

Research Article

Sugar Value Chain in Zambia: An Assessment of the Growth Opportunities and Challenges

¹Thomson Kalinda and ²Brian Chisanga

¹Department of Agricultural Economics and Extension, School of Agricultural Sciences, University of Zambia, Kalundu, Lusaka, Zambia

²Farming Systems, Social Sciences and Economics Division, Zambia Agricultural Research Institute, Chilanga, Zambia

Abstract: The main objective of this study was to identify the major actors in Zambia's sugar value chain and to assess the growth opportunities and constraints faced by the sub-sector. The study results show that the sugar sub-sector accounts for about 4% of the Gross Domestic Product and 6% of total national exports in Zambia. The sugar industry in Zambia is a monopolistic market structure dominated by one firm, Zambia Sugar Plc., which contributes over 90% of the total national sugar production. Zambia is one of the lowest cost producers of sugar globally. Growth in the sugar industry therefore holds great prospects for economic diversification and employment creation. Despite being a low cost sugar producer, growth of the sub-sector is constrained by high transaction costs. These include high fuel, electricity, transportation and distribution costs. Legislation on Vitamin A fortification of sugar also increases production costs and is a significant barrier to entry for potential entrants. Moreover, water rights and insecurity associated with customary land tenure have also emerged as major issues requiring attention to enhance investments into the sector. The situation is aggravated by lack of an articulate sugar sector policy to provide strategic guidance for sector development. In order to attract private sector investment and enhance growth; government policy should assure water rights and land tenure security for establishment of sugar plantations. There is also need to clarify government policy on bio-fuels as well as to review the export strategy to reduce dependence on EU markets and explore alternative regional markets.

Keywords: Diversification, employment creation, sugar industry, sustainable economic growth, value chain analysis, Zambia

INTRODUCTION

Agriculture is the mainstay of the rural economy of Zambia and involves crop farming, livestock rearing, fishing and forestry. The agricultural sector, including agro-processing, contributes about 40% of the Gross Domestic Product (GDP), 67% of the total employment, supplies the bulk of raw materials which account for over 80% of the manufacturing sector's value added and contributes more than 12% of foreign exchange earnings (World Bank, 2007a; Government of the Republic of Zambia, 2011).

The sector's contribution to real GDP averaged 18% over the past decade, making up 39% of earnings from non-traditional exports, though this has fluctuated significantly mainly due to the dependence on seasonal (unreliable) rainfall (World Bank, 2007a). The largest exports and highest contribution are in primary agricultural products (maize, sugar, tobacco and cotton) and floricultural and horticultural products. Other important exports include coffee (Arabica), fuzzy

cotton seed, paprika and soybeans. In some years, maize, marigold meal, groundnuts and seeds have contributed important export values, but the performance of these products seems to be erratic (Government of the Republic of Zambia, 2004a).

Zambia has a comparative advantage in the production of a wide range of food and non-food crops, however, it has not capitalised on this comparative advantage to increase production across a wide range of products. This is partly due to unfavourable policy options, lack of capacity and resources to exploit these advantages. In recent years however, production of crops such as maize, flowers, fruits and vegetables has increased but the comparative advantages in terms of livestock, fisheries and forestry have not been systematically harnessed. To a large extent the Zambian agricultural economy remains largely a mono economy dominated by maize production.

Zambia possesses tremendous land and water resources with over 1.7 million cubic metres of underground water resources. Surface water resources

Corresponding Author: Thomson Kalinda, Department of Agricultural Economics and Extension, School of Agricultural Sciences, University of Zambia, P.O. Box 32379, Lusaka, Zambia

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on the other hand range from 136.2 million cubic metres per day in a drought year (10 year return period) to 237.3 million cubic metres per day in an average year. This is about 40% of the surface water resources in the Southern African Development Community (SADC) region. Zambia is one of the few countries in Africa which is abundantly endowed in terms of land, labour and water resources. Based on this endowment, the country has great potential to expand its agricultural production and provide linkages with other industries. Out of the country's total land area of 75 million ha (752,000 km²), 58% or 42 million ha falls under the medium to high potential for purposes of agricultural production (Government of the Republic of Zambia, 2004b, 2006).

Zambia's future development will depend significantly on the diversification of the economy. Most stakeholders believe that the best prospects for diversification are currently found within the agricultural sector given Zambia's natural resource endowment. Historically, Zambia's agriculture sector has been dominated by maize production. However, there is considerable potential for expansion in respect of a number of other agricultural products. Research evidence has shown that varieties of agricultural products are or have the potential to be internationally competitive and have great potential for growth and employment creation. This study looked at the growth and employment creation potential in respect of the sugar sub-sector. This study was motivated by the need to better inform policymakers on non-traditional agricultural sectors that could contribute significantly to sustainable economic growth in Zambia.

The main objective of this study was to identify the major actors and their core functions in the sugar value chain in Zambia. The study also identified and assessed the major constraints and opportunities in the sugar value chain. In so doing, the study aimed at providing an in depth analysis of the key issues and challenges faced by the sugar sub-sector with a view of assisting the formulation of favourable sector policies and strategies towards promoting long-term growth of the sub-sector.

