The National Technical Working Committee on the Design, Development and Implementation of the Coffee and Sugar Industries Price Stabilization Framework

Sugar Sub-Committee

REPORT - DRAFT 03

April, 2022

LETTER OF TRANSMITTAL

Report of The Technical Working Committee on Design, Development, and Implementation of Sugar Price Stabilization Framework

LETTER OF TRANSMITTAL

Date: April 3, 2022

Hon. Peter G. Munya, E.G.H
Cabinet Secretary
Ministry of Agriculture Livestock, Fisheries and Cooperatives
Kilimo House
NAIROBI

Dear Sir

RE: A REPORT OF THE TECHNICAL WORKING COMMITTEE ON DESIGN, DEVELOPMENT, AND IMPLEMENTATION OF SUGAR PRICE STABILIZATION FRAMEWORK

Following your appointment, the Technical Working Committee on the Design, Development, and Implementation of Coffee and Sugar prices vide gazette notice no CXXIII – NO 178 dated August 27, 2021, with effect from September 01, 2021, the Taskforce immediately embarked on the assignment.

On October 2, 2021, we split the single technical working committee on implementing the coffee and sugar prices/incomes stabilization framework into the Coffee subsector and Sugar subsector to allow for more effective, manageable groups, each with a Team leader. The groups worked separately but simultaneously in coffee and sugarcane growing regions to save time and resources by effecting effortless processes.

The sugar subcommittee reviewed the supply and value chains, conducted intensive public participation, and identified areas that require interventions, including; sugar production, primary processing, governance of cooperative societies, sugar marketing, and sugar research. The team made sugar farm and factory visits, undertook intensive literature reviews on comparable jurisdictions and examined past task force works, existing policies, institutional arrangements, legislative frameworks, and administrative structures.

Above all, the sugar sub-committee took a leaf from history to assess what failed, such that the farmers and the nation ended up where we are today. The historical decline in sugar production and the subjugation of farmers from a well-to-do class to paupers with land titles provides a stark lesson on how not to manage an economically viable commodity.

Due to unforeseen challenges requiring more time, your further extension of 45 days commencing January 4 to March 8, 2022 was valuable. The Technical Committee was required to develop robust sugar prices/income stabilization frameworks. The time extension was necessary for the two teams to tie some loose ends in the reports.

The Subcommittee, based on the findings, proposes various interventions to strengthen sugar production toward addressing existing challenges along the supply and value chains.

With great pleasure and honor, we now submit the Sugar Price/Incomes Stabilization Framework to you and express our gratitude for the opportunity to make our humble contribution to the Sugar subsector in Kenya.

Table of Contents

Contents

ACRONYMS

ACFC	Agro-Chemical and Food Company (Limited)
AFA	Agriculture and Food Authority
AFA –SD	Agriculture and Food Authority – Sugar Directorate
CASSCOM	County Agriculture Sector Steering Committee
CIDP	County Integrated Development Plan
GDP	Gross Domestic Product
COG	Council of Governors
COMESA	Common Markets for Eastern and Southern Africa
EAC	East Africa Community
FTA	Free Trade Area
GoK	Government of Kenya
HA	Hectares
ICT	Information Communication Technology
JASSCOM	Joint Agriculture Sector Steering and Committee
KALRO	Kenya Agriculture Livestock Research Organization
KEBS	Kenya Bureau of Standards
KEPHIS	Kenya Plant Health Inspectorate Services
KESMA	Kenya Sugar Cane Manufacturers Association
KESREF	Kenya Sugar Research Foundation
KETRACO	Kenya Electricity Transmission Company
KISCOL	Kwale International Sugar Company Limited
KNTC	Kenya National Trading Corporation
KPLC	Kenya Power & Lighting Company
KRA	Kenya Revenue Authority
MT	Metric Tons
NEMA	National Environment Management Authority
NHIF	National Hospital Insurance Fund
NSSF	National Social Security Fund
PAYE	Pay as You Earn
PCPB	Pest Control Products Board
SADC	Southern Africa Development Community
SDF	Sugar Development Fund
SDL	Sugar Development Levy

SRI	Sugar Research Institution
TCD	Tons of Cane per Day
TCH	Tons Cane per Hectare
TORs	Terms of Reference
VAT	Value Added Tax

ACKNOWLEDGEMENTS

The Sugar Subcommittee of the Technical Committee wishes to register its profound gratitude to many individuals, organizations and institutions that supported the course of this assignment.

Firstly, to Hon Peter Munya, who saw the need for a Sugar' farmer-centric report and entrusted us with undertaking this noble assignment. It is a clear demonstration of the commitment and desire on the part of the Cabinet Secretary to reform and revitalize the subsector with the overall objective of enhancing Sugar farmers' incomes.

Secondly, this is a farmer-centric Taskforce dedicated to understanding the issues affecting the sugarcane farming communities around the country and exploring ways to enhance the farmers' incomes and sustainability. We recognize that the farmers bear all the supply chain risks in sugar production. We want to thank all the farmers who met with Taskforce. Special gratitude to those who opened their homes and farms to the members of the Taskforce.

Thirdly, we are heavily indebted to all Taskforce members and the Secretariat. They conveyed their professional and administrative support throughout the Committee's assignment. Mr. Charles Mahinda provided the link between the CS and accorded the Committee his invaluable support and counsel whenever needed. We also appreciate the valuable support provided by Dr. Bob Mark and the technical team of the Sugar Directorate, who supported the Secretariat from time to time. They included Willis Audi, Asa Okoth, Jason Mugo, John Adhola, Mary Abonyo, Purity Makena, Gladys Moraa and James Njue.

Fourthly, we are also grateful for the input provided by various government institutions toward completing this assignment. These institutions include; the Agriculture and Food Authority (AFA) and its Sugar Directorate, the Sugar Research Institute, the State Department of Cooperatives, and the State Department of Crop Development and Agricultural Research in the Ministry of Agriculture, Livestock, Fisheries and Cooperatives, among other vital institutions.

Finally, we are indebted to the members of the sugar industry stakeholders including NGOs, who offered valuable insights and made proposals that address the sugar industry's challenges.

Kariukih King'ori
Chairman
The Technical Working Committee on Design, Development, and Implementation of Coffee and Sugar Industries Price Stabilization Frameworks

KARIUKI KINGORI …….
Chairperson

SAMSON OKIOMA …….
Rep of Commodities Fund

DENNIS OLILA …….
Rep of National Treasury

NASHON OLIECH OSIEKO …….
Rep of Sugarcane Farmers

NAOMI NJERI KAMAU (Ms.) …….
Rep of State Dept. of Agriculture

PETER JOBANDO …….
Independent Member

GEORGE AMOS OBALA …….
Independent Member

WACHIRA MAINA …….
Secretary

ROSEMARY OWINO (Ms.) …….
Assistant Secretary

EXECUTIVE SUMMARY

1. Introduction

The Kenyan sugar industry dates back to early 1900's when it was introduced around Lake Victoria by the Indian laborers engaged in the construction of the Kenya-Uganda Railway. The first Sugar factory was established at Miwani in Kisumu County in the year 1922, followed by Ramisi in Kwale County in the Coastal region in 1927.

After independence, the Kenya Government expanded its role in the sugar industry to accelerate socio-economic development, redress regional economic imbalance, promote indigenous entrepreneurship and promote foreign investment through joint ventures by embarking on an aggressive policy of expansion of sugar production. This culminated in commissioning of Muhoroni sugar company (MUSCO, 1966), Chemelil sugar company (CSC, 1968), Mumias sugar company (MSC, 1973), Nzoia sugar company (NSC, 1978) and South Nyanza sugar company (SNSC, 1979).

The enabling business environment promoted private investments in sugar mills particularly from around the year 2000. Currently in addition to the 6 state-owned sugar mills above, ten (10) privately owned mills are operational. The 16 sugar mills have a combined installed capacity of 48,960 MT of cane per Day (TCD) or 14 million MT of cane per year. Additionally, there are 6 new sugar factories registered to establish sugar processing facilities.

The sugar industry contributes 4% of the Agricultural GDP, engages over 250,000 farmers and supports over 8 million livelihoods either directly or indirectly. However, despite these investments, self-sufficiency in sugar has remained elusive over the years as consumption continues to outstrip supply. For instance, in 2020, sugar consumption was 1,040,591 MT compared to local production of 603,788 MT giving a shortfall of 436,803 MT. In 2021, sugar production was 700,000 MT while consumption was estimated at 1,067,099 MT.

2. Summary of Challenges in the Kenya Sugar Industry

The performance of the industry continues to face several challenges. At the farm level, there is low sugar productivity, poor seed cane which takes long to mature, high costs of inputs and delayed payments to farmers by millers, mostly state owned and a few private ones. Additionally, most farmers in the sugar belts are over-dependent on the crop thus do not have diversified income sources and the low sugarcane price that does not cover their production cost.

At the processing level, there is mismanagement of the state owned factories which are poorly maintained leading to inefficient production of sugar and a high debt burden. There is also over-reliance on a single product (sugar) and low supply of cane most of the time.

At the marketing level, there is serious competition from low-cost sugar produced within the COMESA countries and low world market prices. There is also the poor market integration and unclear ex-factory price discovery mechanism. Other challenges facing the industry are poor supply chain management, inadequate and expensive credit for the industry, poor state of roads, inadequate research development and extension services

Despite the past interventions, uncertain sugarcane farmer incomes, cane and sugar price instability and the ever increasing imports have persisted as concerns for the government. The Cabinet Secretary, Ministry of

Agriculture, Livestock, Fisheries and Cooperatives therefore constituted a Taskforce known as the National Technical Working Committee on the Design, Development and Implementation of the Coffee and Sugar Industry Price Stabilization Frameworks as per the Gazette Notice No.8824 dated 27th August 2021. The Taskforce aimed at: a) developing a robust price stabilization framework for the sugar value chain in Kenya; b) evaluating the resource requirements and possible sources including the sugar sector financial and other assets managed by Commodity Fund to support price stabilization framework for the sugar value chain c) considering and evaluating possible sustainability options to be inbuilt into the price stabilization framework for sugar value chain in order to guarantee perpetuity and, d) undertaking any other tasks in furtherance of these broad objectives.

The specific tasks under the terms of reference were to:

(i) review relevant literature including policy documents and other technical publications and potential data sources; identification of threats and success factors for price stabilization in the sugar value chain and in other commodities or jurisdictions; discuss the theory of agricultural support programs; their successes and failure; costs and benefits; equity and market distortion effects on the economy and include bench marking with other countries and review of the challenges faced by past policy interventions such as coffee Stabex, minimum maize price legislations (such as Guaranteed Minimum Returns-GMR), fertilizer subsidies, etc;

(ii) design a Price Stabilization Framework for the sugar value chain comprising one component that addresses general *value chain inefficiencies and weakness* (at farm, processing, trading and industry levels) and the other component specifically establishing financial pool

a. *Sugar Price Stabilization Fund*) to be used for intervening in the sugar market to cushion vulnerable actors, notably, smallholders against extreme price swings. Either way, the following three operational and sustainability considerations will be taken into account: a assessing technical and financial resource requirements, their sources and sustainability considerations

b. determining institutional arrangements and design parameters for managing a price stabilization framework for the sugar value chain

c. design a financial investment plan that guarantees funding sustainability

(iii) design an implementation Matrix/Plan and a Monitoring and Evaluation (M&E) Plan: The implementation matrix included the specific concerns being addressed, the proposed interventions, baseline values (qualitative or quantitative) in the current status that were used in the M&E for purposes of counter-factual impact analysis, objectively verifiable indicators, means of verification and institutions that will take lead role in implementation. The Implementation Plan on the other hand provides the specific activities for each intervention (cost centers) and their scheduling in short, medium and long term horizons such as developing a risk profile for the Price Stabilization Framework and a risk mitigation plan

3. Key Findings

i. Liabilities of the state-owned sugar mills as at 30th June 2020 stood at over KES 151, Billion, mainly attributed to inefficiencies

ii. The average sugarcane productivity is 63MT/Ha.

iii. Sugar is the principal product from most of the sugar mills especially so for all the state owned mills.

iv. Cost structure of the industry at farm level, established that cane transport is the most expensive operation accounting for 22%, followed by seed cane at 20%, labour (17%), Fertilizer and land preparation (each 13%), harvesting (11%), inter-cultivation (3%) and finally levies at 2%. At the miller

level, human resource, pending bills and penalties, and cost of credit are the three most expensive costs in that order.

v. The Sugarcane Pricing formula does not reward the farmer adequately. The variable parameter in the formula is the ex-factory sugar price(SP) which is not transparently determined. Again, the farmer:miller sharing ratio of 50:50 is the lowest ratio in the whole world.

vi. The quality based cane payment which is about to be rolled out is not well understood by farmers. They need sensitization on this before cane payment is migrated from the weight-based payment.

vii. There is no on-going sugar research activities at the Sugar Research Institute(SRI). Research capacity and resources are limiting any work.

4. Recommendations

A number of factors have to be addressed to improve and stabilize sugarcane farmers' incomes. The recommendations target the various levels of the sugar supply and value chain namely, a) sugar cane production, harvesting and transportation, b) sugar processing and value addition, c) marketing and trade, d) industry regulation and sustainability.

a. Sugar cane production, harvesting and transportation

Sugarcane farmers' incomes will improve or stabilize only if policy interventions address distortions and inefficiencies in sugarcane production, harvesting and transportation. Farm level inefficiencies account for nearly a third of the loss in productivity. Transport cost is the farmers' single largest cost, accounting for 22% of total farmer costs, excluding the cost of the 5% cane lost through spillage en-route to trans-loading sites or the mill-gate, depending on who transports the cane to the mill.

Recommendations proposed are:

i) Increase cane productivity and expand output

To address the challenge of poor cane seed varieties strengthening roll-out, multiplication and uptake of new seed varieties beginning with the 21 varieties already developed to increase adoption of improved cane varieties will have to be vigorously undertaken. Provision of adequate and stable funding to the Sugar Research Institute to enable coverage of the entire value chain and deepen the Institute's human resource base is also critical. Further, establishment, by regulation, a Sugar Research Endowment Fund to ensure sustainability of research funding, strengthening and implementation of the Kenya Agriculture Sector Extension Program (KASEP) Policy, and the establishment of a legal framework for Conditional Grants to create "Matching Funds Appropriations System" whereby national government earmarks transfers to counties on condition that they provide matching funds for agricultural extension services and enacting policies and taking measures to reduce cost of fertilizers by, for example: subsidizing fertilizer (or develop a program to lower prices), bulk importation, applying a pan-territorial pricing strategy where farmers pay the same price regardless of their location and promoting use of locally and cost- effective soil fertility improvement measures such as application of lime and use of organic materials such as compost manure and green manure. Again, increasing cropped area to minimize sugar deficits by expanding sugarcane production into non- tradition- rain fed regions- such as Trans Nzoia and Trans Mara as long as appropriate safeguards are put in place to ensure continued food production.

ii) Fair farm gate prices

Ensure farmers get a fair price for their sugar cane by; a) providing accurate data on national production and consumption of sugar, b) eliminating entry of contraband and illegal sugar imports into the country through enforcement of regulations, c) the SRI to recommend complementary diversification enterprises available for

sugarcane farmers, d) reviewing and adopting a Sugarcane Pricing formula that rewards both the farmer and the miller (the formula to include the value of co-products). Currently, the only variable parameter in the formula is the Ex-Factory sugar price (SP) which is not transparently determined. e) sensitize farmers on quality-based payment system and ensure gradual transition to quality based cane payment system, f) digitizing farmers by National Government, County Government and the millers to develop their database, g) undertaking regular meetings of stakeholders to provide alternative dispute resolution process, h) creating awareness among farmers about the contents of the contract and ensure copies are provided to them.

iii) Reduce the cost of crop establishment and maintenance through;

Promotion of mechanized land preparation b) application of integrated weed management practices in order to reduce labor costs, c) reduction of the cost of farm inputs, notably labor and fertilizer and promotion of the use of alternatives to chemical fertilizer and herbicides such as farm yard manure, compost manure, filter press mud and nitrogen fixing plants, d) zero rate tax on agricultural machinery and spare parts.

iv) Mitigate against adverse impacts of climate change

Through a) increasing awareness on the need to adopt climate resilient technologies by farmers to increasing their uptake, b) ensure compliant by factories to effluent disposal and other environmental requirements. c) implementing insurance programme to mitigate crop loss caused by climate incidences, d) entrench Environmental Management System (ISO 14001) certification mandatory for all sugar mills and compliance to encompass their out growers in the certification scope.

v) Improve management of county government cess;

To ensure that Cess is used for proper maintenance of road; a) ring fence Cess money and Counties to use the money for road infrastructure maintenance and development in sugar growing areas, b) establish a Cess Committee comprising of millers, farmers, harvesters and transporters, and County Governments. The Cess Committee should be established within the laws pertaining to Cess in Counties.

vi) Reduce farmers' vulnerability to market risks

This can be achieved through a) introduction of sugarcane specific insurance products to protect against market risks,b) enterprise diversification, c) establishment of a Fund to cushion farmers against income volatility, d) provision of credit through Commodities Fund, e) mass credit access via farmer cooperatives, f) millers' credit sharing platform, and g) registration of all farmers to better manage credit and insurance services

vii) Reduce post-harvest losses and other malpractices associated with harvesting and transportation

This will be achieved through a) reduction of labor costs and payment duplications, b) enforcement of compliance with contractual agreements for cane harvesting and delivery to designated mills, c) review of cane harvesting scheduling, transportation and pricing modalities, and engage regulator to enforce compliance d) facilitate weighing of cane at the farm level and the information digitally transmitted to the factory and generally improve transparency during weighing, e) map buying centres and regulate transport rates, f) strengthen farmer groups to allow them provide harvesting and transport services, h)standardize and enforce quality management of harvesting and transportation, i) introduce penalties to deal with non-compliance with contractual arrangements or agreements, and j) Mechanize operation as much as possible, with the Weighbridges being included under the quality based payment system that is managed by an independent body.

b. Sugar processing and value addition

At the processing level, the inefficiencies of the state-owned sugar mills – transmitted to the final sugar price through exceptionally low conversion rates (Tonnes of Cane into Tonnes of Sugar, TC/TS) - have the largest knock-on effect on the price paid to the farmer for sugar-cane. Three recommendations have been given; i) Increase capacity utilization of the factories, ii) scale up value addition and iii) ensure compliance with provisions of the national environment policy (2013) and laws

i) **Increase capacity utilization**

This will be done through a) increasing factory milling capacity to a minimum of 4,000 TCD per mill so as to facilitate diversification, b) through supporting Millers in various means, including tax incentives, to invest in state of the art, automated and environmentally friendly milling technologies, c)improving management of public mills, d) provision of easily accessible and affordable loan facility to factories, e) building SRI's capacity in research and value addition, e) enforcement proof of cane development and availability, f) enforcement of payment of prices approved by the Sugarcane Pricing Committee, g) ensuring timely harvesting of cane by the millers by enforcing miller-farmer contracts, and h) enforcement of payment for delivered cane within seven (7) days and penalties for default to attract an interest at the prevailing market rate.

ii) **Scale up value addition**

Scaling up value addition will be accomplished through; a) investments in value addition (co-products and power generation) through appropriate incentives such as offering import duty waivers and zero rate tax on equipment and spares, b) policy shift to encourage and support diversification in the sugar industry, c) prohibiting Millers from importation of sugar to avoid conflict of interest and concentrate on cane development and milling, d) development of Regulations to ensure strict adherence to the requirements for sugar importers to curb involvement of millers and/or their subsidiaries/proxies in sugar importation, e) investment in an additional sugar mill in the Kwale County, f) establishment of a Multi-Agency/Body to oversee importation of sugar, credibility of production and consumption data, and g) privatize/Lease public mills to deal with challenges of high debt portfolio.

iii) **Ensure compliance with provisions of the national environment policy (2013) and laws**

Incentivize the adoption of less polluting technologies, the Regulator together with NEMA and Counties will need to work towards strengthening environmental surveillance mechanisms, design and implement information dissemination and awareness creation mechanisms and strategies, incentivize mills to adopt international financial standards for environment accounting (ISO-like recognition), and to build robust regulatory capacity to monitor and enforce environmental standards.

c. Marketing and trade

In sugar marketing and trade, opaque pricing and in-country flows of lawfully imported as well as contraband sugar have the most significant impact on the final price of sugar, itself a key determinant of farm-gate price of cane. Recommendations at the Domestic Level are two fold; i) develop an efficient and integrated domestic marketing system and ii) streamline sugar importation;

i). Develop an efficient and integrated domestic marketing system

All traders to submit returns to the Regulator showing their marketed volumes; capacity expansion plans, and marketing arrangements/forecasts. Industry players, Regulator and County governments to come up with a fair and transparent price discovery mechanisms for sugarcane, sugar and co-products. Harmonization of the domestic marketing system by improving official distribution channels for sugar and pricing, and the revision

and implementation of a transparent pricing methodology for ex-factory price of sugar is recommended.

ii). Streamline sugar importation

Streamlining sugar importation requires the development of a transparent criteria for issuance of import permits including regularly publishing names of firms issued with import permits as well as the quantities to be imported. The Regulator to work with other government agencies and KRA to seal loopholes for smuggling and taking appropriate legal actions (e.g. against sugar laundering, review of import regulations to limit the number of players and review allocation model). The Regulator will always need to have accurate and reliable data on domestic production and consumption requirements as well as their long term projected values, and commission market studies to determine the impact of sugar imports on domestic prices and other welfare implications. Further, the regulator will undertake market surveillance to discover the reasons as to why prices of sugar are cheaper in the Northern part of Kenya compared to Sugar producing regions and Undertake stakeholder awareness on quality based payment.

