Agriculture Investment Opportunities in Kenya

Sugarcane Production and Processing

Investment Case
Market Opportunity

- Kenya offers an attractive market for sugar given its **218,000 MT sugar deficit** and an annual **sugar consumption growth of 3%**
- The East Africa region has an annual sugar consumption of **1.5 million MT** and regional demand for sugar is also projected to increase
- The **Tana River Delta** provides suitable agro-climatic conditions for cultivating sugarcane, with **cane maturity of ~8 months and yields of up to 160 MT per hectare**

Investment Highlights

- Opportunity to invest $339 million into producing and processing sugarcane with a cogeneration power plant; **scheme will produce 150,000 MT sugar / year at full capacity and generate 30 MW of power**
- Investors can anticipate **revenues of $165.3 million, IRR of 20.8% and ROIC of 31.3% by Year 5**
- Risks to investment include supply chain, regulatory, labour, trade, and environmental issues

Enabling Environment

- The sugar industry is a top priority for Kenya's growth. As such, government bodies have been established to focus on **improving the industry's regulatory and operational environment**
- The Kenyan government is considering several interventions, including engaging in tax reform and aiding in community sensitisation, to provide an attractive environment for investment
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- The East Africa region has an annual sugar consumption of 1.5 million MT and regional demand for sugar is also projected to increase.
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Demand for sugar is growing in local, regional and global markets, spurred by rapid urbanisation and a growing middle class driving demand for processed foods, which contain sugar.

**Local Demand for Sugar**

- **Domestic Sugar Consumption in Kenya ('000s MT)**
  - 2008: 661
  - 2009: 706
  - 2010: 736
  - 2011: 752

- **Increase** +4%

**Key Features of Demand**

- **Local**
  - Kenya’s sugar consumption has grown at an average of 4% per year.
  - Kenyans currently consume 23 kg per capita of sugar annually.

- **Regional**
  - Regional sugar consumption has grown at roughly 8% per year.
  - Regional consumption is currently estimated at 1.5 million MT of sugar per annum.

- **Global**
  - Global consumption of sugar has grown at an annual average of 5% since 2006.
  - Developing countries account for 67% of global sugar consumption.

Note: Region includes EAC, Sudan, and Ethiopia.
Sugarcane Market Opportunity
Sugar Supply and Projected Deficit

Kenya is not able to meet the growing demand; its sugar deficit is 218,000 MT and is expected to increase by 1.9% per year to nearly 243,000 MT by 2017.

**Production of Sugar**

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic Sugar Production in Kenya (‘000s MT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>512</td>
</tr>
<tr>
<td>2009</td>
<td>548</td>
</tr>
<tr>
<td>2010</td>
<td>524</td>
</tr>
<tr>
<td>2011</td>
<td>533</td>
</tr>
</tbody>
</table>

- In 2011 Kenya harvested roughly 64,000 hectares of sugarcane to produce 533,856 MT of sugar.
- Sugarcane is currently mostly cultivated in western Kenya, but the Tana River Delta presents new opportunities due to agro-climatic conditions.

**Projected Domestic Sugar Deficit**

- Kenya's sugar deficit is estimated to increase from 218,000 MT in 2012, to nearly 243,000 MT by 2017, at 1.9% growth per year.
- The 2017 deficit translates to almost $398.2 million in unearned revenues.

Note: 1) Projection figures for demand is based on historical growth rates over the last decade, projection figures for supply are based on generous estimates of production growth rates, in order to avoid overestimating the deficit. The Kenyan sugar deficit was projected based on a 4.4% rise in household sugar demand and a 5.3% expansion in sugar production; 2) Assuming the current market price of $1.8 per kg.
Sources: FAOSTAT Database; Interview with Kenya Sugar Boards; Interview with Kenya Sugar Research Foundation; Interviews with Kenyan Sugar Companies
To meet this deficit, an opportunity exists for investors in the Tana River Delta, which provides favourable agro-climatic conditions for cultivating sugarcane.