METHODOLOGY

Analytical framework: The study employed a Value Chain Analysis (VCA) approach. The VCA is one of the many tools that have been used in analyzing markets with the aim of contributing to the process of linking rural industries and enterprises into the mainstream markets (Asia DHRRA, 2008). This provides useful information that can help policymakers to harness and maximize the benefits of the value chain as well as aid in developing strategic linkages between commodity producers, market players and consumers. As defined by Kaplinsky and Morris (2001), the value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of

production (i.e., involving combinations of physical transformation and the input of several producer services), delivery to final consumers and final disposal after use. The essence of VCA is to improve strategic learning in enterprise development as it treats the enterprise not as a singular (autonomous) entity, but as part of an integrated chain of economic functions and linkages across geographical boundaries.

The VCA seeks to understand the various factors that drive the incentives, growth and competitiveness within a particular industry and identify opportunities and constraints to increasing benefits for stakeholders operating throughout the industry. This feature of VCA lends to its completeness as a strategic tool in exploring different alternative strategies for poverty reduction (Asia DHRRA, 2008). The purpose of analyzing the value chain of sugar was to identify key points of intervention along the chain and to recommend specific policy directions to enhance the competitiveness of the sugar sub-sector. This study took a descriptive approach to map the sugar value chain and identify the major actors and the functions they perform as well as identify major constraints and opportunities in the chain.

Data collection: Both secondary and primary data was used in the study. The data was gathered through desk research and key informant interviews. Secondary data was collected through a review of published and unpublished material including past value chain studies. The main archival data was collected from the relevant websites, documents, company reports and academic thesis or papers and journals. A desk review of Sugar industry documents such as sales and marketing reports, financial and annual reports documented by Management staff were also critically reviewed. Other Government agricultural, industrial and trade policy documents which affect the sugar industry as well as relevant statistical reports which document industry production and performance were also reviewed.

Key informant interviews were carried out with leaders in the sugar industry or sector. Additional sources with a detailed knowledge of growth and investment opportunities including the producers' associations and government officials were also consulted for relevant information. Focus of the semi-structured key informant interviews was on the specific research objectives as outlined above and to highlight any pertinent issues concerning the sugar industry in Zambia.

Data analysis: For purposes of this study, descriptive data analysis was employed to characterize the sugar industry in Zambia. The data collected was analyzed to identify the main actors, characterize the key structure or elements of Zambia's sugar value chain. Quantitative and qualitative data collected from documents and key informants was also analyzed to assess the opportunities for enhancing growth of the sugar industry and the constraints hampering growth of the industry. A descriptive-analytical narrative was used to

present the findings from the study in order to have a comprehensive picture of the key issues concerning the sugar industry in Zambia.

RESULTS AND DISCUSSION

Importance of Sugar Industry in Zambia: The sugar sub-sector is one of Zambia's most important economic sub-sectors and is one of the most successful non-traditional export crops. The sector accounts for 3-4% of the national Gross Domestic Product (GDP) and 6% of total national exports in Zambia. The sugar industry provides employment for around 11,000 workers, with a total of dependents probably exceeding 75,000 (Palerm *et al.*, 2010). The sugar sector generates over US\$45 million in gross export revenue annually, which has almost doubled from the mid-1990s when export earnings stood around US\$ 25 Million (World Bank, 2007b).

Sugar production is a high value agricultural industry with significant contribution to the manufacturing sector due to high value addition, diverse range of products and markets. The sugar transformation process results in refined sugar, raw sugar, speciality sugar products, molasses and electricity generation. Potential exists in production of ethanol-based fuel blend and other downstream products (gel fuels). Value is also added by serving different markets including the domestic, regional, international, preferential E.U and niche markets. Preferential E.U markets present the most lucrative markets with further premiums offered to speciality sugar products.

Structure and players in the sugar value chain in Zambia: The Sugar Market is largely private sector driven, highly concentrated and dominated by three sugar milling companies, namely Zambia Sugar Plc., Kafue Sugar and Kalungwishi Sugar. Table 1 shows Zambia Plc. to be the single most dominant company contributing over 90% of the total national sugar production while the remaining two companies only contribute less than 10%.

Zambia Sugar Plc. is the largest sugar producing company with a capacity to produce 450,000 metric tonnes of sugar following its recent expansion. In 2011, Zambia Sugar Plc. produced 385,000 metric tonnes representing about 92.5% of total national production. Established in the pre-independence era, Zambia Sugar Plc. started operating from the Nakambala Estate in Mazabuka district south of Lusaka in 1966 and has a record of consistent growth and innovation. It is a subsidiary of Illovo Sugar Limited of South Africa, a

leading manufacturer of sugar and downstream products, which holds 82% of shares while institutional and private shareholders in Zambia control the remainder of the shares (Zambia Sugar Plc., 2011). Zambia Sugar Plc. has an estate of 16,500 ha while 7,724 ha are under smallholder out growers. Zambia Sugar Plc. produces an estimated 60% of its sugarcane requirements while 40% is outsourced mainly from out grower smallholders organized under the Kaleya Smallholder Scheme (KASCOL), Magobbo smallholder sugar cane schemes and other independent sugarcane farmers. Sales to export markets are significant (60%), exceeding sales in the domestic market (40%) which average around 150,000 metric tonnes per year. Of the 40 % sugar sold in the domestic market, 75% is sold to the direct sector (for consumption) while 25% is sold to the industrial sector for the manufacture of foodstuffs and beverages. Zambia Sugar Plc. also produces high premium speciality sugar for the preferential EU market, which is a niche export market which increases export earnings for the company.