At the Regional and International Considerations, the recommendation is to improve implementation and compliance with regional trade agreements and other international protocols by a) implementation of the National Trade Policy with the goal of improving the country's compliance with international/regional free trade/Customs agreements on agricultural commodity trade, b) deposit all trade instruments regarding sugar trade to the Clerk of the National Assembly for domestication/adoption/ratification, c) implement the sugar industry roadmap for restructuring the production and cane payment based on quality as agreed under the COMESA safeguard measures, d) review the Kenya sugar standard and to build capacity for surveillance and enforcement of compliance by domestic sugar producers, traders, packers and importers, e) develop Regulations to deal with prevention and management of contaminants in crop produce and products, f) enhance surveillance along the Kenya-Somali Border with a view of eradicating sugar smuggling, g) undertake wide stakeholder consultations when developing international Agreements and Protocols. There is need to Commission a Study to provide information on the magnitude of smuggling of sugar

d. Industry regulation and sustainability

At the level of industry, the sugar sub-sector requires three critical instruments to be designed and implemented. First, an overall policy with a clear goal and mission; two, a clear, long-term strategy to integrate various elements and activities in the subsector; and three, comprehensive legal framework to support both the policy and the strategy.

1. **Policy Intervention**

Long term capacity building strategy/policy

1. Develop and implement industry-wide (sugar value chain) training programs supported by industry and county governments. The programme to take into account; - Manpower and skills requirements forecasts; management of skills attrition; peer based demonstrations and training.

2. Develop MOUs with Training institutions to offer specialized training for the sugar value chain.
3. Train millers through courses offered by the National Industrial Training Authority and SRI.

Develop a well-coordinated and capacitated Research and Development plan

1. Increased autonomy and funding for research at Sugar Research Institute (SRI), as provided for under the Sugar Bill to enable SRI carry out research across the value chain.

2. Restructure SRI to make it more proactive in delivering its mandate across the value chain

Industry strategy and policy

1. Develop and fast-track the implementation of a sugar sector policy and long-term strategy
2. Increase competitiveness and sustainability of the sugar industry and benchmark against global leaders (for example in productivity/resource use efficiency, product diversification, returns on investment, technological innovation and compliance with environmental standards).

3. Sugar sector legal framework

1. Fast-track the finalization and enactment of the Sugar Bill, 2019
2. The key issues identified by this Task Force to be forwarded for consideration into the Draft Sugar Bill, 2019.
3. Create an alternative dispute resolution mechanism in the Industry.

Minimize regulatory overlaps

1. Reduce duplication of regulatory functions (by national and County governments)
2. Strengthen border management agencies to function as one (regulatory agencies at the border are currently operating as a silo).
3. Establish one-stop-shop in which all secondary regulators have desks (virtual/physical) at the primary regulator (Customs border points).

Sector energy strategy

1. Establish high-level policy body comprising representatives from Agriculture and Energy to oversee co-production, co-generation and sugar-cane development.
2. Estimate power supply from the sugar industry against national policy targets for production of bio-energy.
3. Specify supporting policy reforms and incentive structures for promoting co-power generation in the sugar sector.

Cross-cutting Issues

There are also cross-cutting issues that need policy attention: the most urgent and important of these are integration of gender issues and inclusion and participation of youth in small-holder agriculture generally and in the sugar sub-sector in particular.

Responsive Cane pricing system

Improving the technical efficiency of farm-level activities, ii) incentivizing farmers to use appropriate cane seed varieties and adopt good agricultural practices through improved extension services ii) improve soil fertility through adoption of the right fertilizer use and applications, iii) increase cane production via expansion of area under cane to non- traditional cane growing areas and irrigation iv) increased funding to SRI to enable research across the whole value chain, yield, high ratooning varieties; training farmers on better agronomy, including on measures to maintain and improve soil fertility by applying fertilizers, lime and organic manure; supporting farmers- through pooling arrangements- to mechanize and cut labor costs on critical on-farm activities such as crop establishment and maintenance and providing access to affordable inputs especially fertilizers.

Additional policy measures should focus on implementing institutional, infrastructural, financial and market reforms that provide adequate funding for the Sugar Research Institute; improve SRIs downstream linkages- with farmers and county governments, for example; strengthen and fund SRI's capacity to bring new varieties to the market; create credit schemes that are both inexpensive and accessible; develop a more dynamic and

responsive sugarcane pricing system; make better use of cess in sugarcane-growing counties in order to reduce infrastructure costs- (transport alone accounts for 22% of costs of producing cane); reduce the dependency of farmers on miller-supplied services such as transport, harvesting and in-kind credit; institute better regulation of harvesting and control of spillage during transport (spillage costs farmers up to 5% of the cane) and develop a tamper-proof, fully accountable and transparent cane weighing system to replace the current potentially easy-to-manipulate system.

1. INTRODUCTION

1.1 Background

Commercial Sugarcane growing in Kenya started in the early 1900's when it was introduced around Lake Victoria by the Indian laborers engaged in the construction of the Kenya-Uganda Railway. The Indians would use it to manufacture jaggery. The first Sugar factory was established at Miwani in Kisumu County in 1922, followed by Ramisi in Kwale County in the Coastal region in 1927.

Before independence, the sugar industry in Kenya was dominated by the private sector with large-scale production. After independence the Kenya Government explicitly expanded its role in the sugar industry as set out in the Sessional Paper No. 10 of 1965 which sought to accelerate socio-economic development, redress regional economic imbalance, promote indigenous entrepreneurship and promote foreign investment through joint ventures. The Government then embarked on an aggressive policy of expansion of sugar production necessitated by the increase in national demand that culminated in new sugar factories being established by the government. The ultimate objective was to increase sugar production while creating rural employment to check the rural-urban migration. The following factories were commissioned: Muhoroni sugar company (MUSCO, 1966), Chemelil sugar company (CSC, 1968), Mumias sugar company (MSC, 1973), Nzoia sugar company (NSC, 1978) and South Nyanza sugar company (SNSC, 1979).

The enabling business environment promoted private investments in new sugar mills which included Soin (2006), Kibos Sugar & Allied Industries (KSAIL, 2009), Butali Sugar Mills (BSM, 2011), Transmara (TSC, 2011), Sukari Industries (SIL, 2011), Kwale International Sugar Company (KISCOL, 2015), West Kenya Sugar Company – Olepito Unit (WEKSOL - OU, 2017) and Busia Sugar Industry (BSI, 2019).

In addition, a number of proposed new sugar projects have been registered. These include: - West Valley Sugar Factory, Tembo Sugar Mills Ltd, West Kenya Sugar Company - Naitiri Unit, Butali Sugar Mills - Turbo unit, South Gem Sugar Factory Company Ltd, Kisii Renewable Energy and Sugar Factory Limited and Giritu Sugar Ltd.

Recognizing the importance of the sector, the Government and the private sector have been involved in the promotion of the industry through direct investments mainly on factories for processing cane and other related infrastructure. Currently, there are 15 sugar factories in the country with a combined capacity to process 48,950 TCD. However, despite these investments, self-sufficiency in sugar has remained elusive over the years as consumption continues to outstrip supply. For instance, in 2020, sugar consumption was 1,040,591 MT compared to local production of 603,788 MT giving a shortfall of 436,803 MT. In 2021, domestic sugar production was 700,162 MT while consumption was 1,067,099 MT (AFA-Sugar Directorate). If the current way of doing business is not radically reengineered, it is envisaged that the country will remain sugar deficit.

The performance of the industry continues to face several challenges. At the farm level, there is low sugar productivity, poor seed cane which takes long to mature, high costs of inputs and delayed payments to farmers by millers (mostly state owned) and a few private ones. At the processing level, there is mismanagement of the state owned factories which are poorly maintained leading to inefficient production of sugar and a high debt burden. At the marketing level, there is serious competition from low-cost sugar produced within the COMESA countries and low world market prices. Other challenges facing the industry are poor supply chain management, inadequate and expensive credit for the industry, poor state of roads, inadequate research development and extension services

1.2 Global sugarcane production

About 1,889,268,880 MT sugarcane is produced in the world every year, (Ace Grow). Brazil is the world's leading producer of sugarcane, followed by India, China, Thailand and Pakistan, in that order. Brazil and India alone produce 59% of the world's sugarcane, while the five biggest producers account for 75.4%. The five biggest producers, their quantities and yields are indicated in Table 1.

Table 1: Top Five Global Sugarcane Producers, yearly

		Production (tonnes)	Yields (T/Ha)
1.	Brazil	768,678,382	75.17
2.	India	348,448,000	70.39
3.	China	123,059,739	73.46
4.	Thailand	87,468,496	65.44
5.	Pakistan	65,450,704	57.88

Source: atlasbig.com

1.3 Global sugar production and consumption

In 2020, world sugar production was 170.116 million MT compared to 171.114 million MT in 2019, giving a decrease by 0.998 million MT, a second year of decline. Of the total global production, beet sugar accounted for 35 million MT, while cane sugar was 135 million MT. The beet sugar market share stands at 21% of world production, a 5-year low.

World consumption decreased to 169.479 million MT in 2020 from 170.026million MT in 2019, an unprecedented third year in a row. National lockdowns and reduced social interaction due to the COVID-19 pandemic contributed to this fall, as did the ongoing sugar and health debate and associated interventions such as sugar taxes. World average per capita consumption in 2020 stood at 21.8 kg, down from a 2016 high of 23.0 kg. India consumes the most sugar, followed by the European Union, China, Brazil and USA. Source: International Sugar Organization Sugar Year Book, 2021.

The volume of sugar traded internationally increased sharply in 2020, reaching 67.891 million MT, up nearly 10 million MT from 2019 and a new record. While previous years of decline in trade partly reflected importers' confidence around supply, the pandemic's impact on accessibility and logistics reversed this trend and lifted the inherent value of holding stock.

1.4 Regional sugar production

Africa accounts for 6% of the global total sugar production, with COMESA Member States accounting for 52% at 5,288,456 metric MT of the total African sugar production of 10,078,610 MT. African countries are working to boost their presence and competitiveness in international markets. In 2019 Africa produced a total of 10.9 million MT of sugar, up from 8.8m MT produced in 2018 and 10.1m MT in 2017 (ISO, 2020). While production is on a relatively smaller scale, countries in the region are some of the largest net exporters. In 2019 South Africa and Eswatini were among the top-10 sugar exporters

worldwide, shipping out 890,000 MT and 790,000 MT, respectively, according to ISO. According to FAO, the average annual global per capita sugar consumption stood at 22.5 kg between 2017 and 2019, nearly double the 12 kg per capita consumed in sub-Saharan Africa over the same period. The top producers of sugar in the region for the period 2018-2020 are indicated in Table 2.

Table 2:Sugar production and consumption for top producers in Africa, 2018 - 2020

Rank	Country	2018		2019		2020	
		Sugar production (MT)	Sugar Consumption (MT)	Sugar production (MT)	Sugar Consumption (MT)	Sugar production (MT)	Sugar Consumption (MT)
1.	RSA	2,196,773	1,661,712	2,224,031	1,644,935	2,048,973	1,682,853
2.	Egypt	2,162,440	3,300,000	2,453,864	3,192,500	2,281,934	3,100,000 e
3.	Eswatini	725,715	56,000 e	679,136	56,000 e	684,563	52,000 e
4.	Sudan	570,000 e	1,800,000 e	481,220	1,765,000 e	467,644	1,398,125
5.	Kenya	491,097	1,012,399	440,935	1,038,717	603,788	1,040,591
6.	Uganda	430,000 e	381,000 e	514,000	370,000	530,600	380,000
7.	Zambia	400,000 e	180,000 e	436,000 e	190,000 e	393,000 e	190,000 e
8.	Zimbabwe	453,231	385,182	406,000 e	370,000 e	427,099	357,161
9.	Mauritius	323,406	36,171	323,551	33,669	270,875	29,244

Source: ISO Sugar Year Book 2021

1.5 Status of the Kenyan sugar industry

1.5.1 Area under sugarcane and productivity

Based on the last sugarcane census report for the year 2021, area under cane as at 31st December 2021 was 200,513 hectares compared to 197,438 hectares recorded in the same period 2019, an increase of 2%. The increase was mainly attributed to improved cane development in the Kakamega, Bungoma, Migori, Kericho and Uasin Gishu counties. However, the leading commercial sugarcane producing counties were; Bungoma, Kakamega and Kisumu at 19.3%, 18.6% and 13.8% of total cane area, respectively. Total number of farmers involved in cane growing in 2020 were 254,422 compared to 265,366 recorded in 2019, a slight decrease of 4%. Most of the cane growers are small-scale farmers with an average farm size of 0.7 hectares (Figure 1).

In 2020, total area harvested was 89,680 hectares compared to 71,525 hectares in the 2019, giving a 25% increase. These figures however, do not include area harvested by non-contracted farmers.

Total cane deliveries in 2020 amounted to 6,810,898 MT compared to 4,605,102 MT in 2019, an increase of 48%. All the sugar companies, except Sukari and South Nyanza, recorded increase in cane delivered in 2020. Mumias and Soin Sugar Companies remained shut down throughout the year. The increase in the cane deliveries was mainly attributed to the good weather conditions for cane growth in most of the sugar zones. Out of the total cane delivered, Out-growers supplied 76%, Nucleus Estate 6% and Non-contracted farmers 18%.

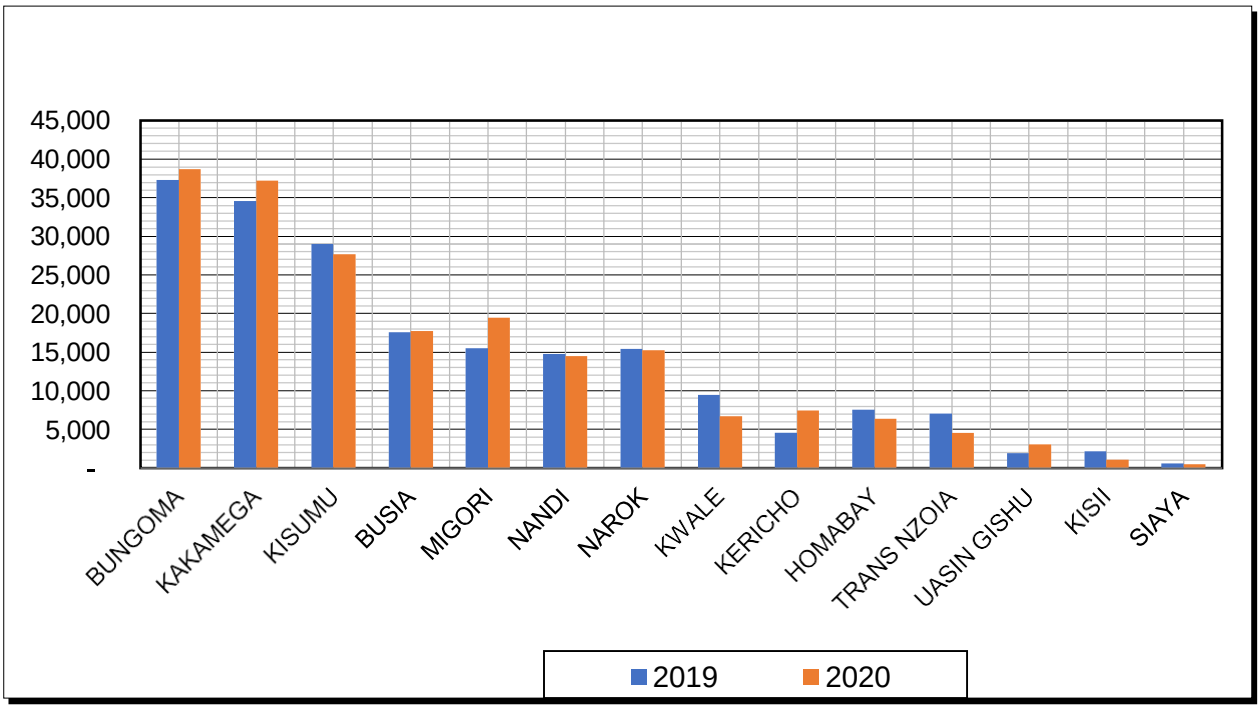


Figure 1: Area under Sugar Cane by County as at 31st December, 2019 and 2020 (Ha)

The average cane yield for the sugar industry in 2020 was 61.85 MT per hectare compared to 51.26 MT per hectare recorded in 2019, representing 21% increase. The increase in yield is a result of good cane growth due to favorable weather conditions and improved cane husbandry in most of the sugar zones.

Transmara sugar zones posted the best cane yield at 133.16 MT per hectare, ascribed to good rains, high soil potentials and aggressive extension services offered by the miller to the farmers. On the other hand, Chemelil, Muhoroni, Olepito and Busia sugar zones registered yields below 50T/Ha, attributed to poor cane husbandry. In addition, Kwale sugar zone reported a low cane yield of 46.1 MT per hectare due to harvesting of over mature cane. For more details, refer to Table 3 and Figure 2 below. (Source: Year Book of Sugar Statistics, 2020). It is worth noting that delayed cane payment and cane prices have a direct impact on cane maintenance and hence affecting the cane yields, See Figure 2.

Table 3:Production and yields for different factories

COMPANY	ITEM	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
CHEMELIL	AREA HARVESTED (HA)	5,864	5,324	5,057	8,927	7,148	4,967	4,220	4,971	1,143	6,956
	CANE DELIVERED (TC)	347,193	294,423	251,450	466,754	368,678	268,438	198,105	226,481	42,587	349,343
	YIELDS (TC / HA)	53.62	49.89	44.60	48.77	48.75	49.52	43.69	43.44	36.27	46.65
MUHORONI	AREA HARVESTED (HA)	4,323	5,319	5,497	7,176	5,763	4,902	5,217	2,641	4,294	5,403
	CANE DELIVERED (TC)	364,631	437,172	329,001	492,998	339,631	305,682	307,301	215,325	210,514	285,154
	YIELDS (TC / HA)	57.25	56.47	49.99	59.00	48.80	49.68	46.50	30.87	38.98	48.48
MUMIAS	AREA HARVESTED (HA)	34,734	41,109	36,043	20,327	10,130	10,979	5,951	2,175	0	0
	CANE DELIVERED (TC)	1,960,461	1,938,681	1,825,743	1,243,433	1,298,329	822,843	314,093	136,586	0	0
	YIELDS (TC / HA)	53.49	42.66	45.52	46.75	49.03	34.97	34.43	37.79	N/A	N/A
NZOIA	AREA HARVESTED (HA)	9,574	13,062	13,111	9,655	9,137	13,290	9,891	8,230	4,191	7,136
	CANE DELIVERED (TC)	645,113	738,433	742,057	695,988	685,930	786,117	464,832	393,429	184,254	433,446
	YIELDS (TC / HA)	66.74	56.19	55.96	72.09	75.07	59.15	46.99	47.80	43.96	60.74
SOUTH NYANZA	AREA HARVESTED (HA)	7,637	6,773	7,756	7,545	5,214	7,437	6,845	6,464	2,780	1,285
	CANE DELIVERED (TC)	675,224	553,858	673,120	627,218	550,236	670,136	460,160	490,442	204,701	197,096
	YIELDS (TC / HA)	77.62	70.54	70.62	67.23	81.09	79.86	57.32	63.31	65.64	77.24
MIWANI	AREA HARVESTED (HA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	CANE DELIVERED (TC)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	YIELDS (TC / HA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
KIBOS	AREA HARVESTED (HA)	1,608	2,207	2,081	1,133	3,253	2,789	2,631	2,717	1,916	2,894
	CANE DELIVERED (TC)	370,272	435,947	618,404	469,799	904,508	814,594	677,086	826,404	657,898	937,925
	YIELDS (TC / HA)	62.46	64.62	65.86	62.92	67.93	63.37	59.05	63.03	63.48	68.82
SOIN	AREA HARVESTED (HA)	351	632	753	257	-	-	-	-	-	-
	CANE DELIVERED (TC)	25,233	41,227	48,738	16,661	-	-	-	-	-	-
	YIELDS (TC / HA)	71.89	65.23	64.73	64.83	N/A	N/A	N/A	N/A	N/A	N/A
BUTALI	AREA HARVESTED (HA)	5,038	6,217	6,680	7,072	6,729	11,427	7,510	11,204	8,656	13,273
	CANE DELIVERED (TC)	310,327	412,982	418,367	596,929	489,968	842,422	474,868	703,633	562,141	895,794
	YIELDS (TC / HA)	58.70	59.06	60.45	68.45	69.56	65.89	59.74	58.73	61.83	67.49
WEST KENYA	AREA HARVESTED (HA)	9,871	N/A	N/A	-	15,737	14,152	14,121	18,000	22,977	21,366
	CANE DELIVERED (TC)	603,229	593,329	1,022,030	852,046	1,267,331	1,054,964	882,887	934,042	1,054,505	1,430,999
	YIELDS (TC / HA)	57.83	N/A	N/A	N/A	74.62	70.95	62.17	51.89	45.89	66.97
TRANSMARA	AREA HARVESTED (HA)	N/A	2,374	4,503	5,584	4,943	4,868	3,255	3,909	4,587	4,561
	CANE DELIVERED (TC)	3,838	178,001	402,480	550,835	525,627	825,342	423,977	576,588	731,840	826,616
	YIELDS (TC / HA)	N/A	74.58	84.51	98.65	106.28	102.25	76.06	83.30	95.47	133.16
SUKARI	AREA HARVESTED (HA)	N/A	4,323	4,376	4,504	8,284	6,474	5,357	9,378	12,951	12,337
	CANE DELIVERED (TC)	1,820	199,911	342,335	397,268	614,033	467,216	345,421	533,988	633,230	624,235
	YIELDS (TC / HA)	N/A	45.14	68.86	66.10	51.26	55.01	60.84	56.78	48.89	50.60
KWALE	AREA HARVESTED (HA)	N/A	N/A	N/A	-	1,492.48	4,476.31	2,710.00	2,390.00	319.00	5,832.60
	CANE DELIVERED (TC)	N/A	N/A	N/A	-	120,519.00	293,916	202,875	179,914	18,878	268,861
	YIELDS (TC / HA)	N/A	N/A	N/A	N/A	80.75	65.66	74.86	75.28	59.18	46.10
OLEPITO	AREA HARVESTED (HA)	N/A	N/A	N/A	-	-	-	-	1,000.00	3,422	3,229
	CANE DELIVERED (TC)	N/A	N/A	N/A	-	-	-	-	45,325.00	130,520	150,556
	YIELDS (TC / HA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	45.33	37.83	46.62
BUSIA	AREA HARVESTED (HA)	N/A	N/A	N/A	-	-	-	-	-	4,287.80	5,406
	CANE DELIVERED (TC)	N/A	N/A	N/A	-	-	-	-	-	174,034.00	410,871
	YIELDS (TC / HA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	37.27	46.37
ALL COMPANIES	AREA HARVESTED (HA)	79,000	87,340	85,857	72,180	77,830	85,761	67,709	73,080	71,525	89,680
	CANE DELIVERED (TC)	5,307,341	5,823,964	6,673,725	6,409,929	7,164,790	7,151,670	4,751,605	5,262,157	4,605,102	6,810,898
	YIELDS (TC / HA)	58.86	51.00	54.67	61.41	66.41	62.21	55.34	55.13	51.26	61.85

NOTE 1 ***Some factories received cane from non-contracted farmers, mainly from neighbouring factory zones as follows:-***

ZONE	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*
CHEMELIL	*32,744*	*28,806*	*25,924*	*31,414*	*20,237*	*22,504*	*13,725*	*10,531*	*1,135*	*24,867*
MUHORONI	*117,157*	*136,804*	*54,205*	*69,599*	*58,382*	*62,137*	*64,688*	*133,782*	*43,112*	*23,196*
MIWANI	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
SOUTH NYANZA	*82,453*	*76,109*	*125,416*	*119,972*	*127,417*	*76,240*	*67,836*	*81,234*	*22,232*	*97,826*
NZOIA	*6,186*	*4,492*	*8,369*	-	-	-	-	-	-	-
MUMIAS	*102,471*	*185,021*	*184,973*	*293,144*	*801,674*	*438,923*	*109,206*	*54,400*	*0*	*0*
KIBOS	*269,841*	*293,337*	*481,343*	*398,511*	*683,518*	*637,828*	*521,714*	*655,145*	*536,284*	*738,792*
SOIN	-	-	-	-	-	-	-	-	-	-
BUTALI	*14,602*	*45,827*	*14,588*	*112,834*	*21,899*	*89,533*	*26,214*	*45,595*	*26,906*	-
WEST KENYA	32,340	593,329	1,022,030	852,046	92,992	50,842	5,020	-	-	-
SUKARI	-	4,762	41,003	99,548	189,388	111,084	19,506	1,489	-	-
TRANSMARA	-	957	21,951	-	270	327,634	176,395	250,961	293,916	219,292

	KWALE	-	-	-	N/A	-	-	-	-	-	-
	OLEPITO	-	-	-	-	-	-	-	-	1,038	-
	BUSIA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14,215	160,195
	TOTAL	***657,794***	***1,369,444***	***1,979,802***	***1,977,068***	***1,995,777***	***1,816,726***	***1,004,304***	***1,233,137***	***938,838***	***1,264,169***
NOTE 2	*a) Transmara and Sukari Industries began operations in December 2011*										
	b) West Kenya data on cane deliveries for the years yield is not established is equated to cane crushed as actual statistics on deliveries and area harvested were not obtained.										