The Tana River is 440 miles long and the Delta covers an area of 130,000 Ha. The region’s low altitude and better soil suitability and climatic conditions lead to several advantages over traditional sugarcane growing areas of Western Kenya:

- **Shorter growing cycles** of between 8 and 10 months, compared to 18 to 24 months in Western Kenya.
- **Higher sugarcane yields** between 110 and 160 MT/Ha, compared to an average of 83 MT/Ha in Western Kenya.

Source: Tana River District; “Kenya Soil Survey,” KARI, 2011; Interview with Kenyan agribusinesses
Sugarcane Production and Processing Investment Case

Investment Highlights

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Sugarcane Production and Processing Investment Highlights

Operational Highlights

This investment will produce white milled sugar to be sold to Kenyan local markets through retailers / wholesalers, as well as generating by-products including molasses and power.

<table>
<thead>
<tr>
<th>Target Markets</th>
<th>Product &amp; Price</th>
<th>Channel</th>
<th>Production &amp; Processing</th>
<th>Sourcing Model</th>
</tr>
</thead>
</table>
| ![Kenyan flag](image) | • White milled sugar  
• By-products include molasses, and power sold to National Grid  
• Proposed price of $1,000 per metric ton beginning in Year 2 of operations  
• Price will fluctuate given productivity, supply, and demand factors | • Majority of sales to retailers / wholesalers and distributors  
• Direct sales to key end-users (household consumers), depending on market relationships | • Sugar mill with a 5,000 TCD capacity, expandable to 10,000 TCD, producing 150,000 MT of sugar (at optimal utilisation of 82%)  
• Proposed location in the Tana River Delta | • Nucleus farm of 11,500 hectares  
• Supply supported by arrangements with ~900 out-growers cultivating 3,000 hectares |

Note: The Government of Kenya will incur the capital expenditures for outgrower irrigation infrastructure.
The nucleus farm and the outgrower scheme along the Tana River Delta will cultivate a combined 14,500 hectares of sugarcane with the mill crushing 1.5 million MT of cane a year.

The investment opportunity identified is in sugarcane production and processing – including a 11,500 hectare nucleus farm:
- The nucleus farm will have one 5,000 TCD mill, expandable to 10,000 TCD, and a 30 MW cogeneration power plant.

The opportunity will also include an outgrower scheme comprised of 909 smallholder farmers that will be trained in Year 0 and will plant a combined total of 3,000 hectares by Year 3.

Sugarcane will be cultivated under drip irrigation to ensure maximum yields, reduced water wastage, and mitigated vulnerability to climate change.

Note: The operating model assumes one nucleus farm and an outgrower scheme in the Tana River Delta given the suitable agro-climatic conditions for cultivating sugarcane, as well as potential for irrigation; the location of the farm has not yet been confirmed; TCD stands for tons crushed per day.
Financial Performance Summary

Revenues reach $130.9 million in year 2 on 11,500 hectares; harvesting and transportation costs are expected to be the highest costs.

### Channel Price and Cost Structure for Sugar Agribusiness (% of Operating Expenditures Year 5)

- **Outgrower Costs**: 1%
- **Labor**: 3%
- **Cultivation**: 3%
- **SG&A**: 4%
- **Milling**: 8%
- **Cogeneration**: 9%
- **Harvesting and Transportation**: 10%
- **Margin**: 63%
- **Total Channel Price**: 100%

Note: EBITDA margins for Year 0 and Year 1 were unable to be calculated given extremely little to no revenue generation in those years. The cost of procuring from outgrowers is a conservative estimate – the nucleus will receive a discount on the cost of outgrower cane because the model assumes that the nucleus farm will cover operational costs for outgrower irrigation.