Kafue Sugar, which started its operations in 2005/2006, is located on the Kafue River on the other side of Zambia Sugar Plc.'s Nakambala Estates. Kafue Sugar has an estate of about 6,000 ha and produced about 30,000 metric tonnes of sugar in 2011 (about 7.2% of total national production).

Kalungwishi Estates Ltd is a relatively new sugar company which is located in Kasama in the Northern Province of Zambia. It cultivates about 400 ha which produced an estimated 1,400 metric tonnes in 2011 (about 0.3% of total national production) (Palerm *et al.*, 2010).

The main business strategy preferred by these companies is that of vertical backward integration whereby the companies own cane producing estates. The schematic presentation of the Zambian sugar value chain as shown in Fig. 1 demonstrates this by providing an indication that 60% of the sugar cane supplied to the mills is from own-estates while only 40% comes from individual farmers who either operate independently or are part of our grower schemes operated by the companies.

The value chain outline also shows the various sugar value chain actors including producers (cane growers), processors (sugar processing companies also referred to as sugar millers), domestic, export and by-product markets, wholesalers, retailers and consumers. Wholesalers and retailers are the main channel through which sugar reaches the consumers. For the Zambia Sugar Company (Zambia Sugar Plc.), an approximate 80,000 metric tonnes representing about 60% of local or

Table 1: Basic information on sugar producing companies in Zambia

Sugar company	Location	Hectares under sugar (Estate)	Hectare under sugarcane (Smallholder)	Production in (metric tonnes)	Percentage of total national production (based on 2011 production estimates)
Zambia Sugar Plc.	Mazabuka	16,500	7,724	385,000	92.5
Kafue Sugar	Kafue	6,000	N/A	30,000	7.2
Kalungwishi Estates Ltd	Kasama	400	N/A	1,400	0.3

Palerm *et al.* (2010), Zambia Sugar Plc. (2011), Mulikelela and Munagnya (2010)

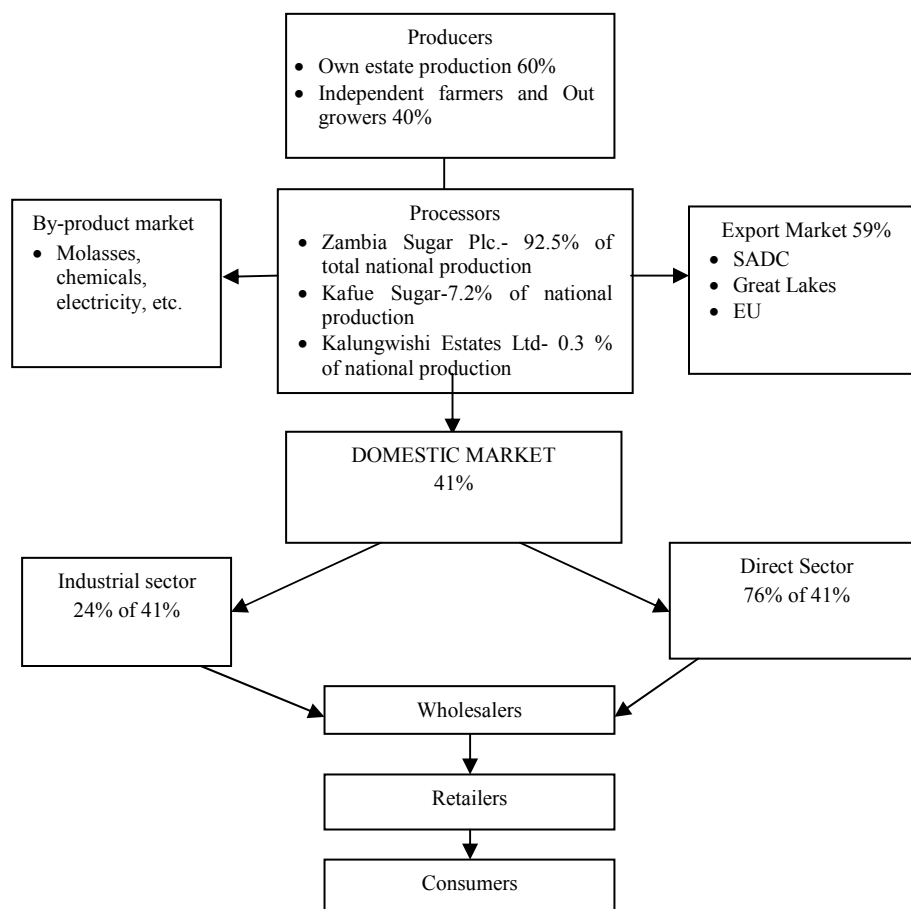


Fig. 1: The Zambian sugar value chain; Chisanga (2012)