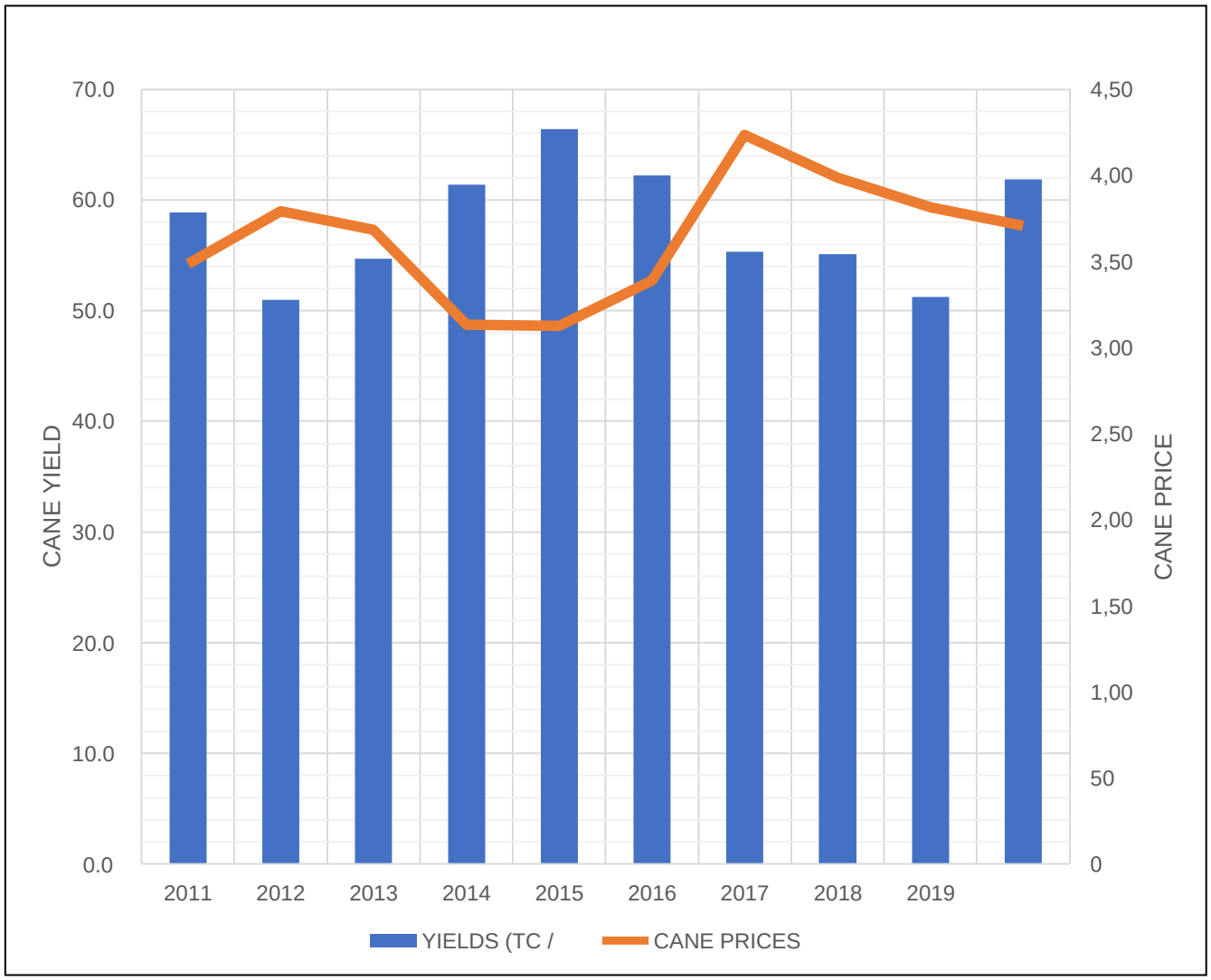


Figure 2: SUGAR CANE YIELD VERSUS CANE PRICES

1.5.2 Sugar production, consumption and import trends

There has been sustained increase in sugar production in the country due to enhanced investments by both Government and private sector players. Kenya's population growth over the past years has also led to an upward push in sugar consumption, thus outstripping domestic production. The potential for self-sufficiency in sugar production has not been realized as a number of mills continue to operate below optimal levels.

The country's highest sugar production since inception was in 2016 where 639,741 MT was produced. In 2020, the production was 603,788 MT against a consumption of 1,040,591 MT for both brown and white refined sugar, reflecting a 42% deficit, which was met through importation. It is worth noting that all white refined sugar for industrial use was imported as the country is currently not producing this type of sugar.

In 2021, Kenya sugar industry recorded tremendous improvement in performance as compared to the previous year. A total of 700,162 MT of sugar was produced. This is attributed to increased availability of sugar cane and improvement of TC/TS ratio by 8.6%. The achieved sugar production for 2021 is against a consumption demand of 1,067,099 MT as indicated in Table 4 below.

Table 4:Sugar production, consumption and imports (2011- 2021)

YEAR	PRODUCTION (MT)	CONSUMPTION* (MT)	IMPORTS (MT)		
			MILL/ BROWN	WHITE REFINED	TOTAL
2011	490,210	783,660	24,880	114,196	139,076
2012	493,937	794,844	84,990	153,599	238,589
2013	600,179	841,957	103,792	134,253	238,045
2014	592,668	860,084	62,709	129,412	192,121
2015	635,674	889,233	99,600	147,789	247,389
2016	639,741	978,746	172,888	161,221	334,109
2017	376,111	997,944	829,871	159,748	989,619
2018	491,097	1,012,399	122,121	162,048	284,169
2019	440,935	1,038,717	285,093	173,538	458,631
2020	603,788	1,040,591	309,408	132,985	442,393
2021Jan-oct	577,807	1,067,099	201,554	133,244	334,798

***** All the consumption figures are estimates.

Details of sugar production by factory in the last three years are shown on Table 5.

Table 5:Comparative sugar production by factory in 2019 – Oct 2021

Factory	Total Jan -Dec 2019	Total Jan -Dec 2020	Total Jan -Oct 2021	Total Jan -0ct 2020
Nzoia	12,582	26,977	17,705	22,731
Chemelil	2,863	24,328	17,419	19,632
South Nyanza	12,573	13,908	23,568	8,778
Muhoroni	10,601	17,464	17,821	13,027
West Kenya	136,304	151,852	157,067	129,740
Mumias	-	-	-	-
Soin	-	-	-	-
Kibos	53,249	85,339	54,072	72,451
Butali	53,577	87,227	67,507	75,602
Sukari	68,658	63,146	78,909	60,224
Transmara	72,011	78,761	89,639	68,727
Kwale	339	10,875	1,398	8,461
Olepito	8,043	11,933	12,816	10,086
Busia	10,135	31,978	39,886	25,268
TOTAL	**440,935**	**603,788**	**577,807**	**514,727**

1.5.3 Sugarcane Production under Changing Climate

Sugarcane growing in Kenya is mostly rain-fed. In recent times climate change has become an important concern because of its largely detrimental impacts. Due to global warming, there has been increased variability in climate and weather resulting in increased intensity and frequency of extreme weather events in Kenya. Climate change has affected sugar cane production in the following ways:

1. Delayed onset of rains and shorter rainy seasons making it hard for farmers to follow recommended planting seasons. Farmers have resulted to planting continuously whenever some rain is received.
2. Short rainy seasons leading to stressed crop and reduced yields
3. Leaching of soil nutrients due to heavy rains
4. Flooding
5. Heavy rains affecting farm operations like ploughing, harvesting and transportation
6. Drought/ high temperatures with negative effects on sprouting and emergence of sugarcane and ultimately, low plant population
7. Cane fires partially attributed to increased temperatures, resulting in negative environmental impact due to smoke, and low quality cane which is at times rejected by millers.

There are few interventions to mitigate the changing weather conditions. Some of the strategies adopted include: irrigation, improved sugarcane varieties that require less water and have shorter growing period, intercropping to minimize soil loss, extension services to farmers and adoption of climate smart technologies.

In general, there is relatively low adaptive capacity, high vulnerability to natural hazards, and poor forecasting systems and mitigating strategies in Kenya.

1.5.3 Sugar milling capacities

The total installed factories' crushing capacity is 48,950 MT of cane per day (TCD) as indicated in Table 6. Realization of the installed capacity would lead to national sugar self-sufficiency.

Table 6:Rated and actual crushing capacities in 2021

Miller	Rated Capacity (TCD)	Actual Crushing Capacity (TCD)
Chemelil	3,000	2,500
Soin*	300	0
Muhoroni	2,200	1,800
Kibos	3,500	3,500
Butali	2,500	2,500
West Kenya	6,500	6,000
Nzoia	3,000	2,500
Mumias*	8,400	0
South Nyanza	3,000	2,500
Transmara	4,000	4,000
Sukari	3,000	3,000
Olepito	1,250	700
Busia	3,000	2,800
Kwale	3,000	2,500
Miwani*	2,300	0
TOTAL	48,950	34,300

*Not operational

1.5.4 By-products and value addition

There are two major sugar by-products namely, molasses and bagasse. Molasses production have been on the rise over the last ten years, increasing from 199,811 MT in 2011 to 269,772 MT in 2020, at a Molasses % Cane ratio of 3.76. In Kenya, molasses is mostly used for manufacture of ethanol and animal feeds. Over the same period, bagasse production increased from 2.02 MT to 2.42 million MT. The average percent of bagasse in cane over the ten years was 36.4. Bagasse is typically used to produce heat and electricity in sugar mills (cogeneration), but can also be used as raw material for paper making, animal feed and for the manufacturing of disposable food containers. Currently, bagasse is mainly used as a fuel in the sugarcane industry to augment energy requirements.

1.6 Role of the sugar industry in the national economy

The major objectives of the Government of Kenya for the sugar industry are to achieve self- sufficiency in sugar with surplus for export in a globally competitive market; generate gainful employment and create wealth for the Kenyan population; supply raw materials for subsidiary industries; and to promote rural development through economic activities linked to the sugar industry.

Kenya Vision 2030, aims at re-engineering the sugar industry towards lower cost of production and higher efficiency to enhance global competitiveness, while guaranteeing an improved livelihood for the communities within the sugar belt. Thus, the sugar industry plays a critical socio-economic role as follows:

- Contributes 4% to value of `agricultural production and 6% of all crops marketed (KNBS Economic Survey, 2020)
- Supports directly and indirectly, over 8 million people (Approximately 17%) of the entire Kenyan population
- Generates revenue, with an estimated gross turnover in 2020 totaling KES 45 billion (AFA Year Book of Statistics 2020)
- Supports about 254,422 farmers who supply over 85 percent of the cane milled by the sugar companies (AFA Year Book of Sugar Statistics, 2020)
- Employs about 14,990 Kenyans in sugar plantations and sugar factories (AFA Year Book of Sugar Statistics, 2020)
- Contributes tax revenues to the Exchequer
- Saves the country in excess of US$ 400 million in foreign exchange earnings annually
- Contributes to the economies of 14 counties, with the following percentage contribution to total sugarcane production: Bungoma (19.3%), Kakamega (18.6 %), Kisumu (13.8%), Migori (9.7%), Busia (8.9%), Narok (7.6%), Nandi (7.3%), Kericho (3.7%), Kwale (3.3%), Homa-bay (3.2%), Trans Nzoia (2.3%), Uasin Gishu (1.5%), Kisii (0.5%) and Siaya (0.3%) (Source: AFA - SD, Cane Availability Survey, December 2020)
- Spurs the growth and development of towns and market places through backward and forward linkages with rural businesses
- Supports infrastructural development through construction and maintenance of roads and bridges in the sugar belt for ease of cane haulage
- Provides social amenities such as schools, health centres, sports and recreation facilities
- Provides raw materials such as bagasse and molasses, for value addition enterprises

1.7 Structure and distribution of production

1.7.1 Famers

The Kenyan sugar industry is dominated by small holder farmers distributed across the sugar growing counties. There are 254,422 growers, with an average holding of 0.7 Ha per family, supplying over 85% of cane to the mills. The rest of the cane is supplied by the sugar companies' nucleus estates and large scale farmers. Farmers are recognized by the Crops Act 2013 as growers who produce sugarcane or any other scheduled crop in Kenya for the manufacture of sugar. Most of the crop is grown under rain-fed conditions with limited irrigation being done in the coastal region. The level of mechanization in the sugar industry is at 45% (Wawire, et al.) with transport and ploughing being the most highly mechanized operations at 100%, harrowing at 99%, loading 80%, furrowing 78%, weeding at 4%, planting 0% and minimal mechanized harvesting at Kwale International Sugar Company.

.

1.7.2 Millers

The millers are licensed by AFA – Sugar Directorate to operate either a sugar or jaggery mill. Harvesting and transportation of cane to the factories or trans loading sites is contracted by millers on behalf of the farmer. Out of the 16 sugar factories in Kenya, 10 are privately owned and generally have better operating efficiency than the public mills. The six public mills are: Miwani Muhoroni, Chemelil, Mumias, Nzoia and the South Nyanza Sugar Company. The10 privately owned mills are: West Kenya, Butali, Soin, Kibos, Kwale international, Busia s, Olepito, Kisii, Transmara and Sukari industries).

1.7.3 National Government

The Ministry of Agriculture, Livestock, Fisheries and Cooperatives has the overall mandate of providing policy direction for the sugar Industry. It has the mandate to promote and regulate the Sugar industry in Kenya. It is responsible for enhancement of competition and fair play and provision of an enabling environment for all stakeholders to operate. This role is partially achieved through the Agriculture and Food Authority (AFA), a State Corporation under the Ministry. AFA, Sugar Directorate has the mandate of setting industry standards and enforcing compliance. The Agriculture and Food authority was established and operationalized by the AFA Act 2013 and the Crops Act 2013, which consolidated all the agricultural commodities boards with the aim of bringing in efficiency by removing overlap of functions, obsolete legislations and to benefit from economies of scale.

1.7.4 County Governments

The Constitution of Kenya 2010 devolved certain functions of agriculture to the County Government. The County Government's functions are spelt out in the Fourth Schedule of the Constitution. They include implementation of agriculture policy, crop husbandry, and pest and plant disease control. As such, the county government is responsible for advisory services to the sugarcane farmers and maintenance of roads using cess charged on sugarcane. The Intergovernmental Relations Technical Committee (IGTRC) and Council of Governors (COG) are mandated by the Intergovernmental Relations Act 2012 to facilitate intergovernmental relations between the national and county governments, and amongst county governments by ensuring consultation, coordination and cooperation.

1.7.5 Sugar Research Institute (SRI)

SRI is the research arm of the sugar industry in Kenya. Organized research on sugarcane dates back to 1969 when the government set up the Sugar Research Station at Kibos, within the Nyando sugar belt, to enhance research on sugarcane production. In 1988 the Kenya Agricultural Research Institute (KARI) was reorganized and the station was renamed National Sugar Research Centre, with a national mandate on sugar research. Through the efforts of the Kenya Sugar Authority (KSA) and KARI to enhance efficiency of sugar research, the Kenya Sugar Research Foundation (KESREF) was created and started its operations on 1st February 2001. KARI and KSA provided the initial resources to enable KESREF take off.

In 2013 the Kenya government undertook reforms in the agricultural sector to improve efficiency in service delivery. This culminated in the formation of two new state corporations in the Ministry of Agriculture, Livestock and Fisheries namely: Agriculture and Food Authority (AFA) and Kenya Agricultural and Livestock Research Organization (KALRO). AFA, through the Sugar Directorate, is responsible for regulating, developing, and promoting the sugar industry while Research in sugarcane cultivation and sugar production is the responsibility of KALRO through the Sugar Research Institute (SRI).

The Headquarters of SRI is at Kibos along the Kisumu-Miwani road in Kisumu County. SRI has Centres in Kibos (Kisumu County), Mtwapa (Kilifi County), Opapo (Migori County) and Mumias (Kakamega County). It also has a testing site at Kikoneni (Kwale County).

The Institute has a national mandate to promote research and investigate all problems related to sugarcane and such other crops, processing into sugar and by-products, and their systems of husbandry, productivity, quality and sustainability of land and matters ancillary thereto.

SRI has five technical research programs:

1. Crop improvement and protection
2. Environment and Natural resource management and biodiversity
3. Product diversification and value addition
4. Economics statistics and policy management
5. Knowledge information management and outreach

SRI has however, not been able to discharge its mandate adequately due to lack of funds. This arose when the Sugar Development Levy, a percentage of which used to finance its activities, was revoked. As such, some sugarcane varieties already developed have not been released, and no research and development or outreach programs are going on.

1.7.6 Distillers

Distillers process molasses as feedstock into Ethanol and its derivatives. The Agro-Chemical and Food Company Limited (ACFC) and the Kisumu Molasses plant, currently operating as Spectra International, were established in line with the Government's Policy on blending fuel with Ethanol. When the programme failed to take off, the factories diversified into production of spirits, yeasts and other molasses based products. Recent distillery installations include London Distillers, Mumias and Kibos Sugar Companies.

1.7.7 Kenya Society of Sugarcane Technologists (KSSCT)

The Kenya Society of Sugarcane Technologists (KSSCT) is an affiliate body of both the International and East African Societies of Sugarcane Technologists (EASST). It is an association of technical professionals in the sugar value chain and draws its membership from individual and corporates with interest in the sugar industry.

1.7.8 Financial institutions.

Sugarcane growing is a heavy capital venture. The cost of production ranges between KSh 100,000 to KSh 150,000 per Ha. Credit for cane development is provided by commercial banks, Agricultural Finance Cooperation (AFC), The Commodities Fund, Millers, Cooperative Societies and SACCOs.

Credit access from these sources is however low due to lack of collateral and high interest rates, leading to high cost of production and indebtedness by smallholder farmers. The situation is exacerbated by delayed payments by some millers for cane deliveries.

1.7.9 Importers

Kenya is a net sugar deficit country. The deficit is bridged by sugar importation mostly from the COMESA region. Sugar importation is currently governed by the Sugar (Imports, Exports and By-products) Regulations, 2020 under the Crops Act 2013.

1.8 Status of implementation of past policy interventions

Reforms in the sugar subsector started in the year 2001 with the formulation of the National Policy on the Sugar Industry and the coming into force of the Sugar Act 2001 to implement it. Wider agriculture sector reforms begun in earnest in 2003 with the formulation of the Economic Recovery Strategy for Wealth and Employment Creation (ERSW) in which Agriculture was seen as the centerpiece of economic growth. The sugar industry responded by setting up the Sugar Industry Task Force of 2003 to look into the challenges facing the industry after the Sugar Act of 2001 was enacted. The industry did not implement most of the recommendations.

The ERS then led to the development of the Strategy for Revitalizing Agriculture (2004-14) which preceded the Agricultural Sector Development Strategy of 2010-20 under Vision 2030.

In 2013, the Crops and AFA (Agriculture and Food Authority) Acts came into force to provide for the consolidation of all agricultural laws that regulated and promoted agricultural crops in general and align the roles of National and County Governments in agriculture to the provisions of the Fourth Schedule of the Constitution.