Source: Interviews with Kenyan agribusinesses.
An initial investment of $339.5 million is required; the investment will deliver an IRR of 21% by Year 5 of operations and be cash positive by Year 2

**Investment**

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Debt</td>
<td>$135.0M</td>
</tr>
<tr>
<td>Equity</td>
<td>$204.5M</td>
</tr>
<tr>
<td><strong>Total Investment Required</strong></td>
<td><strong>$339.5M</strong></td>
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<tr>
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<tbody>
<tr>
<td>Land</td>
<td>$6.3M</td>
</tr>
<tr>
<td>Buildings</td>
<td>$106.6M</td>
</tr>
<tr>
<td>Equipment</td>
<td>$111.9M</td>
</tr>
<tr>
<td><strong>Total Fixed Assets</strong></td>
<td><strong>$224.8M</strong></td>
</tr>
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**Expected Returns**

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<tbody>
<tr>
<td>NPV</td>
<td>$267.0M</td>
</tr>
<tr>
<td>Internal Rate of Return (IRR)</td>
<td>21%</td>
</tr>
<tr>
<td>ROIC (Year 5)</td>
<td>31%</td>
</tr>
<tr>
<td>EBITDA Return (Year 5)</td>
<td>$103.9M</td>
</tr>
<tr>
<td>Net Profit Margin (Year 5)</td>
<td>36%</td>
</tr>
<tr>
<td>Operating Revenue (Year 5)</td>
<td>$165.3</td>
</tr>
<tr>
<td>Net Income (Year 5)</td>
<td>$59.1M</td>
</tr>
</tbody>
</table>

**Forecast Free Cash Flows (Million USD)**

Note: 1The assumption that all capital investment will take place in Year 0 is conservative, and investment can be staggered over the initial business setup phase. Year 0 reflects a two-year grace period. Equipment includes the grid connection infrastructure, water license, and loading zones. A debt: equity ratio of 40%:60% is assumed. 2 Nominal cash flows were assessed in this model.

Source: Interviews with Kenyan agribusinesses
Sugarcane Production and Processing Investment Highlights

Potential Ancillary Business Opportunities

In the long term, opportunities exists to expand this investment including animal feed, fertilizer, molasses, and bagasse production

Sugarcane as Animal Feed and Fertilizer

- Sugarcane products and by-products, including strippings, tops, and molasses can be used for animal feed to add nutrient content and increase palatability of feeds for animals
- Filter press mud from cane mills can be incorporated into soils as a conditioner and fertilizer
- Bagasse can be used to aid re-vegetation and stabilisation of denuded land on road verges and can also be used as an excellent substrate for mushroom cultivation, with the cultivation residue potentially used in animal feed

Molasses and Bagasse for Chemical, Yeast, and Alcohol Production

- Bagasse is a potentially valuable cellulose source for the production of chemicals, such as pentosans (including furfural) and allied substances
  - In some countries, bagasse is also used in the production of paper and particle board
- Molasses produced in the processing of cane is an important raw material for the fermentation industry and in the production of yeasts
- Molasses can also be used by distilleries for the production of ethanol and alcohol – in Brazil, ethanol is also used to create fuels
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The Kenyan government is considering several interventions, including engaging in tax reform and aiding in community sensitisation, to provide an attractive environment for investment.
Kenya’s Enabling Environment

Role of the Kenyan Government

The Kenya Sugar Board and the Kenya Sugar Research Foundation regulate and improve operating conditions for the sugar industry.

<table>
<thead>
<tr>
<th>Public Sector Support</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ministry of Agriculture and Kenya Sugar Board (KSB)</strong></td>
</tr>
<tr>
<td>• The Ministry of Agriculture, supports the sugar industry through regulation and provision of an enabling environment for stakeholders</td>
</tr>
<tr>
<td>• The KSB is mandated to regulate, develop, and promote the sugar industry, coordinate all activities, and facilitate equitable access to sugar benefits and resources</td>
</tr>
<tr>
<td><strong>Kenya Sugar Research Foundation (KSRF)</strong></td>
</tr>
<tr>
<td>• The KSRF is mandated to develop and share appropriate technologies in the sugar industry through technical research</td>
</tr>
<tr>
<td>• Conducts assessments on reducing costs of production and increasing efficiency, to enhance the development and commercialisation of the sugar industry</td>
</tr>
<tr>
<td><strong>Agricultural Sector Coordination Unit (ASCU)</strong></td>
</tr>
<tr>
<td>• Coordinates activities of the several Ministries and other stakeholders that are engaged in the agricultural sector and helps provide a “one-stop shop” for agricultural activities</td>
</tr>
</tbody>
</table>

Note: ASCU self defines their role as a one-stop shop for agricultural business and reform.