domestic sales were delivered to wholesalers and agents in the 2009/2010 season. Each of the wholesalers or agents delivers an average of 6,000 metric tonnes. The sugar companies also deliver refined sugar directly to retailers including supermarkets like Shoprite, Spar and Pick n Pay. In 2009/2010, this amounted to almost 11,000 metric tonnes, representing about 9% of local sales. An average of 250 metric tonnes was delivered to each retailer.

Another important player in value chain is the Sugar Producers Association (SPAZ) that represents various interests among sugar stakeholders; the government; donor agencies and funding organizations.

Regulation and governance: Unlike other export crops, there is no specific regulatory body that determines pricing or quality standards in the sugar industry. At present, there is no particular policy regulating the sugar industry and trade. Policy guidance therefore, is drawn from related policies such as the National Agricultural Policy (NAP) and the Sixth National Development Plan (SNDP). However, Zambia has recently formulated a comprehensive Zambia National Sugar Strategy (ZNSS). An outline document was formulated in mid-2006 as “the elements of the

Zambia national sugar strategy”. In 2010, the ZNSS was updated with some changes to the 2006 NSS. This NSS was eventually finalised and adopted in 2010 to provide strategic policy guidance regarding the sugar industry at national level (Government of the Republic of Zambia, 2010).

Currently value added to sugar and its by-products in Zambia in real terms is about US\$ 145 million. The Zambia National Sugar Strategy (ZNSS) aims at increasing the value added from the current US\$145 million to US\$157 million by 2013 and to US\$200 million by 2020 (Ministry of Commerce Trade and Industry of Zambia, 2010). The ZNSS aims to achieve this by promoting out grower schemes; supporting diversification into alternative uses of sugar such as ethanol production and the development of a sugar trade policy. This is expected to generate more employment as well as increase incomes from the sugar industry.

The Zambian government introduced controls with regard to sugar imports. According to Zambia’s legislation, all sugar in Zambia that is meant for direct consumption has to be fortified with vitamin A in specific quantities. This implies that all domestic and imported sugar should meet specific fortification requirements. This legislation does not exist in other

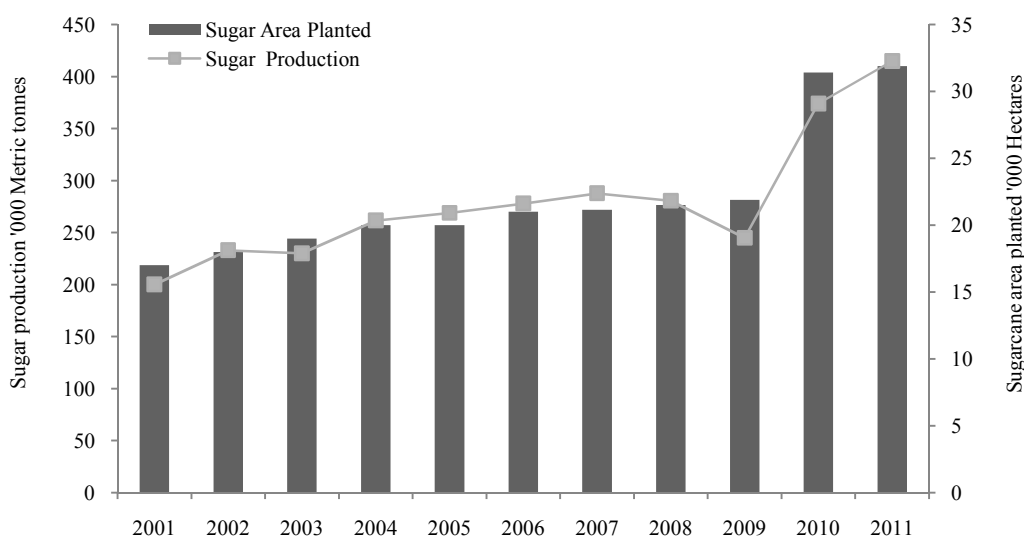


Fig. 2: Sugar production and area planted in Zambia, 2001-2011; FAO Stats

countries which means all sugar coming from outside cannot be imported into Zambia. In effect, this policy affects sugar imports, as it is Non-Tariff Barrier (NTB) on sugar imports. The law on fortification also increases the cost of producing domestic sugar which is pushed onto consumers increasing the farm to retail price spreads. It also crowds out the sugar market as it is a significant barrier to entry for potential entrants as the cost of fortification machinery is high (Ellis and Singh, 2010; Chisanga, 2012). Coupled with this, there is an administrative barrier to sugar imports where potential importers are required to obtain import permits from the government which is often not transparent and often delayed. This has limited imports, which had soured to around 25% of total domestic consumption in 1999 at the time the law was put in place (Chisanga, 2012).