The AFA and Crops Acts enabled the development of two sets of regulations in 2020 to provide for the Crops (Sugar) (General) and Crops (Sugar) (Imports, Exports and By-products) rules and the Agriculture and Food Authority Strategic Plan of 2017-22. These legal frameworks have not been transformative, necessitating the setting up of three taskforces by a farmers' lobby group, the County Government of Kakamega and his Excellency the President to address challenges in the sector.

The status of reforms in the sugar subsector has been reviewed under the following themes:

1. The Sugar Policy reforms
2. Privatization of state owned sugar companies
3. Write off of debts of state owned mills and growers
4. Quality based cane payment system
5. Adoption of high sucrose early maturing cane varieties
6. Development a New Out-grower Business Model
7. Diversification

The sugar industry updated and expressed their reform preferences in the latest national-government-initiated Sugar Industry Stakeholders Taskforce Report of 2019. The report covered reforms in the following areas:

1) Policy, legal and institutional framework.
2) Sugarcane and sugar productivity improvement,
3) Pricing mechanism,
4) Sugar marketing and Trade,
5) Funding mechanism, and
6) Revitalization of state-owned mills.

Recommendation were made targeting:

1) Increasing sugar cane production and productivity
2) Enhancing milling efficiencies and competitiveness
3) Pricing Mechanism
4) Enhancing sugar marketing and trade
5) Compliance with the COMESA Safeguard Conditions
6) Funding mechanism
7) Revitalization of public-owned mills; and
8) Taxation structure.

2. STATEMENT OF THE PROBLEM AND TERMS OF REFERENCE

2.1 Statement of the problem

The sugar sector in Kenya is characterized by numerous challenges that affect stakeholders along the entire value chain. The sector has for decades failed to meet the domestic demand, leading to increasing reliance on imported sugar.

Sugarcane farmers have borne the brunt of the challenges along the sugar value chain and are constantly faced with low and unstable household incomes. Their sugarcane production investments are constrained by low productivity, high cost of inputs, and high cost of sugarcane harvesting and transportation. The above challenges are further compounded by delayed payments for sugarcane delivered by the farmers especially to the public mills.

The public milling companies suffer operational inefficiencies and are saddled with a high debt burden. Their cost of processing sugar far outweighs the revenue generated, hence the need for constant government bailouts. The private mills, on the other hand, have better operational efficiencies and have been able to expand production and venture into diversification enterprises. The importation of relatively cheaper sugar to bridge the deficit have compounded both the farmer and miller problems. To millers, imports have dampened the price of sugar and placed downward pressure on ex-factory prices. In an attempt to break even, millers have even joined the sugar importation fray, and other illegal activities such as re-bagging and branding of imported sugar into Kenyan brands.

Government support for the sugar industry can only be justified on grounds of import substitution, in recognition of a sector of national strategic significance for purposes of factors such as food security or economic empowerment of large numbers of vulnerable citizens. Such interventions are usually temporary for purposes of nurturing a nascent industry. In an endeavor to address the concerns along the value chain, the government has intervened through various measures such as price controls for sugarcane and sugar. While such interventions were aimed at protecting resource poor farmers and vulnerable consumers, they were not sustainable as they interfered with the free market forces of supply and demand. Consequently, uncertainty in farmer incomes, and sugarcane and sugar price instability continues, while the demand for sugar imports continues to grow.

The second major challenge in the sugar sector is on the demand side, and it is an intriguing one. Being literally a staple or an essential commodity nutritionally, the demand for sugar is inelastic meaning that price changes elicit minimal reactions from the consumers (e.g. a 10 percent increase in price leads to a reduction of demand by less than 10 percent) thereby providing an uncanny attraction for taxation akin to what is generally witnessed in the case of alcohol, petrol and tobacco.

There are four distinct consequences of this:

1) Sugar imports become quite attractive for their low cost and ability to sell them at high domestic prices driven by contrived scarcity;
2) There is a crowding out effect on processing investments and technological innovations aimed at increasing domestic production;
3) Parallel markets emerge;
4) Farmers' sugarcane can conveniently be sacrificed, and hence the intrigue of conflicting policy aiming to protect the farmer through a price stabilization mechanism. Save for instances when there are exchange rate variations, price volatility is seldom the real problem, especially considering the captive nature of the domestic sugar market. A possible fifth dimension is how the government benefits (in terms of tax revenue collection and achievement broad national policy objectives) from the scenario.

The Sugar Taskforce definitely gained useful insights from interviews with key informants/experts and other value chain players. It was also worthwhile to establish the current status of industry reforms and implementation of recommendations made by previous taskforces in order to identify the main challenges inhibiting reforms in the sugar sector.

2.2 The terms of reference and their interpretation

Rationale for setting up the Sugar Taskforce **(Gazette Notice Vol; CXXIII-No. 178):** as per statement in the Gazette Notice was to:

1) Develop a robust price stabilization framework for the sugar value chain in Kenya
2) Evaluate the resource requirements and possible sources including the sugar sector financial and other assets managed by Commodity Fund to support price stabilization framework for the sugar value chain
3) Consider and evaluate possible sustainability options to be inbuilt into the price stabilization framework for sugar value chain in order to guarantee perpetuity
4) Undertake any other task in furtherance of these broad objectives

The specific tasks have been rearranged and summarized as follows:

i) Review of relevant literature:
   a) Policy documents and other technical publications and potential data sources
   b) Identifying threats and success factors for price stabilization in the sugar value chain and in other commodities or jurisdictions. Discuss the theory of agricultural support programs; their successes and failure; costs and benefits; equity and market distortion effects on the economy. This will include bench marking with other countries and review of the challenges faced by past policy interventions such as coffee Stabex, minimum maize price legislations (such as Guaranteed Minimum Returns-GMR), fertilizer subsidies, etc

ii) Design a Price Stabilization Framework for the sugar value chain comprising one component that addresses general *value chain inefficiencies and weakness* (at farm, processing, trading and industry levels) and the other component specifically establishing financial pool (a *Sugar Price Stabilization Fund*) to be used for intervening in the sugar market to cushion vulnerable actors, notably, smallholders against extreme price swings. Either way, the following three operational and sustainability considerations will be taken into account:
   a) To assess technical and financial resource requirements, their sources and sustainability considerations
   b) To determine institutional arrangements and design parameters for managing a price stabilization framework for the sugar value chain
   c) To design a financial investment plan that guarantees funding sustainability

iii) Design an Implementation Matrix/Plan and a Monitoring and Evaluation (M&E) Plan: The implementation matrix will include the specific concerns being addressed, the proposed interventions, baseline values (qualitative or quantitative) in the current status that are used in the M&E for purposes of counter-factual impact analysis, objectively verifiable indicators, means of verification and institutions that will take lead role in implementation. The Implementation Plan on the other hand provides the specific activities for each intervention (cost centers) and their scheduling in short, medium and long term horizons

iv) Develop a risk profile for the Price Stabilization Framework and a risk mitigation plan

It should be clear from the interpretation/grouping of the specific terms of reference that the resulting four categories of tasks cater for all the stated TORs and are indeed the basis for the methodological approach presented below.

3. METHODOLOGY

3.1 Review of relevant literature

The literature review highlights the sugar industry's role in the economy, its linkages with other sectors, prevailing concerns and challenges hindering sustainable growth, public policy interventions, and their status of implementation and efficacy. We reviewed and discussed the institutional arrangements and mechanisms for price discovery and how farm gate returns and profitability guarantee food and nutritional security, especially for smallholder cane farmers. In many smallholder farming systems, there is usually a tendency to diversify income sources that invariably compromise the objective of production specialization and commercialization, as anticipated in various agricultural development strategy papers such as ASDS of 2003. The literature review will document how smallholder sugarcane farmers increase their vulnerability to market risks such as extreme movements in costs and prices by over-relying on sugar cane as their primary source of income. Policies and regulations also influence exposure to market shocks and value chain characteristics such as the degree of competitiveness in trade, all of which affect the speed and magnitude of price transmission to framers.

Other discussions that will feature in the review of literature are: i) the structure and distribution of sugar production and processing factories; ii) capacity utilization, resource allocations, and profitability; iii) key players in processing and marketing and governance structures (including assessment of potential conflicts of interest); iv) the role of the state (bringing out conflicts in regulation, resource allocation and responsibilities of the Counties) especially with respect to taxation, infrastructure development, capacity building, and formulation and implementation of trade policies; and, promoting product development and value addition.

The review will also cover the impact and capacity for response to emerging (cross-cutting) development trends such as rapid population growth that has led to land fragmentation in high rainfall agro-ecological zones. Additionally, the review will examine how urbanization, increased competition, standards, food safety requirements in the region and globally, and climate change impact on competitiveness and profitability of sugar cane compared to alternative farm crops' businesses.

A more detailed analysis applying a value chain approach will be undertaken as elaborated in sub-section 3.2

3.2 Review of Case Studies of the Commodity Price Stabilization

A number of countries have successfully undertaken agricultural commodity price stabilization. These include but not limited to:

i) Republic of India

India is a country located in South Asia and the seventh largest country by area in the world. With a population of over a billion, Agriculture remains one of the most important economic activity contributing about 14 percent of the Gross Domestic Product in India.

India has successfully undertaken price stabilization on various agricultural commodities which include **tea, coffee**, **rubber** and **tobacco**. India has the following types of stabilization schemes as follows:

a) **Price stabilization Fund (PSF)** – When prices go below the lower bound, payments are made out of the Fund. Similarly, when prices go above the upper bound, farmers make payments into the Fund.
b) **Modified Price Stabilization Fund (MPSF) –** The scheme allows both participating farmers and government to make a pre-determined contribution to the Fund. The Fund is utilized during periods of distress.
c) **Multipurpose Loan Scheme (MLS) –** The loan scheme subsidizes credit to allow smallholder growers of less than four (4) Hectares to access affordable credit

b) Republic of Ghana

Cocoa is one of the main cash crops in Ghana. Cocoa farming supports over 800,000 small scale farmers.

Cognizant of the important role of the crop, and in light of the inevitable global price volatility, the Government of Ghana established a Price Stabilization Fund in the year 2004. The goal of the Fund is to support intra-seasonal fixed producer price in the situation of shortfall in export revenues. More specifically, the Fund aims at stabilizing the cocoa prices by ensuring that farmers get a significant share of price and a guaranteed income.

Ghana COCOBOD have a responsibility of working through a multi-stakeholder approach sets prices of Cocoa in a given year. Once the price is set, all Cocoa farmers have to be paid the recommended amount until the next price is set.

3.3 Price/Income Stabilization Approach

As stated in sub-section 1.3, the price stabilization framework has been divided into two components. One that addresses general *value chain inefficiencies and weaknesses* at the farm, processing, trading, and industry levels, the other component deals with the mechanism of establishing a sugar price stabilization fund. A price stabilization fund may not be required given the arguments presented briefly under the section elaborating statement of the sugar industry problems that, in our considered opinion, lies elsewhere and not as generally assumed to be price volatility. Available data shows that from 2002, retail sugar prices were relatively stable till around 2010 (and spiking one year later), mainly due to bureaucratic licensing and vetting processes for imports (COMESA Assessment Mission Report, 2012). Indeed, the Sugar Industry Stakeholders Taskforce Report of 2019 does not discuss in detail the price discovery mechanism in the industry, nor does it bring out price volatility as a critical issue but notes that from 2001, the pricing of farmers' cane was the responsibility of Sugarcane Pricing Committee.

Given the preceding, we place more emphasis on ways of eliminating inefficiencies and weaknesses along the sugar value chain and in the price discovery mechanisms (discussed in this sub-section) while giving the Technical Working Committee the prerogative to decide on the merits of a *Price Stabilization Fund* highlighted in the next sub-section.

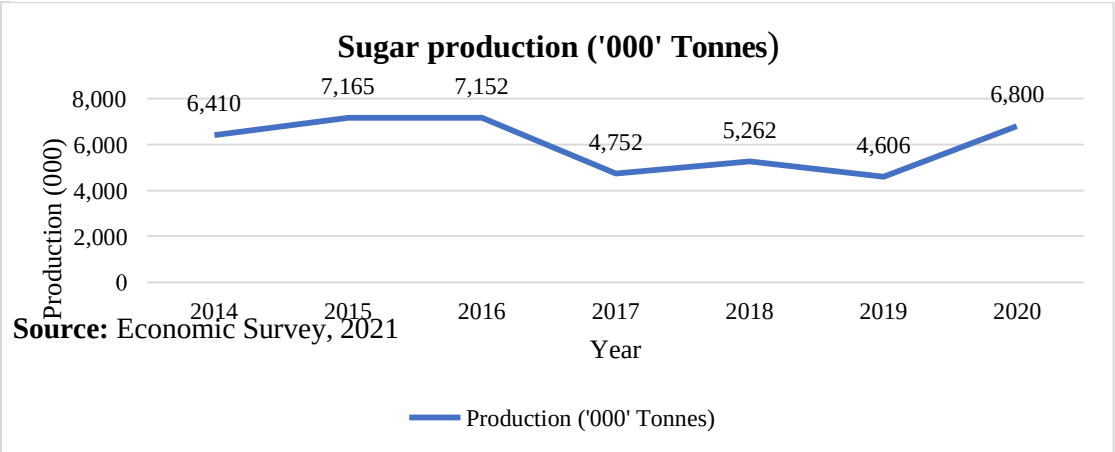
3.3.1 Rationale for Income Stabilization

Trends in Sugarcane Production and Sugar Prices

Kenya has a long term experience in sugarcane farming and processing. Recent data from the Kenya National Bureau of Statistics shows that sugarcane production has been fluctuating over the years. Similarly, the Sugarcane prices have been fluctuating over the years. This is attributed to but not limited to changing weather patterns, increasing costs of production, and lack of a coherent way of determining the cost of production of one tonnage of sugarcane.

Figure 3 shows that the cane production has been in a downward trend between 2016 and 2019 before taking an upward trend in 2020. The sudden decline in cane production in 2017 was attributed to drought which led to decline in productivity and harvesting of pre-mature cane. In 2020, there was a significant increase in cane production by 32 percent. This was attributed to good weather and the coming in of private farms who played a key role in cane development and uptake.

Figure 3: Sugarcane production (2014 – 2020)



Source: Economic Survey, 2021

On the contrary, sugar prices in the country have been fairly stable over the years. This is despite the fluctuations of sugarcane prices which, intuitively and surprisingly, does not have a direct link with the prices of sugar prices in the domestic market. The stability in sugar prices in Kenya points out that the challenges bedeviling the sugar sector in Kenya are generally emanating from the lower part of the value chain.

There are a number of tangible reasons that make sugarcane farming important to the economy of Kenya. These include but not limited to:

i. **Gross Domestic Product Contribution** – Sugarcane farming contributes 2 percent to Kenya's GDP;
ii. **Livelihood support** – There are many farmers that depend on sugarcane farming as a source of livelihood.
iii. **Forward and backward linkages** – The sector creates demand for raw materials at the production process while at the same time creates a forward linkage in the economy.

In cognizance of the important role played by the sub-sector in the economy, the Government has a role to play in ensuring that sugarcane prices are good enough to earn farmers a decent living. Generally farming is an expensive affair due to too high cost of land preparation, high cost of seed cane, fertilizers, and credit.

Other measures for commodity price stabilization

The measures adopted for stabilizing agricultural prices vary considerably, depending on the economic circumstances in the market and the level of volatility. The price of a commodity may be stabilized at a predetermined level to meet the objectives set to achieve socio-economic goals. The following measures or combinations may be adopted to effect the stabilization of agricultural prices and therefore form the basis of a stabilization framework.

Table 7: Measures for price stabilization

Direct measures	**Indirect measures**
Regulating agricultural production to control supply of agricultural produce;	Setting of maximum or ceiling price
Regulating imports and exports	Setting of a minimum or floor price
Encouraging agro-processing industries	Setting of periodic administrative price
Building buffer stocks	
Ensuring efficient procurement and public distribution	
Regulating inter-regional movement of commodities	

3.3.2 Analysis of trends in production, processing, and profitability

i) Survey approach at the farm level

The following measures of productivity and profitability were estimated:

a) Trends in productivity growth: comparing cane productivity for different farm sizes; regions; cane varieties (e.g., short maturing/high sucrose compared to popular varieties); agronomic practices, including access to extension services; and different contracting arrangements (vertical integration in various degrees)

b) Production gross margins for different options listed under (a) above, indicating operational profitability and the main cost centers, especially share of labor, fertilizer, transport, and post-harvest losses; performing a sensitivity analysis to show response to changes in productivity, costs, and prices;

and comparing estimated farm returns with recommended household annual or daily food requirements in different production regions

c) Graphical and econometric analysis showing recent and projected growth in sugarcane production/supply compared to trends in market and farm gate prices

d) Determine the economic benefits of alternative input procurement and transportation arrangements as well as the required resource requirements and capacities available to factories and at the Counties

e) The role and capacity of regulators, research, and County governments

ii) Survey approach at the factory level

At the factory level, the aim of the survey was to compute the following:

a) Operational costs showing the main cost drivers, notably labor, power, machinery, financial costs, management fees, storage, transport, and taxes

b) Capacity utilization: technologies and their installed compared to actual utilization by season and ages

c) Marketing arrangements and participation in the importation of sugar (volumes, prices and sources)

d) Engagement in value addition and the range of value-added products, their quantities, market destinations, and challenges/opportunities

e) Role of regulators and County government such as the requirements for registration of processing factories and whether quality of cane supplied is compromised by factory or county governments issues.

3.3.3 Analysis of transportation and storage arrangements

a) Document the costs for alternative transport and storage arrangements, and who bears risk of loss or damage/spoilage

b) Opportunities and cost-savings likely to arise from better synergies and more innovative transport/storage arrangements

3.3.4 Analysis of institutional arrangements for marketing of sugar

a) Sugar production trends compared to volumes imported and projections; import procedures and costs

b) Price trends at farm gate compared to retail markets and the transmission from market to sugarcane producer and their determinants; producer share of retail price; computation of demand elasticities

c) Key market players at different levels of the sugar value chain and roles played by (or impact of) taxes, regulator, County governments

3.4 Sugar Industry Price/Income Stabilization Fund

3.3.1 Contextual overview

This sub-section gives a brief overview of the efficiency of different price discovery arrangements and the need for regulatory or public intervention; recent price movements in the sugar industry and possible determinants; a statistical demonstration of the existence of the above usual price variance/risk (volatility) at the farm, retail, and the industry levels and macroeconomic impacts of price volatility; strengths and weaknesses of agricultural commodity price stabilization policies and legislations in the sugar industry and other commodities or comparator countries (benchmarks)

3.3.2 Operationalizing a price stabilization fund for the Kenya sugar industry

i) State the Fund's specific objectives and its legal backing, duration (with options for renewal), sources of funds (such as levies, grants/donations, return on investment, liquidation of idle assets, etc.)

ii) State how the monies accrued will be invested, including how the residual funds will be distributed/disbursed when the Fund is eventually terminated or deemed to have successfully served its purpose

iii) Provide an operational model for price stabilization with trigger points for withdrawing funds during distress periods to compensate vulnerable sugarcane producers (and any other eligible value chain players) and for building the Fund during boom years

iv) Discuss means of ensuring equity and sustainability of the Fund and any inherent risks and their mitigation strategies

v) Propose an administrative structure for a committee to manage the Fund, its composition, and where it will be domiciled

3.5 Data Sources

i) Secondary data: Kenya Sugar Board, FAO, KNBS, KRA, AFA, recent past studies and reports of taskforces and COMESA

ii) Preliminary information from industry stakeholder interviews:

- Managers/Boards of Sugar Factories; Farmers' representatives and unions; Importers, Transporters
- Sugar Campaign for Change Lobby group
- Wholesalers, retailers and distributors, Brown sugar importers
- State Department of Trade; Ministry of Foreign Affairs; County Executive Committee Members (CECMs), Sugar Research Institute, Ministry of Agriculture, Livestock, Fisheries and Cooperatives
- Kenya Revenue Authority; Kenya Railways Corporation; Kenya Ports Authority; Kenya Export Promotion and Brand Agency, Border Management Committee. Other Stakeholders
- Stakeholders Validation Workshop for Nyando, South Nyanza, Western Kenya and Coastal regions.
- Case studies of farms and factories

4. OVERVIEW OF THE KENYA SUGAR SUB-SECTOR

4.1 Snapshot of the high-level liabilities of five state-owned mills

Table 8: Snapshot of the high-level liabilities of five state-owned mills

The Key Liabilities of Five (5) Publicly Owned Sugar Mills as at 30th June 2020						
Description	CHEMELIL	SONY	MUHORONI	MIWANI	NZOIA	TOTAL
Accrued public debts (trade payables, cane payables, dividends payable etc)	997,560	1,129,625	1,349,352	177,488	39,981,876	43,635,904
Law suits (Value of subject matter involved in the cases)	622,029,504	813,237,105	692,866,769	0	171,166,934	2,299,300,312
Public loans (GOK)	40,000,000	229,598,750	7,999,688,030	2.015,450,276	39,726,442,480	50,011,179,536
Private Loans (other	3,586,790,606	2,473,337,792	1,495,617,478	1,859,706,031	2,610,180,890	9,418,062,088

agencies and banks)						
Payroll arrears	1,064,129,817	886,033,982	963,509,619	57,288,361	1,498,218.022	4,469,179,801
Taxation	3,098,901,814	2,326,011,477	13,750,830,037	17,338,445,157	5,417,219,105	41,931,407,590
	9,409,412,061	7,857,845,086	26,251,864,408	19,432,928,262	87,906,886,288	151,765,033,703

4.2 The impact of the inefficiencies in state-owned sugar mills on farm incomes

4.2.1 Muhoroni Sugar Company

Muhoroni Sugar company was incorporated in 1964 under an act of Parliament, Cap 441. It started operations in 1966 with an initial factory capacity of 800TCD which was expanded to 1,800 TCD in 1978 and eventually to 2,200 TCD in 1990. The Company is owned by GoK (82.78%); UKETA Ltd (16.86%) and private shareholders (0.36%). Muhoroni was placed under receivership by the former Kenya Sugar Board in March 2001 and the National Bank of Kenya. The National Bank of Kenya was subsequently paid off and as of today the sole debenture holder is the Sugar Directorate. The 2001 receivership was primarily protective, designed to preserve the assets of the country in order to permit the restructuring of the balance sheet as a first step preparatory to privatization. The current receiver/managers were appointed on June 26th 2018.