Source: Interviews with the Ministry of Agriculture, Ministry of Lands, Ministry of Roads, Ministry of Transportation, Kenyan Sugar Board, Kenya Agricultural Research Institute, and Agricultural Sector Coordination Unit.
Kenya’s Enabling Environment

Government of Kenya Initiatives

To create a favourable environment for investors, the GoK is considering several policy interventions to drive and encourage investment in sugarcane production and processing

**Existing Initiatives**

- To **create an attractive business environment for sugarcane production and processing**, the Government of Kenya has implemented a number of strategies, including:
  - Reduced import tariffs, revoked export duties, and simplified business licensing through the **Investment Promotion Act of 2004**
  - Conducted **irrigation suitability assessments** on the Tana River Delta to better understand the irrigation potential of the region
  - Provided **irrigation infrastructure for outgrower schemes**
  - Prioritised the **privatisation of the sugar industry**
  - Educated **farmers** on available funding options
  - Developed **partnerships with strategic stakeholders for structural adjustments**

**Further Considerations**

- To **facilitate the sugarcane production and processing investment** in line with Vision 2030, the Government of Kenya has developed a 2010–2014 strategy focused on:
  - **Enhancing the sugar industry’s competitiveness** by providing support to ensure operational efficiency with a keen focus of decreasing harvesting and transportation costs
  - **Expanding the product base** to include additional uses of sugarcane into the value chain thereby diversifying the product demand, e.g. ethanol production
  - **Enhancing infrastructure development** with a focus on roads and technology infrastructure
  - **Strengthening the regulatory framework** to enhance industry trade and drive demand which includes a review of current policies and corporate governance structures

Source: Interviews with the Ministry of Agriculture, Ministry of Lands, Ministry of Roads, Ministry of Transportation, Ministry of Water and Irrigation, and National Irrigation Board;
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
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<td>ASCU</td>
<td>Agricultural Sector Coordination Unit</td>
</tr>
<tr>
<td>Bn</td>
<td>Billion</td>
</tr>
<tr>
<td>CAGR</td>
<td>Compound Annual Growth Rate</td>
</tr>
<tr>
<td>COGS</td>
<td>Cost of Goods Sold</td>
</tr>
<tr>
<td>EAC</td>
<td>East African Community</td>
</tr>
<tr>
<td>EBITDA</td>
<td>Earnings Before Interest, Taxes, Depreciation, and Amortization</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization</td>
</tr>
<tr>
<td>FAOSTAT</td>
<td>Food and Agriculture Organization Corporate Statistical Database</td>
</tr>
<tr>
<td>FDI</td>
<td>Foreign Direct Investment</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GoK</td>
<td>Government of Kenya</td>
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<tr>
<td>GIZ</td>
<td>Deutsche Gesellschaft für Internationale Zusammenarbeit (the German Society for International Cooperation)</td>
</tr>
<tr>
<td>ha</td>
<td>Hectare</td>
</tr>
<tr>
<td>HCDA</td>
<td>Horticultural Crops Development Authority</td>
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<tr>
<td>IRR</td>
<td>Internal Rate of Return</td>
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<tr>
<td>KARI</td>
<td>Kenyan Agricultural Research Institute</td>
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<tr>
<td>kg</td>
<td>Kilogram</td>
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<td>M</td>
<td>Million</td>
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<td>MT</td>
<td>Metric Ton</td>
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<tr>
<td>NPV</td>
<td>Net Present Value</td>
</tr>
<tr>
<td>ROIC</td>
<td>Return On Invested Capital</td>
</tr>
<tr>
<td>SG&amp;A</td>
<td>Selling, General, and Administrative Costs</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>USD</td>
<td>US Dollar</td>
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