Production trends: Sugar production in Zambia has been on the rise since its privatization in the 1990s. This has been driven by huge amounts of Foreign Direct Investment (FDI) flows and new production technologies introduced. Although increased production can be largely attributed to one sugar producing company (Zambia Sugar Company Plc.), emerging sugar companies mainly Kafue and Kalungwishi Sugar are growing in significance in the market. Figure 2 shows annual sugar production and area planted for the period 2001-2011 in Zambia. Sugarcane area planted and sugar production has been on a steady rise since 2001 with an exception being during the 2008 and 2009 seasons when a slump in production was experienced. Heavy rains that were experienced in 2007 saw a reduction in production yields over the 2008 season. Production fell further in 2009 but more recently, there has been a surge in output owing to major capacity expansion at Zambia Sugar Plc. and Kafue Sugar.

Projected future trends in sugar production: There are a number of drivers shaping the future trends in sugar production in Zambia. Among these are expansion programmes at existing sugar companies and proposed new investments in the industry. Globally, high world sugar prices are expected to sustain revenue realizations from all export markets, into which increased sugar volumes are to be sold. The existing strong local economic fundamentals are expected to benefit local sales, whilst exchange rate movements and weather conditions will continue to influence profits (Zambia Sugar Plc., 2011). Financing costs are forecast to decrease year-on-year with a reduction in borrowings and the refinancing of expansion-related loans. The cost of financing is further expected to decrease following the reduction in lending rates by financial institutions after the Zambian Central Bank reduced the reserve ratio requirement. In addition, the government is expected to reduce corporate taxes for commercial banks by 5 from 40 to 35%, respectively and all these efforts will serve to reduce the cost of borrowing.

Employment and income distribution: Apart from contributing to GDP through exports, the sugar industry contributes to employment of permanent and seasonal workers and supports smallholder farmers involved in out grower sugarcane production. The sugar companies also spend large amounts of money on local suppliers. By supporting local business in the supply chain, sugar companies indirectly attract additional investment to the local economy, thereby increasing local growth in SMEs through their participation in the value chain. Zambia Sugar Plc. is the largest employer in Mazabuka and contributes positively to the development of the town.

According to Zambia Sugar Plc., the company employs around 2,000 permanent employees and just

over 4,000 seasonal workers at peak periods. The company spends more than ZMK 190 billion (US\$ 38 million) in salaries, wages and benefits to employees. The largest of these positive impacts is experienced by the company's out growers whose total earnings for cane delivered to the Nakambala factory amounted to more than ZMK 200 billion (US\$ 40 million) in the 2010/11 season. Approximately 70% of the procurement budget is spent on Zambian suppliers (Zambia Sugar Plc., 2011). Kafue Sugar spends about ZMK12 billion (US\$2.4 million) annually on salaries for over 2,000 workers thus contributing positively to development in the Nampundwe area on the outskirts of Lusaka. The sugar industry contributes considerable tax revenue to government. For instance, it contributed about US\$7.9 million in corporate taxes on profits in 2007 (Mulikelela and Munagnya, 2010).

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The sugar industry also contributes significantly to infrastructural and social development. Much of the infrastructure in Mazabuka town in Zambia has been developed, improved and maintained by sugar sector revenues. Sectors such as engineering, banking and transportation have developed in response to the needs of the industry.

Opportunities for growth in the Zambian sugar industry: The analysis highlighting the major opportunities for the growth of the sugar industry is presented below:

Competitiveness of Zambian sugar: Zambia is one of the lowest cost producers of sugar in the world. It is ranked the world's sixth lowest cost producer after

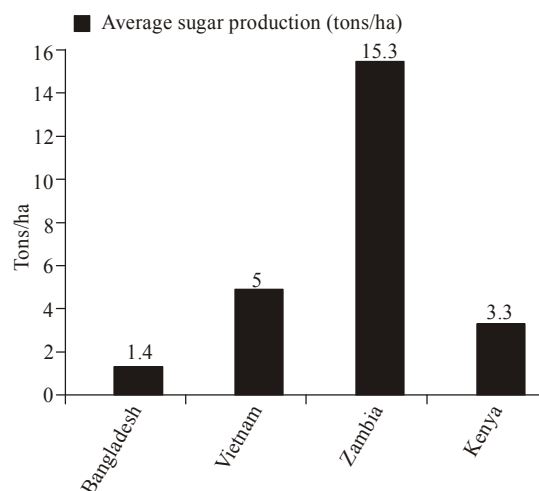


Fig. 3: Average sugar production in case study countries in 2007; Ellis and Singh (2010)

Brazil, Malawi, Zimbabwe, Australia and Swaziland respectively (World Bank, 2007a). The Economic Research Services (ERS) of the United States Department of Agriculture, USDA, revealed in a 2007 study that the cost of production for these low cost producers (including Zambia) for raw cane was 8.69 US cents per pound while the world average was 12.39 US cents per pound. Additionally, recent research by the Overseas Development Institute (ODI) revealed that sugar production in Zambia is very efficient, stating that the average cost of production in Zambia is US\$169 per metric tonne compared to the world average of US\$263. The privately managed Zambian sugar sector has shown to compete successfully on world markets, representing a possible source of considerable investment and growth and faring better than the Kenyan sugar sector, for example, which has a high degree of state involvement.