Table 9: The total liabilities of Muhoroni Sugar Company as at August 2020

A. PRE-RECEIVERSHIP DUES AND OBLIGATIONS	
Monies owed to the Revenue Authorities	
1. Excise duty (interest and penalties)	10,664,708,488.00
2. With-holding Tax (interest and penalties)	971,377,110.00
3. Presumptive income tax	174,563,746.00
4. With-holding tax VAT	259,180,555.00
Total taxes and Penalties	12,069,829, 899.00
Trade Creditors	
1. Pre-receivership trade creditors	224,816,256.00
2. Pre-receivership sugar creditors	36,455,813.00
Total	261,272,069.00
Loans	
1. GoK	6,223,114,853.00
2. Sugar Directorate	1,495,617,478.00
Total Loans	7,718,732,332.00

B. POST-RECEIVERSHIP DUES AND OBLIGATIONS	
1. Growers and Transporters dues	365,980,027.61
2. General suppliers dues (pre and post receivership)	757,985,337.30
3. Staff salaries arrears (pre and post receivership)	639,581,638.75
4. Undelivered sugar orders	81,776,275.00
5. Unpaid taxes	2,139,685,947.00
6. Loans	1,776,573,177.00
Total post receivership liabilities	4,921,820,790.36
TOTAL LIABILITIES (A+B)	24,971,655,089.36

The financial and operational challenges facing Muhoroni Sugar Factory are reflected in the overall efficiency of its milling (Table 10). Sugar is the principal product from the state-owned sugar mills, meaning that the primary basis for payment to farmers is the sugar that these factories are able to extract and place on the market. The poorer the sugar yield, the lower the payment to the farmers. The volume of cane crushed at Muhoroni fluctuates widely, sometimes due to lack of cane but mostly due to shut-down for repairs. Over the last 10 years, from 2011 to 2020 there have been large variations between both the amount of cane crushed and the sugar yield, expressed in terms of MT of cane needed to yield a MT of sugar.

Table 10: FACTORY PERFORMANCE OF MUHORONI SUGAR COMPANY LTD; 2011 - 2020

I T E M	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RATED CAPACITY (TCH)	100.00	100.00	100.00	100.00	100.00	91.67	91.67	91.67	91.67	92.00
ACTUAL (TCH)	98.83	100.88	101.04	105.12	102	104.67	106.02	98.54	95.85	93.21
CANE CRUSHED (MT)	370,099	445,438	366,433	493,371	388,452	323,093	321,727	225,094	187,957	279,738
SUGAR MADE (MT)	26,279	30,536	29,578	39,713	30,556	23,964	21,074	15,981	11,964	18,060
CANE/SUGAR (TC/TS)	14.08	14.59	12.39	12.42	12.71	13.48	15.27	14.09	15.71	15.49
STOPPAGE DUE TO NO CANE (HRS)	2,040.00	335.00	747.00	898.00	1,033	1,117	2,333	2,063	4,967	2,554
STOPPAGE DUE TO FACTORY (HRS)	2,412.00	2,471.00	2,151.00	2425	1,960	2,500	1,923	1,459	1,441	2,441
CAPACITY UTILIZATION %	42.36	50.85	45.92	56.31	44.41	43.92	40.88	37.59	23.41	34.59

In Muhoroni's best year- in terms of MT of cane crushed, 2014 - the factory milled 493,371 tonnes of cane, producing 39,713 tonnes of sugar in TC/TS ratio of 12.42:1 the factory's second-best sugar yield for the entire decade. The best TC/TS reported for the period was in 2013 when Muhoroni achieved a conversion ratio of 12.39:1. In six of those ten years, the factory had a conversion ratio of 14:1, which wastes 4 MT of cane taking account the industry average TC/TS of 10:1. The last four years, that is 2017 to 2020 have seen a market deterioration in the TC/TS ratio. It was 15.27:1 in 2017; 15.71:1 in 2019 and 15.49:1 in 2020.

The implication of this is that in the 10 years between 2011 and 2020, Muhoroni produced a total of 240,705 MT of sugar from the 3,401,402 million MT of cane that it crushed. Had it had a better TC/TS ratio, say it were able to produce sugar at the industry average TC/TS of 10:1, the factory would have made 340,140 tonnes of sugar. By operating at efficiency levels that are well below the industry average, Muhoroni cost sugar cane farmers value equal to 92,435 MT of sugar.

These finding tally with overall capacity utilisation and frequent shutdowns for unscheduled maintenance at the factory. Over the decade, capacity utilisation at Muhoroni averaged 42%. Downtime arising from unscheduled factory maintenance averaged 2118 hours per year whilst down- time due to lack of cane averaged 1809 hours. Combining the two, Muhoroni was non-operational for 3,927 hours. Given an optimum operating schedule of 22 hours a day for 300 operating days, a factory should process cane for a total of 6600 hours a year. On that basis, Muhoroni lost 59.5% of the optimum time available for annual operations due to lack of cane and unscheduled maintenance.

Risks and sources of Leakage

Legal risk: The company has been losing land, part of its LR no. 6016 (IR 2093), a leasehold interest for a term of 991 with effect from July 5th 1927 totaling 1601 acres has been subdivided and transferred to third parties.[1] Only 671 acres now remain. There has also been encroachment on factory land by squatters and other illegal entrants such Koketch estate in the Pombo area. The receiver/managers also note that they have experienced "a surge in litigation mainly from suppliers and other creditors." As of the date of the 2020 audit by the Ministry, the company was facing 264 pending cases with a total value of kshs 692,866,768.77. This figure excludes workman's compensation claims which were not quantified.

Financial risk: High and growing levels of indebtedness which erodes the company's ability to raise funds for operations, maintenance and expansion.

Operations and management: The company is beset with operational inefficiencies, blamed by the receiver/manager on obsolete machinery and equipment. In July 2020, the TC/TS ratio was 17.49 against a budget target of 12.02 and total sugar produced for the month was 838 MT against a target of 3,413 MT. The cost of producing one ton of sugar for July 2020 was 140,003 shillings against a target of kshs 58,377. As at August 2020, factory maintenance projected to cost 125.6 million had not carried out.

4.2.2 Chemelil Sugar Factory

Chemelil Sugar factory started operations in 1968 with a cane crushing capacity of 2,280 TCD, which was expanded over the years to 3,000 TCD. Over the five years, starting especially from the late 1990s the company suffered from poor operational efficiencies due to inadequate cane supply and incoherent expansion programmes. The result was declining operational efficiency that has gotten progressively worse.

As at 30th June 2020, the company had liabilities in excess of Kshs. 9.4 billion including unremitted deductions related to NSSF; NHIF; staff pensions; outstanding leave as well as very onerous tax liability amount to nearly Kshs 3.1 billion. The table below summarises its most significant liabilities.

[1] Part of the land was given to churches, the county government for market development (Konyango) and for a public school (Muhoroni Factory Primary School)

Table 11: Chemelil Sugar Factory

	Amount (KSh million)	Comments
Accrued Debt (Public)		
NSSF	29,943,300	Unremitted payroll deductions
NHIF	30,323,490	Unremitted payroll deductions
Pensions	198,753,812	Unremitted payroll deductions
Provision for outstanding leave days	100,082,131	Provision not clearly stated
Tax Liability	3,098,901,814	Unremitted payroll deductions
Other Payroll liabilities (staff Sacco deductions, union dues, etc)	38,651,807.45	Unremitted payroll deductions
Loan from Kenya Commercial Bank	16,596,243.80	Used to finance operations
Deferred income	108,107,730.00	Customers' prepayments for sugar and molasses
Dividends payable	9,699,787.00	
Outstanding law-suits	622,029,504.00	164 cases, each with a value of not less than KSh 1 million
Outstanding accounts payable (includes monies owed to farmers)	879,752,803.00	
GoK Loans	40,000,000	Used to offset farmers debts
Other loans (Commodity Fund/Kenya Sugar Board loan)	3,528,613,830.74	Used for rehabilitation; payment of arrears, cane development etc.)
	8,701,456,253	

As the Table 12 below shows the financial and operational problems that Chemelil faces are reflected in its milling performance: its capacity utilization is poor; its TC/TS ratio low and it faces frequent shutdowns both because of unscheduled maintenance and for lack of cane. As the analysis below illustrates, these inefficiencies reflect actual loss of income to farmers.

Table 12: FACTORY PERFORMANCE OF CHEMELIL SUGAR COMPANY LTD; 2011 - 2020

I T E M	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Rated Capacity (TCH)	140	140	140	140	140	125	125	125	125	125
Actual (TCH)	108.7	100.2	106.2	116.85	98.22	108.97	96.47	105.24	94.13	103.32
Cane Crushed (MT)	344,880	294,088	279,050	466,670	341,999	264,675	195,993	228,052	43,487	346,841
Sugar Made (MT)	21,501	15,977	22,797	37,709	23,144	16,509	12,309	15,089	2,606	25,362
Cane/Sugar (TC/TS)	16.04	18.41	12.24	12.38	14.78	16.03	15.92	15.11	16.69	13.68
Stoppage Due to No Cane (Hrs)	942.00	929.00	198.00	1255.00	358	1,610	2,243	4,455	1,094	1,821
Stoppage Due to Factory (Hrs)	3,329.00	2,532.00	2,112.00	729.00	673	1,516	1,582	1,306	478	2,600
Capacity Utilization %	28.53	29.50	38.30	41.27	39.17	40.88	25.1	36.41	16.43	37.77

Chemelil has the lowest TC/TS ratio of all the state-owned sugar mills. The highest ratio was achieved over the decade under consideration was 12.24:1 in 2013, and in five of the years between 2011 and 2020 Chemelil's TC/TS averaged 15:1. The lowest was in 2012 when it fell to 18.41:1. So the factory for over a decade had average TC/TS of 15.1:1. At that average, Chemelil could only produce 193,003 MT of sugar from the 2,805,735 MT of cane that it crushed in those ten years. If the factory had crushed that sugar cane at the industry average TC/TS of 10:1 it would have produced 280,574 MT of sugar. This means that Chemelil's milling inefficiency cost farmers a total loss of 87,571 MT of sugar.

Of concern is the fact that the TC/TS ratio of Chemelil was in permanent flux throughout the decade. It rose from a low of 18.41:1 in 2012 to 12.24:1 in 2013 and 12.38:1 in 2014 but fell back to nearly 15:1 the next year and then to 16:1 in 2017. In 2019 it was 16.69:1 before rising to 13.68:1 This suggests that there is a serious problem with equipment: the performance of the machinery is very variable, indicating frequent breakdown and poor maintenance. The Task Force confirmed that this is the case during a site visit during hearings in the Nyando area.

As the Table above shows, Chemelil has a long history of inefficiency characterised by constant down-time arising from unprogrammed maintenance and lack of cane. During the period under review, the factory's capacity utilisation ranged from a very low rate of 16.43% in 2019 to a modest 41.27% in 2014, Chemelil's best. In other words, Chemelil capacity utilisation averaged only 33.3% throughout the period from 2011-2020.

In 2018 Chemelil had 4,455 hours of downtime for lack of cane. Given an optimum of 6600 operating hours a year, a shutdown of 4,455 hours implies that Chemelil lost 67.5% of its optimum time for operations in 2018 just for lack of cane. On average, over the decade, downtime arising from lack of cane was 1,491 hours whilst down-time arising from unscheduled maintenance came to 1,686 hours. The combined total of 3,177 hours represents a 48% loss of optimum annual operating time.

Risks and sources of Leakages

Legal risk: The company is facing a total of 164 court cases (those involving at least 1 million shillings in subject matter) with an estimated value of 622,029,504 shillings.

Financial risk: With its considerable indebtedness; delays in meeting financial obligations; a negative working capital of more than 2.5 billion as at 30th June 2018 Chemelil is technically insolvent and its operations depend on public bail-out and indulgence and comfort from its creditors. Moreover, the audit figures collected in the ad hoc audit did not represent all monies owed by the company. This means that there is doubt about the overall accuracy of its financial statements.

Operational weaknesses: Internal controls in Chemelil were described as weak and these is characterized by poor record keeping as well as high staff turnover.

4.2.3 Miwani Sugar Company

Miwani was founded as Miwani Sugar Mills in 1922 with a capacity of 800 TCD. Later, it expanded its rated capacity to 2400 TCD. By the 1980s the company had ran into financial difficulties and became insolvent in 1988. It went into receivership but the receivers- Coopers and Lybrand- were unable to sell the company or its assets. In April 1990 the government purchased the MSM's land and assets for kshs 354 million and incorporated a new company, Miwani Sugar Company (1989) Limited. The factory was intended to produce industrial sugar. To incentivize this, the government promised that for the period up to June 30, 1992 industrial sugar would only be allowed into the country if imported by Miwani Sugar Company. The government went into partnership with Vanessa who took up 51% of the issued ordinary share capital whilst the government took up the balance of 49%. Additional incentives included significant injection of public funds into the revival of the Factory. According to the Report of the Task Force appointed to look into the problems affecting the effective operation of Miwani Sugar Company (1989) Limited as of 31st of March 1995 the government committed a total of Ksh 386,580,000.00.

The government also offered a series of fiscal incentives: waiver of customs, duties and other levies on all equipment imported by the company. Moreover, the government also contracted that monies invested by the company in the rehabilitation of premises and Machinery would be tax-deductible. It also undertook to allow the Company to carry forward any tax losses arising during an initial period of five years on the understanding that these loses could be offset against future taxable income. Unfortunately, these fiscal incentives never worked. First, waivers and concessions on imported equipment were terminated by the 1992 finance act partly in response to the fiscal stress that public finances were then experiencing. Second, the company never having made profit the issue of taxation became mute. Third, the Task Force found no evidence that tax deductibility was ever implemented.

The company never got enough cash to run operations and such revenues as it received came principally from sale of sugar cane from its substantial land holdings. As the receivers noted the government investment in the Miwani factory may have been principally for socio-economic reasons.

The genesis of current land problem: After the share purchase agreement was executed a number of important legal obligations were never fully implemented. Most important of this was the fact that as of September 10, 1996- the date the Task Force completed its Report- the title to the land constituting the nucleus estate though physically held by the management of Miwani Sugar Company had in fact not been legally transferred from the name Miwani Sugar Mills, the original company, apparently because the external lenders to MSM had not released their charges over the land. The external lenders argued that the government had not discharged its obligations under article 5[2] of the agreement of 9th April 1990.

Table 13: Summary of monies owed by Miwani Sugar Factory

Owed to the Revenue authority and Deductions (statutory and non-statutory)	
1. Tax	17,338,445,157.00
2. PAYE, as at 30/6/2020	258,743.00
3. NSSF	256,940.00
4. NHIF	98,450.00
5. SACCO deductions	29,439.00
6. COTU and KUSPW	43,390.00
7. Legal and Audit Fees	2,022,000.00
Owed to Government, Government Agencies and Parastatals	
1. National Cereals and Produce Board	7,122,000.00
2. Kenya Sugar Development Levy	112,557,340.00

[2] Article 5 related to some of the core obligations of the government including: a) consents, licences and approvals; b) indemnities; c) legal opinion from AG showing that government had power to issue promissory notes; enter into an agreement of this sort and make payments under such an agreement; d) duly executed promissory notes; and e) undertaking by the central bank to pay the receivers.

3. Ministry of Agriculture (principal plus interest as at 30/6/2020)	45,000,070.00
4. The National Treasury (A/C 1; 2 and 3)	1,970,450,206.00
5. Agriculture and Food Authority	1,679,871,885.00
Other Loans and Liabilities	
1. Cane maintenance	577,680.00
2. Trust Bank (in Liquidation) Overdraft	60,112,524.61
3. KCB overdraft	42,281.00
4. Pre-liquidation salary arrears	57,288,361.00

Notes:

1. The audit also notes that machinery and equipment with a book value of Ksh 1,063,299,438 is not only obsolete and fully depreciated but also uneconomical to repair.
2. The factory also had cane and agricultural produce valued at 177,419,305.00.
3. Miwani Sugar Company is owed 177,488,713.26 by Muhoroni Sugar Company which is also in Receivership.

Risks and sources of Leakages

Legal risk: In abeyance is criminal case number 429 of 2010 on Miwani Nucleus Estate LR No. 7545/3 registered in the name of Crossley Holdings. High Court Case no. HCCC 225 of 1993 and Civil Appeal no. 261 0f 2008 held that the transfer of LR 7545/3 to Crossley Holdings Ltd by the Registrar of Titles was null and void but the entries registered in favour of Crossley Holding on the title were never cancelled. This land was bought by the Government of Kenya through the Ministry of Finance from the Receiver/Managers of Miwani Sugar Company (1989) Limited which is a state owned corporation fully owned by the government.

Financial risk: Overdue tax obligations to Kenya Revenue Authority, National Cereals and Produce Board and Kenya Sugar Development levy. As of the 20th January 2016 the outstanding tax liability stood at 17,338,445,157.00 whilst the amount owed to the Kenya Sugar Development Levy is – according to AFA- 121,057,793.00. The company also owes National Cereals and Produce board 7,122,000 for supply of DAP and Urea fertilizers. The 2020 audit established that for the pre-receivership period, Miwani owed the staff salary arrears of KSh 57,288,361.00

Operational weaknesses: weak internal controls in the pre-receivership period leading to loss of working capital; financial misappropriation; poor record-keeping and over-reliance on one revenue stream, raw cane sales only.

4.2 4 South Nyanza Sugar Company

The factory was built in 1979 with an initial crushing capacity of 2,200 TCD, which has since been expanded to 3,000 TCD.

While the factory has achieved acceptable operational efficiencies over the years, it has faced major challenges in terms of cane supply and inadequate steam capacity. Over the last five years, capacity utilization has only been 61%. Underutilization of company assets and historical poor management practices have resulted in the present company's weak financial position.

As at 30th June 2005, the company's debts stood at KSh 3.38 billion compared to the fixed assets of KSh 2.3 billion. Out of the total debt, KSh 1.53 billion is owed to Kenya Government, KSh 1.18 billion is owed to the Sugar Development Fund (SDF), while the balance is owed to other creditors. Out of amount owed to SDF, KSh 664 million are levy arrears and accrued interest.

It is recommended that the amount owed to the Government (Kshs.1.53 billion) and KSh 664 million owed to the SDF be converted to equity or written off. The company will service the balance of KSh 518 million. This financial restructuring will make company attractive to new investors and ready for privatisation.

According to the 2020 Ministry Ad Hoc Audit of the South Nyanza Sugar Company as at 30th of June 2020:

1. The company owed a total of KSh 1,129, 625, 989.00 to cane farmers; suppliers and agricultural contractors.
2. It had a total of 4186 cases totalling to KSh 813,237,105.00 the bulk of which related to breach of cane supply contracts and compensation claims arising from injuries suffered during cane harvesting.
3. Loans owed to government and overseas development agencies amounted to Ksh 818,968,527.49 but this was not backed by a confirmation letter from the National Treasury;
4. The company owed private loans to Kenya Commercial Bank, the Co-operative Bank of Kenya and the Commodities Fund amounting to KSh 1,406,647,342.00. The loan from Co-operative bank is secured by a charge on the 7407.32-acre nucleus farm at Sare Awendo.
5. In addition to these financial obligations, the Company is carrying significant payroll arrears as follows:
    a. Ksh 886,033,982.00 as unpaid salaries; un-remitted pension contributions and unpaid terminal benefits;
    b. Ksh 1,981,602, 354.00 in unpaid taxes and other statutory deductions;
    c. Ksh 54,890,577.00 in unpaid land rates owed to the county government;
    d. Ksh 289,518,546.00 in unremitted pay-roll deductions to SACCOs; unions and insurance companies.

Sony's poor financial performance is reflected in its milling inefficiencies especially in the period from 2016 to 2020. It recorded reasonably strong performance in terms of capacity utilisation and conversion rates in the early years. For example, in 2011, SONY Sugar had – at the rate of 9.53:1 the best TC/TS of all state-owned sugar mills. This was better than the industry average and the Company's TC/TS rate was comparable to the industry average over the 5-year period from 2011 to 2015. From 2017 Sony's TC/TS ratio started to deteriorate: it was 11.39:1 in 2016; 12.37:1 in 2017; 12.49:1 in 2018; an extremely low 18.78:1 in 2019 and a still quite low rate of 15.35:1 in 2020. The deteriorating TC/TS has evolved in tandem with deteriorating factory efficiency and increasing downtime whether for the lack of cane or because of unscheduled maintenance. Sony's average down-time for lack of cane over the period was 1343 hours whereas downtime from unscheduled maintenance was 1603 hours. The combined downtime of 2952 hours implies a loss of 44.7% of optimum annual operating time, the lowest among the state-owned mills. However, its capacity utilisation – averaging 49.2% for the decade - was not particularly strong. But the average is misleading: SONY's average capacity utilisation for the years 2011 to 2016 was 60.4%. This declined to an average of 32.3% for the period 2017 to 2020, which is nearly half the average for the previous period.

Table 14: FACTORY PERFORMANCE OF SOUTH NYANZA SUGAR COMPANY LTD; 2011 -2020

I T E M	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Rated Capacity (TCH)	135	135	135	135	135	125	125	125	125	125
Actual (TCH)	118.61	113.65	116.42	118.34	120.22	122.71	123.32	123.96	114.66	109.89
Cane Crushed (MT)	689,389	536,838	680,077	633,182	651,560	698,774	435,046	508,623	233,722	220,550
Sugar Made (MT)	72,346	52,470	66,994	60,387	60,044	61,341	35,162	40,726	12,448	14,373
Cane/Sugar (TC/TS)	9.53	10.23	10.15	10.49	10.85	11.39	12.37	12.49	18.78	15.35
Stoppage Due to No Cane (Hrs)	1,224	1,406	965	693	140	287	2,542	958	3254	1,960
Stoppage Due to Factory (Hrs)	1,154	893	1,142	1,005	1,022	1,599	1,608	2,592	2,757	2,322
Capacity Utilization %	59.71	54.42	60.35	56.63	66.73	64.44	41.17	46.69	21.34	20.07

Risks and Sources of Leakage.

