structure of BH Market.
3. What is the role of BH Market?
4. Who are the stakeholders (main) of the BH Market?
5. What are the achievements of the BH Market?
    - Food availability
    - Collection points
    - Food Access
    - Import Bill
6. What are challenges facing the BH Market?
7. What is the pricing policy of BH Market?
8. How does this policy motivate the small scale farmers?
9. What needs to be done to address challenges facing the horticulture market?

Annex 4

Questionnaire administered to the Private Sector Traders

1. What is the role of BH Market in horticulture?
2. How are you involved with BH Market?
3. What are the benefits that you derive from the existence of the horticulture market?
4. What are the challenges facing the horticulture market?
5. What do you think is required to address horticulture market problems?
6. What are horticultural processing prospects in Botswana?
7. What processing activities are you doing in your company?
8. What is the market potential?
9. How many people by gender do you employ?
10. What are challenges in processing in Botswana?
11. What solutions can be considered to promote and advance processing?

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