The ODI study also compared Zambia's costs to three other sugar-producing countries, Kenya, Vietnam and Bangladesh, illustrating that the sugar yield as measured in tons/hectare in Zambia far exceeds that of the other three countries, which is indicative of high efficiency in production (Fig. 3).

Despite being a low cost sugar producing country, Zambia's sugar domestic price was found to be the highest among the five study countries as shown in Table 2. The table shows the sugar retail prices in five selected countries.

It is clear from the figures above that the cost of doing business after the farm-gate is relatively higher in Zambia than in the other sugarcane producing countries. It is therefore prudent for policymakers to critically look at factors such as taxes, cost of financing and transport efficiencies if the retail price of sugar is to compete favourably with other countries.

Competition and trade in sugar is for the most part governed by preferential trade agreements. The

Table 2: Sugar retail price in selected countries

Country	Sugar retail price 2008 – Spot market price at time of country visit (USD)/kg
Bangladesh	0.57
Vietnam	0.66
Zambia	1.2
Ghana	0.99
Kenya	1.05

Ellisand Singh (2010)

agreements have largely benefitted sugar producing developing countries like Zambia by helping them access regional and international sugar markets. The significant trade arrangements include the ACP/EU Sugar Protocol, the Agreement on Special Preferential Sugar (SPS), the Everything-But-Arms (EBA) initiative, the Caribbean Basin Initiative (CBI), African Growth and Opportunity Act (AGOA), North American Free Trade Agreement (NAFTA), the SADC Sugar Cooperation Agreement and the Southern Africa Customs Union (SACU). The ACP/ EU Sugar Protocol may perhaps be regarded as the most important thus far, as it has enabled the developing countries access to the EU sugar markets at prices substantially higher than the world prices.

One of the drivers of Zambia's sugar industry competitiveness is the amendment in the EU quota regime. Under the Lomé and Contonou Agreements, the country enjoyed protected quota-based access to the European Union for a maximum of 28,000 metric tonnes per annum. This regime, however, has changed under the new "Everything but Arms" agreement between the EU and African, Caribbean and Pacific (ACP) countries whereby the price for raw sugar has been cut by 32% while the quota has been increased. The new trade policy permits Zambia to export a maximum of 250,000 metric tonnes of refined sugar (almost 95% of its current production) to the EU from 2009 until at least 2015 from which it stands to benefit through this expanded duty free quota, although the price of the product is no longer guaranteed. In the absence of a guaranteed price, Zambian exporters will have to look at the regional markets seriously because, according to the World Bank (2007b), international price competitiveness is affected by freight costs which are found to constitute an approximate 45% of the export parity price. This suggests that Zambia might be better placed to serve regional rather than international markets such as the EU because of its high inland transport costs. Zambia is also affected by duties, taxes and other protectionist policies in countries where it exports sugar. This results in higher prices of sugar in these markets. However, evidence shows that the regional markets that Zambia serves offer higher returns than the EU quota based market due to high transport costs to reach overseas markets (Struyf and Chuba, 2009; World Bank, 2007a).

Increased and deeper regional integration under the Common Market for Eastern and Southern Africa

(COMESA) and the Southern Africa Development Community (SADC) through regional trade arrangements such as the SADC Sugar Cooperation Agreement, offers an opportunity for export growth through increased access to regional markets and diversification of market access, which is currently highly dependent on the EU market. The growth of industrial use of sugarcane and the policy shift by Brazil, the major world sugar producer, to support sugar production for ethanol production has increased global demand for sugar, thus implying that there is a market available for sugar in the future.

Public support programmes for sugar production:

There are a number of public led initiatives to support sugar production in Zambia as a result of the privatization of the sector. The government attracts investments into the sector through its promotion of FDI and promotion of agricultural growth. Private and donor agency cooperation has also emerged as an important source of initiatives shaping the sugar industry and increasing smallholder participation in the sugar value chain.

One such initiative is the Magobbo sugar scheme sponsored by the European Union (EU) and Mazabuka Sugar Cane Growers Trust (MSCGT). The scheme is implemented through the MSCGT to facilitate sugar cane production in an out grower scheme involving the local population in the Magobbo area of the district. The European Union agreed to support the MSCGT with a financial grant of up to 60 % of the project cost. The total cost of the project is US\$6, 5 million with an EU contribution of US\$ 3, 9 million. The project was initiated in October 2009, with the broad objectives of expanding sugar production and sugar product volumes, as well as realising significant increase in permanent employment in the sugar sector in Zambia (WHYDAH Consulting Ltd., 2011). Some 900 farmers are benefiting from the scheme which has brought an estimated 438 ha into production. The project is envisaged to increase income from the current US\$1,168 per year (2011) to US\$4, 000-US\$ 5000 in 2012 and to US\$ 10,000 in 2022 (ibid).