Legal risk: According to the auditors, SONY loses many of the cases filed against it. The auditors attribute this to a) low staffing levels in the company's legal department which undermines effective representation in court and b) lack of proper court documentation.

One sub-set of legal risks has to do with poor contract management. As the auditors noted the issuing of contract books to farmers and suppliers is un-coordinated which exposes 'the sugar mill to fictitious and fraudulent claims."

Financial risk: As the unfulfilled obligations above indicate, the company has not honoured many of its financial obligations as they fall due. Moreover, the auditors found that the company makes payment to farmers and suppliers on a cash basis which the auditors fear leads to a situation where people are paid before cane delivery, a fact that could account for the large debts owed to suppliers and farmers. Failing to make prompt payment is also related to legal risk because it spawns litigation for breach of contract and leads to penalties and fines.

Operational inefficiencies: Sony does not have proper plant maintenance plans which reduces operational inefficiencies arising from breakdowns. According to the Managing Director the company has "not undertaken any annual plant maintenance (APM) for nearly 5 years."[3] That fact, coupled with average deliveries of 150 MT per day against a daily processing capacity of 2000TCD has eroded profitability and increased operating costs.

4.2.5 Nzoia Sugar Company

Nzoia factory was commissioned in 1978 with an initial rated capacity of 2,000 TCD, which was later expanded to 3,000 TCD. It was designed and built by a French firm called Fives Cail Babcock (FCB). Its eventual poor performance arose from the significant commercial borrowing that its management used to finance the company's early expansion. In 1992 it embarked on a second phase of expansion with an intention of raising its TCD to 7000. But Nzoia's earlier borrowing plus its latest expansion left the company financially compromised. Poor financial performance spawned deep operational difficulties; poor factory performance; deployment of inappropriate technology; very high TC/TS ratio, all leading to increasing losses.

Other constraints crowded in: a bloated workforce and heavy indebtedness meant that Nzoia faced very high costs of production. As at 30th June 2020, the financial situation of the company as summarised in the Ad Hoc Audit Report is as set out in the Table 15 below:

Table 15: The Liabilities of Nzoia Sugar Company as at 30th June 2020

• The National Treasury	37,138,667,228
• Ministry of Agriculture	2,587,775,252
• Cane Transporters	58,786,303
• Trade Suppliers	728,710,913

[3] See MD's Letter of July 7, 2020 to Cabinet Secretary Agriculture on pending bills attached as Annex 1 to Ad Hoc audit Report on the Leasing of the Five (5) State Owned Sugar Mills, SONY Nyanza Sugar Mill, August 2020.

• Cess		30,983,150
• Due to Out-growers		438,977,305
• Rent to Nucleus (Ministry of Agriculture)		16,266,635
• Bungoma County Land Rates		81,710,093
• Outstanding statutory/payroll deductions		
	PAYE	1,027,578,980.39
	NSSF	26,473,782.38
	NHIF	20,430,750
	Pension arrears	370,681,833.45
	Domestic tax penalties	4,389,640,124.78
• Salary arrears		1,113,631,656.29
Grand total		42,109,578,980.39

The correlation between deteriorating financial and managerial performance with factory performance in terms of the efficiency of milling operations is particularly strong in Nzoia.

Table 16: FACTORY PERFORMANCE OF NZOIA SUGAR COMPANY LTD; 2011 – 2020

I T E M	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Rated Capacity (TCH)	125	125	125	125	125	125	125	125	125	125
Actual (TCH)	120.08	124.00	129.59	142.74	130.47	130.26	129.3	132.73	119.18043	133.23
Cane Crushed (MT)	635,920	727,921	762,491	707,302	699,907	829,093	441,114	393,118	185,844	424,598
Sugar Made (MT)	61,291	67,003	60,846	64,214	61,172	73,459	29,757	27,541	13,003	27,274
Cane/Sugar (TC/TS)	10.38	10.86	12.53	11.01	11.44	11.29	14.82	14.27	14.29	15.57
Stoppage Due To No Cane (Hrs)	136.00	189.00	551.00	409.00	449	764	3629	5067	1,733	765
Stoppage Due to Factory (Hrs)	1,071.00	899.00	1385.00	401.00	1,138	870	654	503	1,002	1,428
Capacity Utilization %	69.67	75.78	70.11	82.69	70.92	73.63	44.66	36.19	33.31	42.12

Between 2011 and 2016, Nzoia crushed, on average, a total of 727,106 MT of cane every year. In the subsequent years, 2017 to 2020, this average dropped to 361,169 MT per year, a 101 per cent drop. The averages conceal very erratic production and efficiency problems. For example, in 2016 Nzoia crushed 829,093 MT of cane to produce 73,459 MT of sugar, giving a TC/TS ratio of 11.29, a respectable rate given the industry average of about 10. However, Nzoia had been more efficient in the earlier years: in 2011 it crushed 635,920 MT of cane to produce 61,291 MT of sugar yielding a TC/TS ratio of 10.38, matching of the industry average. Nzoia had nearly as good a performance in the next year, 2012. That year it crushed 727,721 MT of cane and produced 67,003 MT of sugar, yielding a TC/TS ratio of 10.86:1 In the years after 2017, the performance has been parlous: in 2017, the factory crushed 441,114 MT of cane to produce 29,757 MT of sugar at a conversion ratio of 14.82:1; in 2019 it crushed only 185,844 MT of cane to produce only 13, 003 MT of sugar giving a TC/TS ratio of 14.29:1. That dropped further in 2020. That year Nzoia crushed more than twice the cane it had crushed in 2019 - 424,598 MT in all-but its TC/TS ratio deteriorated to 15.57:1.

These numbers represent real financial losses to the farmers: if in 2020 Nzoia had achieved the TC/TS ratio it had recorded in 2011, it would have made 40,903 MT of sugar, not the 27,274 MT it produced. That means that the deterioration in the factory's TC/TS ratio to 15.57:1 represents a loss to the farmers' cane worth 13,729 MT of sugar. The same holds for 2017. Again, using the 2011 TC/TS rate of 10.38 rather than the 2017 TC/TS rate of 14.72, it is clear that the farmer lost value equal to 12,740 MT of sugar. At its 2011 conversion ratio, Nzoia should have produced 42,497 MT of sugar in 2017, not the 29,757 MT it actually did. Expressed in macro terms, in the 10 years under consideration, Nzoia crushed 5,807,308 million MT of cane from which it extracted 485,560 MT of sugar. Had this crushing yielded sugar at the industry average ratio of 10:1, Nzoia should have produced 580,731 MT of sugar. That means that by having their cane crushed at Nzoia farmers lost value equal to 95,171 MT of sugar over the decade.

Of the four public mills reviewed for the decade 2011-2020, Nzoia had the best average capacity utilisation numbers at 59.9%. Its total downtime for unscheduled maintenance and lack of cane was 2,304 hours and the lowest among the state-owned mills, representing a loss of 34.9% of available optimum time for annual operations. These relatively good numbers are accounted for by the Nzoia's strong performance from 2011 to 2017 during which time, its average capacity utilisation stood at 73.8%. Over the next four years, that is, from 2017 to 2020, Nzoia's average capacity utilisation fell to 39.1%

Risks and sources of Leakage

Legal risk: Nzoia Sugar Company is facing 43 law suits with a subject matter value of Kshs. 171,161,934.15.

Financial risk: The company's financial position has eroded its working capital making it difficult for it to sustain its operations. Nzoia has also been a persistent defaulter on its debt commitments, attracting burdensome interests and penalties. Its current liabilities exceeded its current assets by Kshs. 44,683,068,000. In the audit year the company reported an operating loss of Kshs. 3,568,733,000.

Operational and managerial risks: The parlous financial condition of the factory has generated serious operational failures. There is, for instance, a plant valued at Ksh. 295,697,000 which was meant for the 1992 expansion programme that has been lying idle since it was acquired.

4.2.6 Other Case Studies

i) Homalime

Homalime key to productivity in sugar cane is the effective maintenance of the soil and of the crop. At Homalime, average yield over the last 54 years of monoculture is 105 tonnes/ha in 18 months, with ratoon numbers reaching as high as 13 but averaging 9 before replanting. They recently produced a crop in the 15th ratoon with a yield of 107 tonnes/ha in 18 months. Their preferred variety is Co 421. It is one of the very old varieties, susceptible to smut but gives them flexibility as it is not prone to early flowering, so does not lose quality at an early age.

Homalime has good well drained soils. They tend to be clay types but not as heavy as those found in much of the Nyando Sugar Belt. The maintenance of soil conditions is probably the most important reason why they can achieve and sustain the high yields.

Unique agronomic practices sustaining maximum yield and ratoons at Homalime

1. At harvest time they pile the cane in 2-3 tonne bundles and then these are removed from the field with tractor and with Bell trailers (as used in Mauritius in the 19 60s and 1970s) which winch the bundle onto the trailer. They avoid wherever possible allowing anything heavier into the field as well as the Bell loaders. Those 3 wheelers locking their wheels to turn do an enormous amount of damage to the cane stools.

2. Weather permitting, they subsoil after every harvest as well as spray herbicides using a boom sprayer and fertilise using a broadcaster. If the ground is excessively wet these last two operations are done by hand but this gives erratic application, so is less favoured.

3. They apply lime to the fields more than is absolutely necessary, so often they will have higher than ideal soil pH (up to 8, sometimes) but perhaps the product they are using is contributing more than just pH adjustment to the crop. They apply lime at a rate of 5 MT/ha after every 3rd harvest. Lime may be applied at higher levels in cases where water logging occurs. Cane appears to be very forgiving of high pH conditions.

4. They do not burn cane. They harvest green and the trash is windrowed in every third row. This means they can subsoil two rows and the third is left with rotting organic matter. At the next harvest, the windrow is moved down to the next line. They cannot afford to lose this organic matter to the skies and is one of the secrets to their success.

5. In addition, they spread slurry from biogas digesters onto the crop, at least 10 MT per ha but more if they can.

6. They do not leave the land bare. They grow a leguminous crop such as Crotalaria (Sun Hemp) and then plough this back into the soil. This fixes nitrogen into the system and improves structure and fertility

7. They are piloting to intercrop the Crotolaria in standing cane when regrowth of ratoons commences. This is then cut back or sprayed so it dies in situ, thus adding organic matter back to the soil.

8. After harvesting, they fill any spaces in the cane rows, either by splitting stools, if wet enough or when drier, by planting seed billets.

9. They rogue the smut infected plants. This is all done by hand but maintain plant population.

10. On their total acreage of 300 ha, by doing this continuously, they can get away with employing 3 people to do these two operations, which is still a lot cheaper than establishing a new crop.

11. Fertilizer application is also crucial. They apply the slurry or farmyard manure as soon after the crop is harvested as possible, depending on other field operations. Then 4 to 6 weeks after harvest, they apply 125 kg 17:17:17 per ha. followed 4 -6 weeks later by 250 — 375 kg nitrogen (2-3 x 50 kg bags) depending on the crop condition, usually ammonium sulphate or CAN, depending on what is available on the market. In the past they have also had to add muriate of potash and magnesium sulphate, when soil testing indicates a need.

12. Weed control is important. They currently use Krismat once or twice and then glyphosate will be used once or twice round the borders of the more mature cane to reduce encroachment of weeds from firebreaks.

Other areas under research and development at Homalime

1. Vermiculture

2. Use of cane juice to make wine

3. Use of smoke for making pesticides and acaricides

ii) Kibos Sugar and Allied Industries

Established in 2009, Kibos Sugar is located on the outskirts of Kisumu city. As per 2020 the area under cane was 7,393 hectares with the nucleus covering 635ha. Average yield within the Kibos area is around 68.82 MT per ha. In terms of efficiency, Kibos has a TC/TS ratio of 11.7:1 against an industry average of 11.96:1 The mill has a daily crushing capacity of 3500 MT.

One noticeable fact about the Kibos Sugar Company is its strategic motives towards diversification. The key diversification products include ethanol and paper. Plans are underway to start producing fertilizer (between March and June 2022) and biodegradable plastics. In addition, a state of the art sugar refinery plant has been set up, ready to start operation.

Despite a number of positives, Kibos Sugar Company has faced a number of challenges. A recent plant breakdown resulted in massive losses leading to thousands of tons of cane being diverted to neighbouring millers. The company has since mitigated against this by installing new back up machinery within its production lines. Unfavorable tax regimes have also adversely affected some of the product portfolios making the products less competitive within the regional market. For instance, a comparative tariff regime for ethanol indicates Tanzania is 0%, Kenya is 216% while Uganda is 60%. This tax structure significantly puts the Kibos ethanol at a big disadvantage.

The state of the art sugar refinery plant put up by the Kibos has been lying idle for more than five years in what is said to be due to taxation and regulatory issues. Poor infrastructure especially dilapidated road

networks have continued to negatively impact on the company's business. The company has had to frequently divert huge resources towards road rehabilitation.

Research is a key component and precursor in the development of any industry. Inadequate funding and general poor coordination among government research institutions and other agencies has resulted in slow and poor development of improved cane varieties consequently affecting cane yields. In a nut shell, innovation within the sugar industry has been very low.

The porosity especially of the Kenya Uganda border has allowed in cheap imports which has in turn negatively affected the business and profitability of the local millers.

The repealed Sugar Act 2001 introduced the requirement for cane purchase on the basis of farm gate prices to control grower losses in 2002. In the absence of a farm-gate cane purchase infrastructure the industry has adopted a global sugar industry time-tested innovation by setting up cane buying centres near growers. The first buying centre that was set up by Kibos sugar company at Awasi market, about 60 kilometers from Kibos sugar mill, raised concerns as this was deemed to be an infringement of Chemelil/Muhoroni cane supply zone. The deregulation of cane zones has since allowed the setting up of 25 buying Centres with the capacity to trans-load and bulk small cane loads to facilitate both high payload and faster road transport.

Multiple trans-loading stations at various buying Centres signify intense competition for cane by millers which should be beneficial to the farmers. However, complaints have also emerged that middlemen and mill employees have exploited loopholes in the cane supply chain to fleece farmers through cane brokerage.

There have been allegations of lack of transparency in cane weight determination, weighbridge inaccessibility, manipulation of cane deliveries, rigging of weighbridges and weight displays/recorders and lack of direct communication with growers. However, visits at 2 trans-loading sites in Kipsitet and Awasi respectively operated by WEKSCOL and KSAIL have revealed that weighbridge operation are largely semi-automated and preloaded with grower details prior to cane delivery, weighing and trans-loading. Traditional, low capacity tractor units' transport cane from infield and more difficult terrain to the Trans- loading stations at farmers' cost from where the high capacity trucks haul higher payloads through highways to the factories at the millers' cost. It has emerged that cane trans-loading stations are used to improve grower accessibility and efficiency in logistics by reducing grower cane supply risks and exposure, cane loses and transport costs.

Table 17: MILLER TRANSLOADING SITE

No.	MILLER	TRANSLOADING SITE	REMARKS
1	KIBOS	Awasi	Operational
2		Chemase	
3		Mberere	
4		Shikunga	
5		Nambale	
6		Kipsitet	
7		Koru	
8	MUMIAS	Kisoko	Operational
9		Bumula	
10		Navakholo	
11	WEST KENYA	Magut	Operational
12		Misikhu	
13		Kimwani	
14		Naitiri	
15		Miwani	
16		Chemelil	
17		Kipsitet	
18		Khalaba	
19		Siele	
20	NZOIA	Makhese	Operational
21		Mayanja	
22	BUTALI	Chekalini	Operational
23		Turbo	
24	TRANSMARA	Ochodororo	Not Operational
25		Moticho	
26		Oyani	
27		Shankoe	Operational
28		Kipakheri	
29		Ereko	
30		Osinoni	
31		Osupuko	
32	SUKARI	Oyani	Operational
33		Nyaonto	
34		Opapo	
35	SONYSUGAR	Opapo	Not Operational
Total		**35**	

iii) Chemelil Sugar Company

Background information

Chemelil Sugar Company Ltd is one of the Public Owned Sugar Companies in Kenya. Situated in Nyando Sugar belt, the Company plays a significant role in supporting livelihoods of over 150 households.

Objective of the Company

The objective of the company is to: -

i. Produce high quality brown sugar as part of a national strategy for achieving self-sufficiency in sugar requirement in the country; and
ii. Contribute towards the integrated national economic development within western Kenya.

Company Strategies

The Company strategies include: -

i. Cane Development;
ii. Factory Capacity Optimization;
iii. Capacity Building; and
iv. Financial Management.

The vision of the Company is to be a Company of Choice in the manufacture of sugar and related products while the mission is to produce and market quality sugar and co-products in the most efficient and competitive manner that exceeds expectations of all stakeholders.

Field Visit – Findings and Lessons learnt/Challenges

Advantages

i. The Company is located in a rich Nyando Sugar Belt where it can easily draw raw materials i.e., sugarcane;
ii. Availability of sugarcane at the factory ready for processing;

Challenges

i. **Insolvency** - The Company is insolvent i.e.; its assets are insufficient to discharge its debts and liabilities. The debt spans for a number of years.
ii. **Determination of Ex-Factory Price**: The company operate unprofitably, is unable to recover costs of sugar production thereby selling the sugar produced at a loss. This may be attributed to collusive behavior in the determination of Ex-Factory Price
iii. **Outdated technology** – The Company has a sugar milling technology which is said to be the 1960's. The taskforce took note of the constant breakage of the company which limits its ability to mill in reliable and predictable manner. The factory has low efficiency in milling and therefore a lot of sugar is left in Molasses.
iv. **Bloated staff** – The Company has more staff than is required. This has a negative implication on the wages and salaries which is paid to the staff. The taskforce also took note of the misconception that sugar companies were started with the objective of creating employment and not profit maximization. The TF noted that some workers who are union members come from the Nyando Sugar Belt and are also sugarcane farmers
v. **Farmer's debt** – The Company does not pay sugarcane farmers efficiently. It was noted that farmers have been delivering sugarcane while payment takes a longer period than desired. This has created disincentive among farmers in terms of production of sugarcane.

Recommendations

i. There is need to write-off the debt of the Company and lease or privatize it;
ii. Install the state of Art Technology to allow for improved efficiency at the Company;
iii. Rationalize the number of staff at the company to enhance labour productivity.

iv. Develop a quicker mechanism of ensuring farmers are paid their dues as soon as they deliver the sugarcane.

v. Review the pricing policy to ensure profitably

iv) Muhoroni Multipurpose Cooperative Union

The members of the Union raised the following challenges:

1. Concerned about frequent cane fires
2. Poor road infrastructure a major challenge
3. Concern over low farm productivity and and low quality sugarcane
4. Delay in harvesting of cane has negatively affected the farmers
5. Concern over unpredictable weather patterns
6. The group does secure financial support and inputs from the millers for its members
7. Decried corruption within the industry e.g chuth ber
8. Sugar importation is athreat to the local market
9. High costs of production is a major challenge
10. Encourages intercropping and diversification

Table 18: A case study of cost of sugar cane production by Multipurpose Cooperative Union

Operation	Cost Per Hectare (KSh)	Remarks
Ploughing	12,000	
Re-ploughing	12,000	
Furrowing	5,000	
Seed cane – 10 tons	40,000	
Labor for planting	8,000	
Weeding (4 weeding X 8,000)	32,000	
Chemicals – for killing weeds	6,000	
Fertilizers (5 X 3,000)	15,000	
Labor – Chemical/Fertilizer Application	10,000	
Contingencies	10,000	
TOTAL	150,000	

- Expected minimum yield - 60 MT
- Farm cost per ton - KSh 2,500
- Harvesting costs per ton - KSh 170
- Transport cost per ton - KSh 653
- Cane entry cost at the mill - KSh 3,323

v) Cost of importing a ton of sugar from Zambia

Table 19: A case study of cost of importing a ton of sugar from Zambia

Item	Cost USD/ton	Cumulative cost USD/ton
CIF cost	-	625.0
VAT @16%, IDF@3.5%, RDL@2%	134.3	759.3

Shipping line costs @325 USD per container of 25MT	13.0	772.3
Port charges @ 400 USD per container of 25MT	16.0	788.3
Transport to go down warehouse @ 15,000 KES per container (exchange rate of 110)	5.5	793.8
Agency fee @ 200 USD per container of 25MT	8.0	801.8
Offloading charges @ 4 USD per ton	4.0	805.8
Ex-warehouse cost at exchange rate of 110	-	USD 806 (KES 88,638)

vi) On-farm visits

Issues raised by sugarcane farmers

1. Late harvesting of sugarcane beyond the maturity age
2. Delayed payment to farmers
3. Spillage of sugarcane during transportation
4. Low prices per MT for sugarcane of 2,800 to 3,200 which is dictated by the miller
5. Sugar factories importing and branding sugar
6. Sugarcane farming can be profitable if farmers carry out some of the activities on the value chain
7. The miller transports sugarcane to the factory at a high rate (a case of transporting 2 trips of 10 tons each at a cost of 20,000 Kenya shillings was reported)
8. High farm labour cost which is provided for by the miller
9. Poor germination of the parent crop
10. High costs fertilizers (DAP ranging from 3,600 to 4,000 per 50kg bag)
11. Some farmers resorted to jaggeries due to failure of the sugar mills in harvesting sugarcane
12. Breached land lease agreements (usually the lease covers 6 years but is terminated mid-way)
13. Sugarcane is harvested but not collected by the miller leading to heavy losses by the farmers. Cases of sugarcane staying on the ground for upto 2 weeks was reported
14. Bribing the mills and loaders/transporters for them to collect sugarcane from the farmers
15. There is brokerage by mill employees where they buy sugarcane at Kshs 10,000 per tractor (15MT) and enter the same in the Mills records/register using dormant accounts. Some brokers take farmers cane on loan but never pays for it.
16. Poor agronomic practices (weeding is hardly done by the growers) due to lack of finances
17. Sugarcane land ploughed by the miller but subsequent planting of the fields not carried out. A case was given where 38 acres of land was ploughed by KISCOL in 2015 and only 5 acres were planted. KISCOL had proposed to lease the 38 acres at an equivalent of 10 acres.
18. There is no weight confirmation at the weighbridge by the farmers during cane deliveries to the factory
19. Wrong designation of zones by transporters who take advantage to overcharge the growers by applying higher rates
20. High cost of land preparation at Kshs 4,000 per acre for the disc plough and Kshs 7,000 per acre for the moldboard
21. Frequent cane fires especially during the dry season (the cane is not accepted by the millers – West Kenya and Kibos Sugar and Allied Industries)
22. The current cane payment does not consider the by-products from sugarcane
23. Lack of extension services from the County Governments
24. There were cases of corruption from the field supervisors that were reported by the farmers interviewed

4.3 Economics of sugarcane production and processing in Kenya (value chain rs

4.3 1 The sugar value chain

There are five major steps in the sugar industry value chain: cane production, harvesting/transportation, sugar production/importation, distribution/trading/retailing and consumption as indicated in Figure 1.