Another initiative is the Manyonyo Water Users Association (MWUA). This is a government initiative supporting irrigation and livelihoods by supporting smallholder cane production co-funded by the African Development Bank (Palerm *et al.*, 2010). MWUA was initially meant to be a multipurpose scheme for irrigation of various crops. With the expansion project of Zambia Sugar Plc., the Manyonyo farmers saw an opportunity for growing a high value crop with secured markets and have committed themselves to producing sugar cane. Zambia Sugar Plc. has committed itself to buy the cane crop as a way of making better use of their increased milling capacity. The scheme is expected to have 555 ha under sugar cane once it becomes fully operational (Struyf and Chuba, 2009).

Expansion and proposed investment programmes: Zambia Sugar Plc. also completed the acquisition of Nanga farms from Zambeef, which has brought an additional 10,500 ha into the estate under Zambia Sugar Plc. in Mazabuka. Smallholder out-grower development at Magobbo and Manyonyo smallholder schemes has brought an additional 438 ha into smallholder sugarcane production. In 2011, Zambia Sugar Plc. produced a record 1.97 million metric tonnes, which saw sugar production increase to 385,000 tons from 315,000 tons in the previous season representing a 16 % increase (Zambia Sugar Plc., 2011). The company envisages reaching its projected output capacity of 450,000 tonnes per year in 2013. Zambia Sugar Plc. has also expanded on electricity generation, making it self-sufficient in its electricity requirements by expanding from 10 megawatts to 30 megawatts. The company also plans to start ethanol production. The expansion project at Zambia Sugar Plc. is projected to create some 10,000 jobs, including smallholder out-grower schemes.

Kafue Sugar has grown from an initial 2,000 ha in 2005/6 to a current 6,000 ha and is expanding its estate by about 700 ha thus increasing its capacity to 45,000 metric tonnes per year. This expansion is expected to cost about US\$6 million. The expansion will create a combination of 1,000 permanent and seasonal jobs. Kafue Sugar also has plans for developing an out grower scheme. These plans are still at a preliminary stage with a planned area of about 500 ha, which would be put under a centre-pivot irrigation regime. The scheme would benefit some 80 farming families. It is intended to practice green cane harvesting. The Kalungwishi Sugar Company has no immediate plans for expansion or out-grower schemes.

The sugar industry has also attracted a number of proposed new investments. Among these is the Luena farming block in the Luapula Province of Zambia. Luena Farm Block is located 1,060Km from Lusaka and comprises about 100,000 ha of farmland suitable for growing sugar. The Government of the Republic of Zambia is currently seeking the participation of private sector investors to partner with to develop the farm block into an integrated sugar plantation and processing unit. Development of the Luena Sugar Cane Plantation will include the development of infrastructure such as roads, power, water, residential and commercial properties (Zambia Development Agency and Commonwealth Business Council, 2011).

Another proposed new investment is the South African based AGZAM Project Developers Ltd which plans to build a US\$251 million sugar and bio-ethanol plant which will be one of the largest non-mining investments in recent years. The company plans to produce 200,000 metric tonnes of sugar and 28 million litres of bio-ethanol per year by 2013 and it is expected that the project will create around 4,000 jobs. The company will cultivate about 15,000 ha of cane sugar in

Kazungula and support about 3,000 ha of plantations by out-growers (The *Zambian Economist*, 2011).

Sugar out grower schemes: Out grower schemes or contract farming is gaining prominence in Zambia's sugar industry as a model that secures cane deliveries from smallholders while guaranteeing their market and thus supporting farmers' livelihoods. The most successful out grower scheme is the Kaleya Smallholder Trust (KST), which has been operational since the 1980s. It currently operates with 160 smallholder farmers with about 1,040 ha under sugarcane. The out grower scheme was initiated by four shareholders (Zambia Sugar Plc., Development Bank of Zambia, Commonwealth Development Cooperation and Barclays Bank). This was an initiative for poverty alleviation and also as an expansion strategy by Zambia Sugar Plc. to provide more cane for milling operations (Struyf and Chuba, 2009). There are three major institutions operating the Kaleya Smallholder Scheme, namely, the sugar milling company (Zambia Sugar Plc.); a management Company (KASCOL); and farmers organization (Kaleya Smallholder Trust-KST) (Palerm *et al.*, 2010). As was outlined above, two other out grower schemes are currently under development. These are the Magobbo Cane Growers Trust (MCGT) and Manyonyo Water Users Association (MWUA).

Challenges in the sugar industry: The analysis highlighting the major challenges facing the sugar industry in Zambia is presented below:

High transactions costs: A number of major challenges or constraints exist in the Zambian sugar market including the high cost of doing business in Zambia as reflected in high taxes, high fuel, electricity and transportation and distribution costs and the high wages that push the domestic price of the commodity upwards. The sugar industry is capital intensive and requires heavy capital investments such as setting up irrigation facilities and factory plants. In Zambia, the cost of borrowing is very high and this limits growth of the sugar industry particularly for small industry players and potential new entrants.

Zambia also faces a major challenge with transportation which affects its competitiveness in the international market. Zambia is a landlocked country and coupled with poor transport infrastructure, this makes it very expensive to access export markets. As noted above, freight constitutes a significant proportion (about 45 %) of the export price posing a major challenge for the sugar industry.

The competition framework governing Zambia's industries including sugar is weak as is evidenced by the monopolistic structure of the industry. This has been reflected in the domestic pricing of sugar where the price is significantly higher than the cost of production.

The Zambia Competition Commission, which is the main competition regulation body in the economy, is limited in scope in resolving competition problems arising in the economy especially where there is vested interest.

Conflicts on land tenure and security: Land tenure and security is another issue affecting the growth of the sugar industry in Zambia. In some cases, the conversion of customary land to large leaseholds for establishment of sugar plantations has eroded local rights to land use and common pool resources. As land is acquired for commercial farming, industry and tourism, local people in some areas have lost access to water sources, grazing land and forest products. Some smallholder farmers have been reluctant to get involved in out grower schemes in Zambia since most of the land is held under customary tenure. They fear that if the conversion of their land for sugar production is not done transparently with assurances of tenure security, they will end up being displaced and in conflict situations.

Water and environmental issues: Water and environmental issues are of critical importance in sugar production as the industry is a major user of water resources. Two sugar producing companies (Zambia Sugar Plc. and Kafue Sugar) rely on the Kafue River which has come under heavy stress due to other uses of the same water including hydroelectricity and domestic consumption and as well as the regulation of flows at the Itezhi-Tezhi Dam. Furthermore, water crises caused by the increasing population demanding more and more water, as well as the changing climatic conditions coupled with poor management of the basin, have brought about an imbalance between supply and demand. There are legal implications regarding access to commercial irrigation water. Water rights are granted by the Water Board of the Department of Water Affairs. Access to water rights is a major barrier for land development for sugar production including out grower scheme development. At present water rights have been granted to Zambia Sugar Plc. (1,246,428 m³) and 575,540 m³ for out grower scheme while Kafue Sugar has been granted 515,000 m³. There are indications that the water rights already allocated to sugar estates and Zambia Electricity Supply Corporation (ZESCO) Limited may be exceeding future water availability (Palerm *et al.*, 2010).

Lack of clear policy on ethanol production: Viable opportunities for ethanol production, for blending with petrol exist and ethanol production from molasses is expected to commence in the foreseeable future. Ethanol production from molasses is expected to further increase the viability and profitability of cane production/processing for both sugar cane farmers as well as sugar mills. However, the sugar industry is yet to seriously undertake production of ethanol due to lack

of appropriate policies in Zambia. There are no clear legal and institutional frameworks to facilitate development of the national fuel-blending sub-sector, to enhance the interest from potential ethanol producers and the fuel blender(s) and guarantee the market.

CONCLUSION AND RECOMMENDATIONS

The analysis of the sugar industry in Zambia concludes that the industry is positively contributing to economic growth, value addition, employment and wealth creation. The sugar industry in Zambia has experienced significant growth in recent years owing to the increasing investment in the subsector. This has generated positive economic benefits for the local economy through employment creation and other multiplier effects in the areas of operation. Out grower schemes are a growing model in the sugar industry and present a great opportunity for enhancing smallholder incomes. The preferential trade agreements (particularly the EU/ACP Sugar Protocol) have been instrumental in ensuring access of Zambian sugar to the European markets. Government and donor agency led initiatives are gaining prominence in the sugar industry with a major aim of promoting smallholder sugar production for enhanced livelihoods.

Zambia has been found to be a low cost sugar producing country. However, the high domestic price raises questions of domestic competitiveness of the sugar market. The industry faces challenges of transport infrastructure constraining exports and international competitiveness. Water rights and land tenure security have emerged as major issues requiring attention to enhance investments and increased participation by smallholders. The lack of a clear policy framework on ethanol production negatively affects the sugar industry, as there is no strategic framework to guide the production of this important by-product. Potential for increased value addition in the industry exist through widening the domestic and market base through investment such as in biofuels and other downstream sugar products.

Considering findings of the study on the opportunities available and constraints faced in the sugar industry, further sustainable growth and employment creation can be achieved through coherent strategies which:

- Identify areas or regions for expansion of sugar plantations that have assured water rights, land access and tenure security, to create incentives for private sector investment in the sugar industry especially given the already growing local and foreign investment in the sector.
- Clarify Government policy on bio-fuels so that the legal and institutional framework enables the development of the national fuel-blending sub-sector. This would enhance the interest from

potential ethanol producers and the fuel blender(s) and guarantee the market.

- Reviewing the export strategy especially taking into the account the market access risks posed by amendments in the EU trade policy, focusing on reducing dependence on the EU markets and exploring alternative markets such as the regional markets.

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