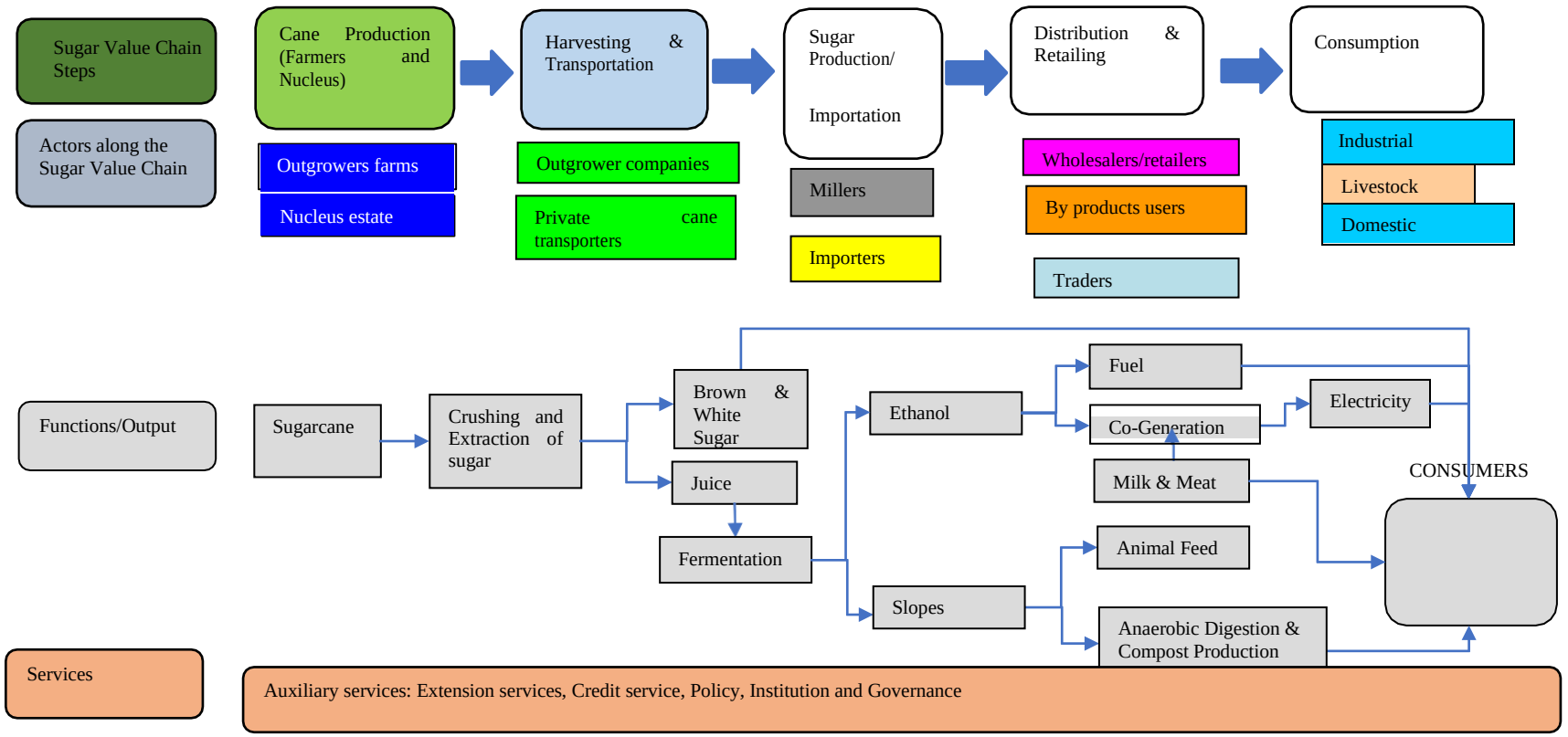


Figure 4 Sugar Industry Value Chain

4.3.2 Cane production, harvesting and transportation

Production of cane in Kenya is concentrated in Western and Rift Valley parts of the country with little production in the coastal region. Sugarcane production in Kenya is predominantly small-scale. Over 97% of the Kenya's sugarcane is produced by out-growers an own about 0.8 hectares of land. The remaining 3% is contributed by nucleus farms owned by the sugar milling companies (Year book 2021). Cane production takes place in the following zones/belts: South Nyanza, Nyando, Western, Rift Valley and Coastal belts/zones. These zones vary in agro-ecological characteristics which influence the maturity period of cane. Sugarcane matures within a period of 18-22 months in Transmara and Western Kenya and 10-12 months along the Coast

Cane production faces numerous challenges among them; - the costs of inputs, seed cane, labor, fertilizers, cost of land preparations, harvesting and inter-cultivation. Cane transportation constitutes the major cost component (22%) while seed cane constitutes 20% of the costs that go into production, harvesting and transportation-Figure 5. Poor harvest methods and transportation systems lead to faster deterioration of crop within 24–48 hours, while weak infrastructure results in high transportation costs.

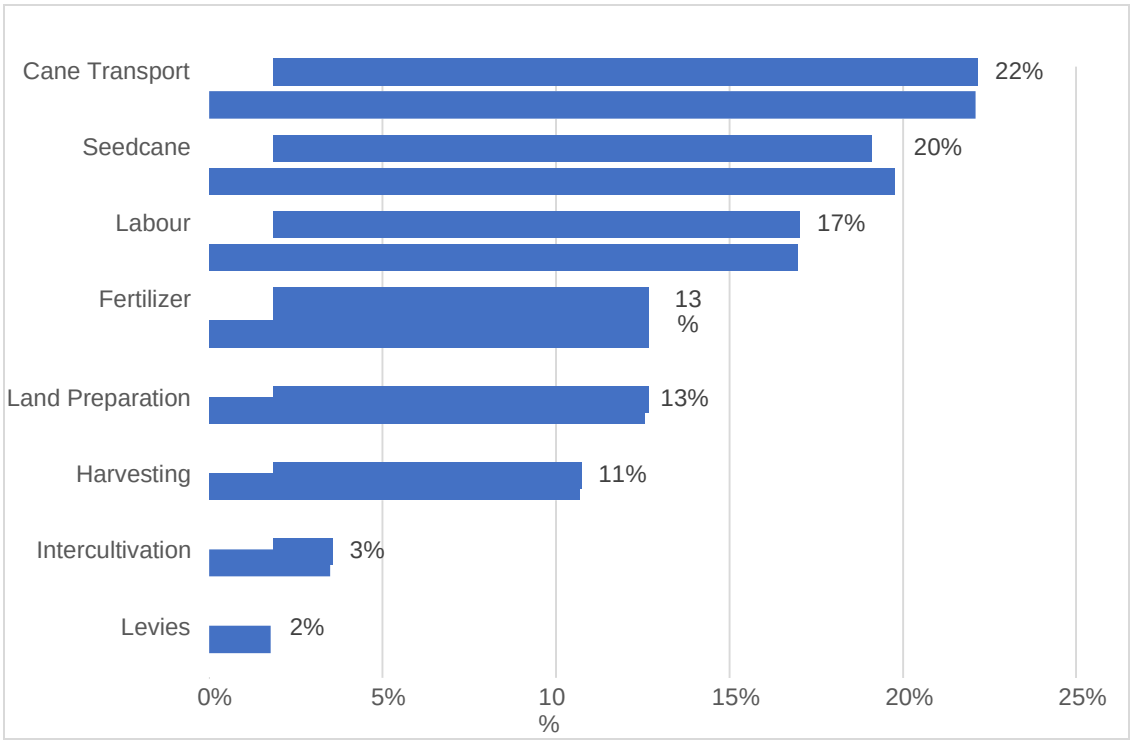


Figure 5: Cost structure at production level (Farmers)

Land Preparation

The land preparation components are; surveying, land leveling, ploughing, harrowing, furrowing, ripping, sub-soiling, drainage, tinning, hilling-up. These activities vary from zone to zone depending on the soil condition.

Seed cane Development and Planting

Seed cane supply is still a problem due to inadequacy of material, both in terms of quality and quantity. Seed cane treatment has not been embraced by the sugar industry due to lack of policy on seed cane production. Under the Common Fund for Commodities (CFC) East African variety development programme, there is a component for establishment of seed cane treatment plants in all the factory zones. This is expected to give a major impetus to the supply of clean, vigorous seed to farmers. As recommended farmers are expected to plant seed cane from nursery derived from the factory nucleus estates or other private seed developers. Seed cane treatment is a vital element in the production costs reduction measures as it will mitigate disease and other pest control costs.

Cane Maintenance

The elements of Cane maintenance are fertilizer and herbicide application, weeding (manual, mechanical and chemical), trash-lining, inter-row cultivation, gapping, smut rouging, erection of fire breaks, stubble shaving, chopping, supervision and pest control.

Cane Harvesting and Transportation

Most factories use contracted labour in cane harvesting and the policy is for low cutting as good practice and cost reduction measure as stable shaving is avoided. The available data shows that cane transportation accounts for 22% but can be as low as 16% and as high as 40% depending on the distance from the mill to the farm. There are various sizes of trucks used to transport cane ranging from single basket (8T), double basket (16T) to Lorries (7-15T) type of transport units. Most private millers Kibos Sugar and Allied Industries Limited, West Kenya, Butali and Transmara also introduced 30-40 MT Lorries ferrying cane from their trans-loading stations or elsewhere where there is cane.

4.3.3 Cane processing (production sugar and co-products)

The sugar milling industry consists of five (5) public companies-Sony, Chemilil, Muhoroni, Mumias, , and Nzoia, and several private companies. Millers include sugar factories and jaggery plants which purchase raw materials (cane) from farmers for processing into white and brown sugars as well as jiggery. The milling companies are responsible for harvesting and processing of sugarcane to sugar, molasses, and bagasse and associated products.

Across the milling companies, the processing of sugarcane to sugar ranges between 8Mt and 17MT to 1Mt (one ton of sugar). The conversion ratio is influenced by among others the efficiency of the machines and the quality of cane in terms of sugar index. Compared to the public millers, private millers have a relatively better conversion ratio of sugarcane to sugar.

Cost structure at milling level

The cost structure of milling sugarcane to sugar has several components. The average cost of processing 1MT of sugarcane to sugar is Kshs. 80,000. This cost constitutes a hoard of elements among others labour, bagging, storage and handling, cost of credit, cane weighing costs and administration. The most important input that goes into the processing of sugarcane into sugar are labour costs (human resource) that takes up to 25% of the total costs-Figure 6.

*team & power generation, bagasse handling, laboratory cost, filter cake handling, marketing, environment, Boiler water treatment).

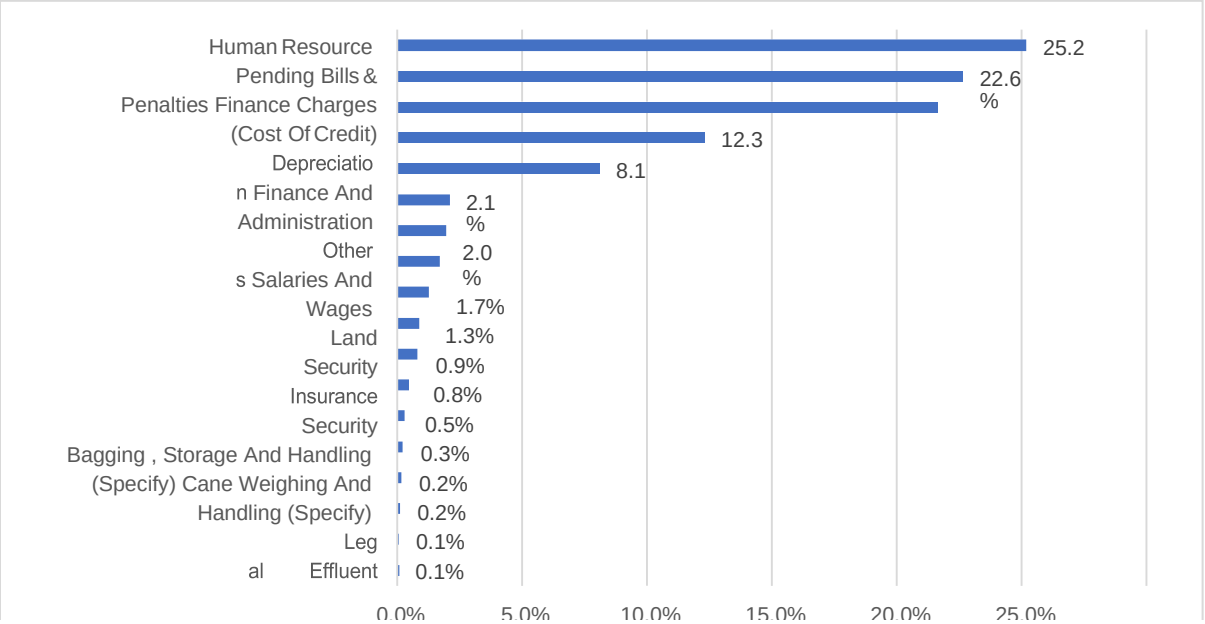


Figure 6: Cost structure at milling level (public mills)

Sugar Processing Costs-Case of Nzoia Sugar Company.

In the FY 2019/20, Nzoia Sugar Company processed 193,288 MT. The company converted cane to sugar at a ratio of 17:1, leading to an output of 11,623 MT of sugar. The cost of processing a MT of cane was estimated to KES 144,446. This cost excluded several cost elements including agriculture services costs, finance and administration and personal services as well as finance charges.

A tone of sugar was sold for KES 73,558 far below the cost of processing a MT of sugar. Although the sugar sold was less by 2,000 MT compared to what was processed, the revenue translated into a loss estimated to KES 2 billion and KES 3 billion before and after factoring in financial charges respectively.

Table 20: COST PER TON OF SUGAR PRODUCED

Tons of cane milled	Ton	193,288	-
Tons of canes /tons of sugar ratio	Ratio	16.99	-
Tons of sugar produced	Ton	11,623.94	-
Tons of sugar bagged	Ton	11,623.94	-
COST OF CANE			
Nucleus Estate	Kshs.	All	110,386,762.00
OVERHEADS			
Nucleus estate	Kshs.	All	123,260,252.00
Other, Specify	-	-	-
Subtotal 37.0			
FACTORY COST			
Direct cost of manufacturing	Kshs.	All	1,679,037,785
Cost per Ton at factory level	Kshs.	All	144,446
Agricultural service	Kshs.	All	318,512,736
Finance and administration	Kshs.	All	421,874,302
Personnel services	Kshs.	All	100,017,283
Operating costs without finance charges	Kshs.	All	2,514,303,761
Finance charges	Kshs.	All	886,350,911
Operating costs with finance charges	Kshs.	All	3,400,654,672
Other, Specify	Kshs.	All	933,316,581
COST OF PRODUCTION (Sugar)			
Cost per Ton without finance charges (kshs)	Kshs.	All	216,321
Cost per ton with finance charges (kshs)	Kshs.	All	292,554
Tons of sugar sold	Kshs.	All	9,266
Net sugar sales (after duty and levy)	Kshs.	All	681,581,438
Average selling price per Ton (kshs)	Kshs.	All	73,558
AVERAGE PROFIT /LOSS ON MANUFACTURE			
Without finance (kshs)	Kshs.	All	-2,126,441,301
With finance (kshs)	Kshs.	All	-3,012,792,212
At factory level (kshs)	Kshs.	All	-747,964,032

4.3.4 Sugar supply and consumption trends

The national supply of sugar consists of domestic production and imports. Kenya's production of sugar has almost doubled from 350 thousand MT in 1980s to an estimated 600 thousand MT in 2020. Despite the increase in production, consumption of sugar in the country has grown faster than the production. The average annual production increase is estimated to be 2% while the growth in consumption is estimated to average 3% annually (Figure 7). Growth in sugar consumption is driven by factors among others population and per capita income growth.

Kenya imports almost 40% of the total amount of sugar consumption. Although controlled, the amount of imported sugar has been on gradual increase and with growing national demand, imported sugar is likely to surpass the slow growing national production to bridge the gap between production and consumption.

Apparently, with the increasing population, economic growth and urbanization which are likely to drive the consumption, the gap between production and consumption will widen. Evidently, if the production of sugarcane does not increase at the same rate, then imports of sugar will grow faster to

bridge the consumption gap. This implies that in near future, the Kenya may be importing more sugar than the domestic production (Figure 7)

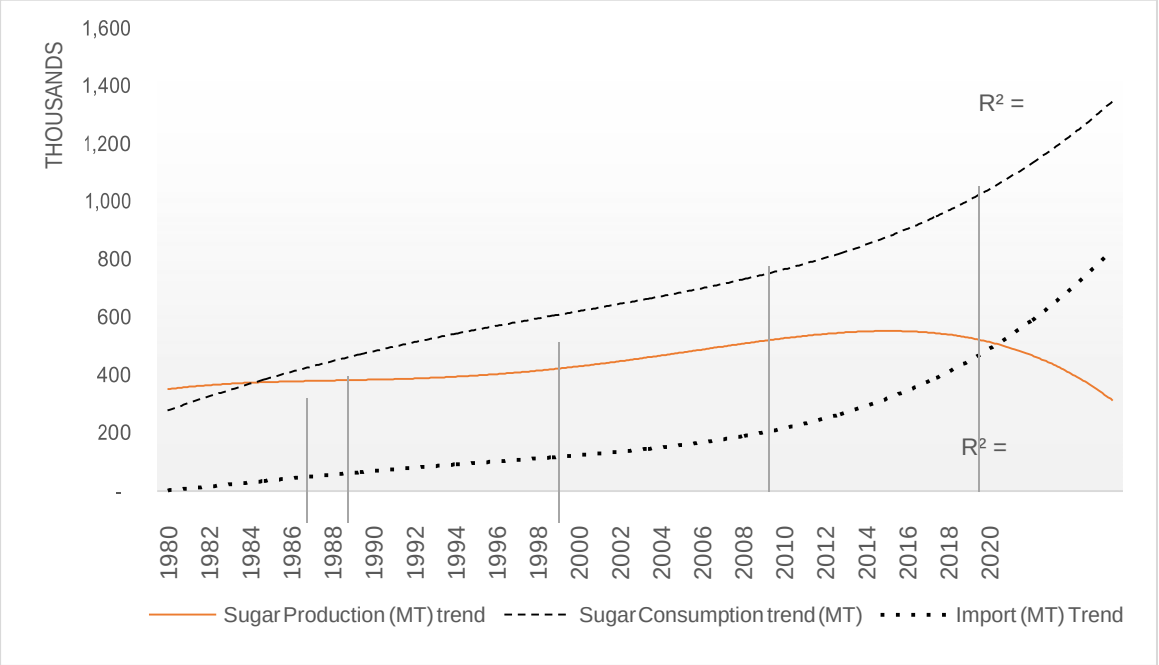


Figure 7: Production and consumption trends of Sugar

Until liberalization of Kenya's economy, the retail prices of refined sugar and imported sugar were at par pointing to the controlled regime of imports. Since liberalization in early 90's the the gap between these two prices widened (Figure 8). Compared to the cost of ex-factory prices, imported sugar is far cheaper and competitive. While on one hand the imported sugar serves to rationalize the domestic price of sugar and offer consumers an affordable price, the relatively cheap imports of sugar dis-incentivizes the sugarcane production and processing.

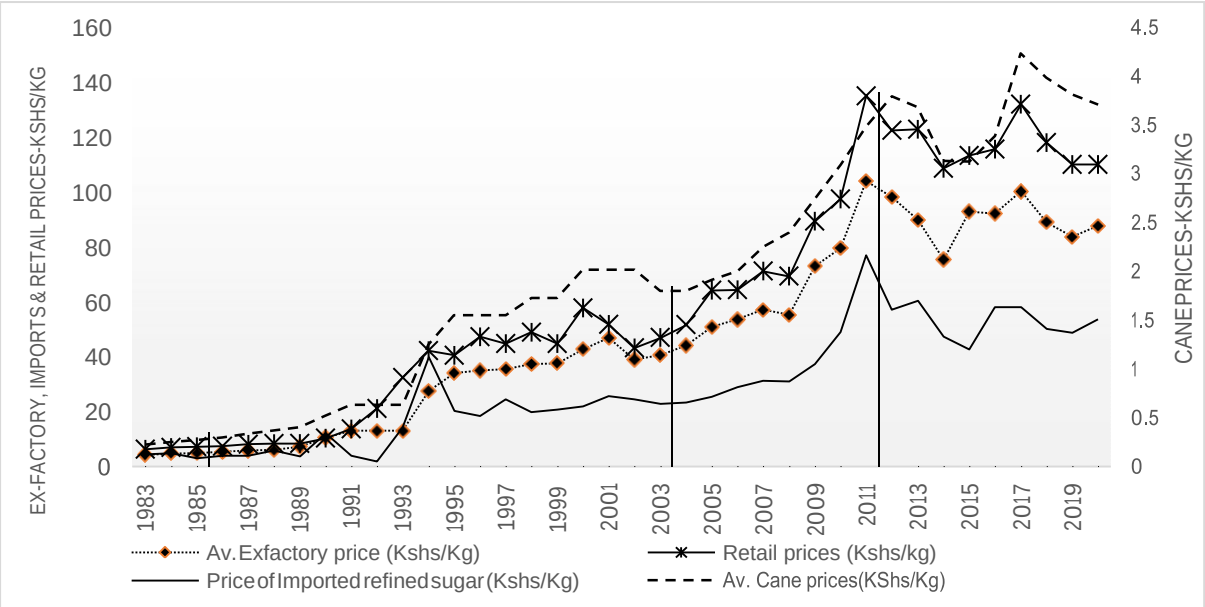


Figure 8: Trend of retail prices and import price of sugar

Sugar Consumption Patterns

The classification of sugar and substitutes constitutes a number of products. Table sugar (brown sugar) is the widely consumed by households across the country and accounts for 92% of the sugar household expenditures (Table 21). This implies that almost in every household, sugar is a common household item that constitutes their diets.

Table 21: Household consumption pattern of sugar and sugar related products

Variable	Obs	Household expenditure on sugar & Sugar products	Std. Err.	[95% Conf. Interval]	
Sugarcane	20,447	4.1%	0.001	0.040	0.043
Sugar	20,447	92.7%	0.001	0.925	0.930
Icing Sugar	20,447	0.0%	0.000	0.000	0.000
Jaggery (sukari Guru)	20,447	0.2%	0.000	0.001	0.002
Jam	20,447	0.3%	0.000	0.003	0.004
Marmalade	20,447	0.0%	0.000	0.000	0.000
Honey	20,447	1.3%	0.001	0.012	0.015
Chocolate	20,447	0.3%	0.000	0.002	0.003
Sweets	20,447	1.0%	0.000	0.010	0.011
Chewing Gum	20,447	0.0%	0.000	0.000	0.000
Others	20,447	0.0%	0.000	0.000	0.000

Using the Kenya National Bureau of Statistics (KNBS) household Budget survey data (KIHBS 2015/16), the per capita annual sugar consumption was estimated to be 22 Kgs.

Applying the per capita consumption and national adult equivalent population, the national demand translates to a national demand of 1.22 million MT of sugar annually and excludes the white industrial sugar-**Table 22**. The estimated demand for sugar is far above the domestic consumption captured as actual

Table 22: Per-capita sugar demand and National Demand 2020

National Sugar Demand	
000’ Population Kenya (WB 2016	49,051
Per Capita Sugar consumption (KGs)-National	22
National Consumption-000' MT (Pop Kenya* Per Capita Sugar Consumption)-2016	**1,097.3**
Est. National Consumption-000' MT (Pop Kenya* Per Capita Sugar Consumption)-2020	**1,221.6**

Across the counties, evidence shows that counties in the northeastern part of the country have the highest per capita consumption of sugar. These counties include Mandera (45), Garissa (49) and Wajir (61). Other counties include Isiolo 35 and Marsabit 36 kilograms per capita-**Figure 9**.

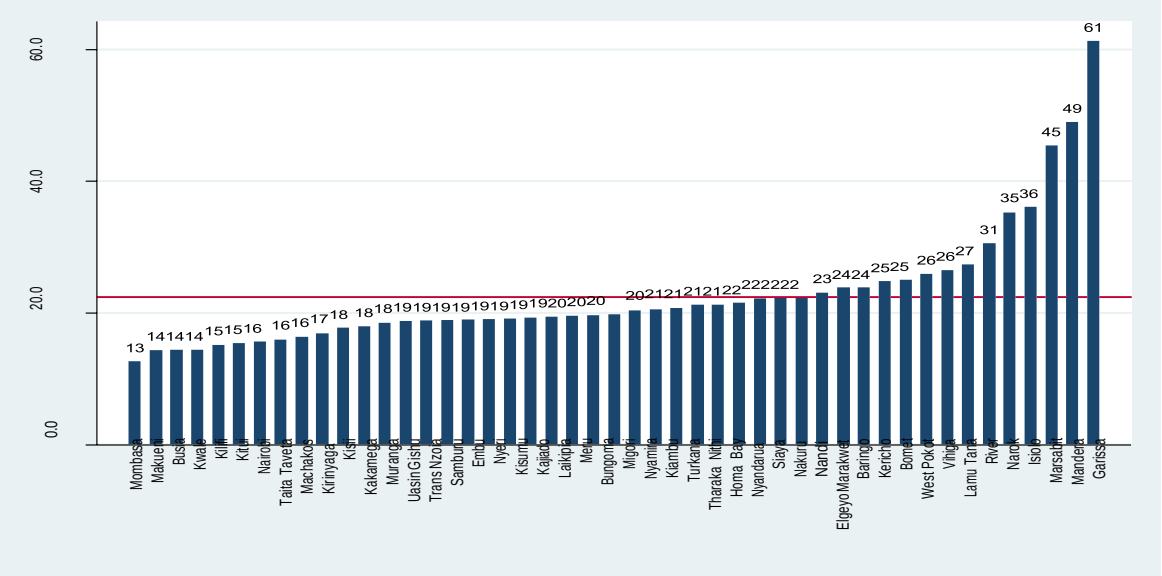


Figure 9: Annual per capita sugar consumption by County

Sugar Demand and Projections through 2030

The demand for table sugar in Kenya has been underestimated constraining imports of sugar and thereby, relatively shoving up the consumer prices. Alternatively, the underestimation of the deficit has indirect given room for importing sugar illegally. Understanding of the future demand trends permits formulation of interventions towards production and marketing of sugar and sugar products (SSPs). In order to understand the future trends of domestic demand for SSPs, a simplified analysis of projecting the country's demand for sugar through 2030 was adopted.[4]

[4] $Future\ market\ Potential = \left[\frac{Q_j}{Adult\ Eqv_i} * P_i\right](1 + P_r)^n\left(1 + Y_r * E_y\right)^n$. Where $\frac{Q_j}{Adult\ Eqv_i} * P_i$ is the annual sugar consumption quantity (per capita quantity* total population) at base year (2016); P_r=rate of population growth; Y_r annual rate of per capita income growth; E_y=income elasticity of sugar demand.

The base year is adjustable to any year of choice, however, we choose 2016 as the base year because it is the one used by the Kenya National Bureau of Statistics to calculate real inflation rates. Sugar demand is income inelastic (0.894) and as well price inelastic (0.946) which renders it a non- candidate for taxation in any progressive tax regime[5]. For instance, it is expected that absolute values of elasticity of sugar decrease with increase in per capita income (increases in wealth lead to increased demand for sugar). The estimated demand for table sugar is 1.22 million MT in 2020 and this is likely to grow to 1.47 million MT by 2030, a 21% increase by 2035 (Figure 10) given the population and economic growth. Deeper analysis show that as per capita income increases, sugar consumption increases.

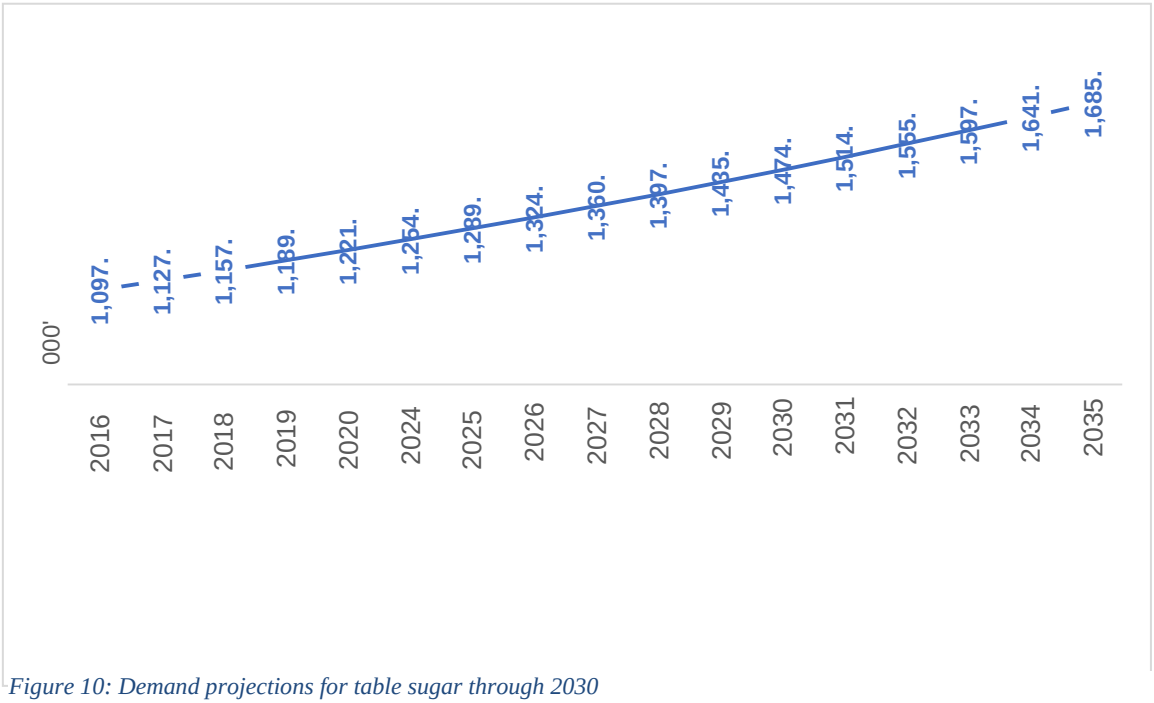


Figure 10: Demand projections for table sugar through 2030

4.3.5 Profitability of sugarcane farming and complementary enterprises

The profitability of sugarcane farming in Kenya is influenced by a number of factors among them input costs, the price of cane, and the quantity of harvest. Cane grows into the first crop and then yields into ratoons. Due to the cost of operations and management that are borne by the millers as they support the out grower farmers, the revenue accrued from the yields from the plant crop is used to meet the cost of production and the farmer yields very little net revenue from the first crop. For the period of 18 months when seed cane is planted to the time of harvest, there are small or no revenue gains. As such, the initial benefits of the farmers come in the first ratoon after 16 months of the first harvest. In most cases, the farmer harvests on average 3 ratoons with some cases reaching 16 ratoons. The number of ratoons is influenced by the level of management and the variety of cane.

[5] Musyoka et al., 2015. Food consumption patterns and distributional welfare impact of import tariff reduction on cereals in Kenya. *African Journal of Agricultural and Resource Economics* Volume 9 Number 3 pages 183-199

An assessment of the net revenue from the first crop and the available ratoons from several public companies and privately managed cane farms reveals that farmers gain very little or are even put in debt in the first crop and these debts are repaid from the ratoon crop. Although the data available is for the Western Kenya region, such cases of debt traps were common in the Coastal belt during the discussions with the Task Force.

From the ratoon yields, the first ratoon from the out growers aligned to the public millers gained very little. Compared to the poverty line (monthly household expenditure KSh 3,252), cane farmers earn a monthly revenue just close to the poverty line with revenue for out-grower farmers in Western Kenya and Butali falling at or below the poverty line (***Figure 11).*** This revenue is only realized from the first ratoon and the revenue goes below the poverty line in the second ratoon. Compared to the farmers allied to the public mills, those allied to the private millers gain relatively high in the first with a peak at the second ratoon. Net revenue drops below poverty line in the third ratoon for the private.

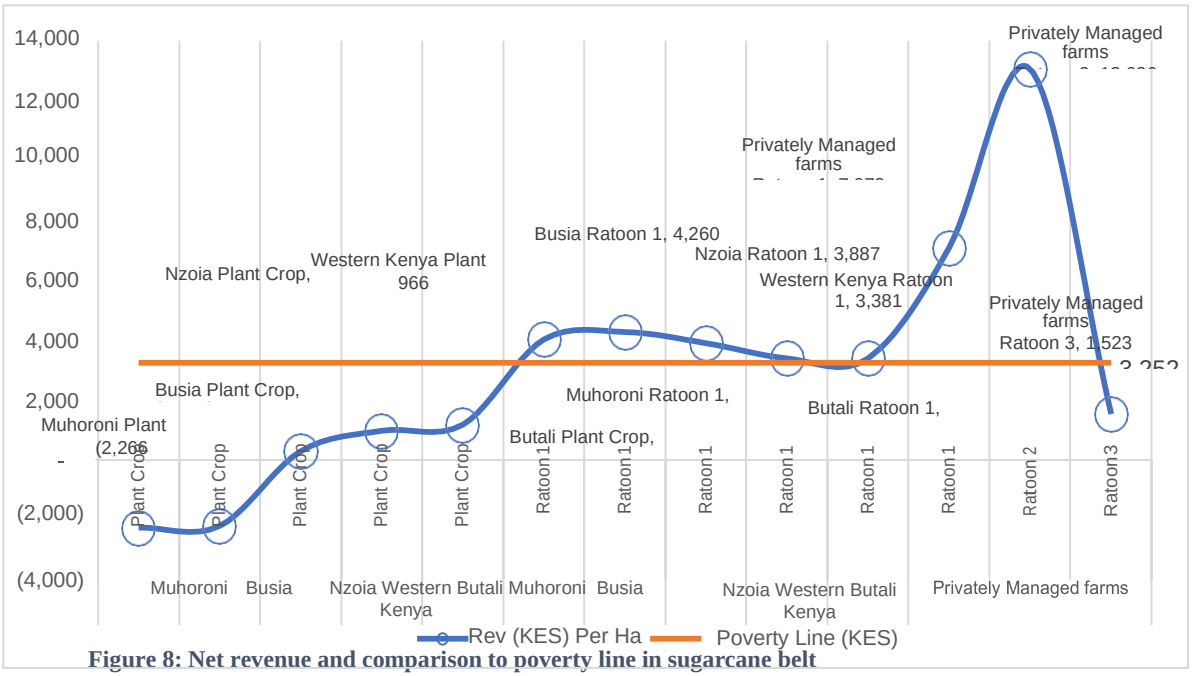


Figure 8: Net revenue and comparison to poverty line in sugarcane belt

Figure 11: Net Revenue and Comparison to Poverty line in sugarcane belt

Complementary Enterprises to Sugarcane farming

Net revenues from sugarcane farming do not compare well with other crop and livestock enterprises across the country. A comparison of gross margins per acre reveals that gross margins from sugar cane fall far below the margins from other enterprises. Sugarcane farmer generate an estimated KES 1,531 per acre (Figure 12) . The close comparative enterprise, bananas and maize generate more than twice the net revenue of sugar. Notably, one dairy cow would generate higher margins than an acre of sugar within a month.

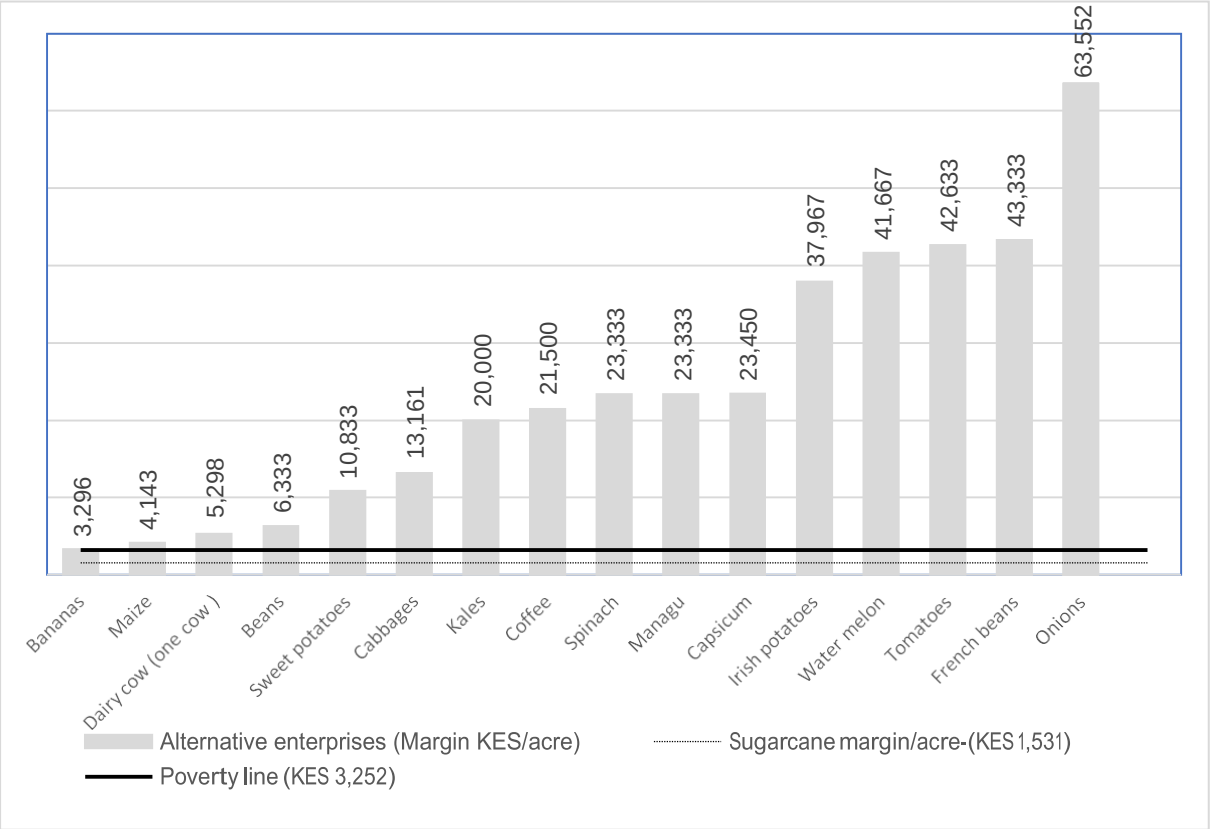


Figure 12 Gross margin comparison of sugarcane farming with alternative enterprises

4.3.6 A Review of sugarcane pricing approaches

In sugarcane producing countries, prices of sugarcane are determined either through a revenue sharing model or a fixed model. Of 22 countries that produce cane, 6 countries which account for 40% of global sugar production use fixed price regimes and include India, China, Egypt, Ethiopia, Morocco and Pakistan. In the rest including United States of America (USA), which use the revenue share regime, the share to the sugarcane growers range between 50% and 70%.

While the merits of fixed price regimes include ease of administration, the demerits are numerous and seemingly outweigh the merits. Demerits of the fixed price regime include;

- No link to the price of sugar and that they can be highly politicized and consequently producers and millers do not share the risk
- Burdening the millers when the price of sugar goes down reducing the margins since they have to pay a fixed price for cane- this is a disincentive to miller investment

The merits of the revenue sharing regime include;

- Ensuring that cane prices and millers margins are linked to sugar prices and in some cases to prices for ethanol and molasses.
- Incentivizing for technical improvement for both growers and millers due to enhanced premiums for higher sugar content.
- Providing clearer signals for producer response

The demerits to revenue sharing regime include the challenge of administration and that the complex negotiations may result in disagreements and decision impasse. The widely used formula for revenue sharing considers several elements among them the sucrose,, brix and fibre content in the cane.[6]

4.3.11.1 Current cane pricing formula

The Kenya simplified sugarcane pricing formula came to effect in 2021. The formula considers the sugar net price, a share to the sugarcane growers of the revenue from millers and the conversion factor of sugarcane to refined sugar-TC/TS.

$$PC = \frac{SF*FSR}{TC/TS}$$

where

- PC =price of cane
- SF -net sugar price calculated as ($SF + 0.16SF = Ex - factory\ price\ of\ sugar$ or simplified to $SF = \frac{Ex-factory\ price}{1.16}$),
- FSR – the farmers' sharing ration at 50%
- TC/TS- tonnes of cane used to produce a tonne of sugar is set at 10, being the industry average.

An evaluation of from the short time of evaluation revealed that the formula

- Fails to confer poverty alleviating benefits to sugarcane growers;
- Even though has parameters which are "negotiated" for example farmer share, the constant TC/TS factor continues to reward processing inefficiencies at milling level;
- The process through which the NET price of sugar is arrived at (Ex-factory Price) is very gray and seemingly not driven by supply and demand forces. Yet, the formula applied to that the ***Cost of Cane is simply Half of the Millers Revenue***. Millers revenue is directly linked to the Ex-factory price;
- Does not incorporate other products-for example molasses and ethanol, and
- Does not take up inflation from international price trends-even though most of the imports that influence domestic prices originate from the COMESA region for which there are import duty waivers.

4.3.11.2 The Proposed AFA Revenue Sharing Formula

$$Psugarcane = \frac{Pol\%*K*R*FSR*Psugar}{1+E\%} + bp\%$$

where:

- $\boldsymbol{Psugarcane}$ price of sugarcane
- $\boldsymbol{Pol}\%$ cane is a measure of the sucrose content of cane
- $\boldsymbol{K}$ is the expected mill extraction
- $\boldsymbol{R}$ is the expected boiling house recovery
- $\boldsymbol{FSR}$ Farmers share is a fixed part of the net sugar Cane price as set by the Sugar Cane Pricing Committee (SCPC)
- $\boldsymbol{E}\%$ is the proportion of extraneous matter delivered as cane
- $\boldsymbol{bp}\%$ Percentage of the value of the by-products as fixed by SCPC
- $\boldsymbol{Psugar}$ Monthly average net price of sugar after deducting taxes and levies

---

[6] $Pc = Ps * 0.009 * (CCS - 4) + constant$

- Where Pc and Ps are price of cane and price of sugar, respectively

CCS = 3/2P (1 – (F+5)/100) – ½ Bx (1 – (F+3)/100,

$$CCs = \frac{3}{2}P\left(\frac{(1-F+5)}{100}\right) - 1/2Bx(\frac{(1-F+3)}{100})$$

Where;

P = % pol in first expressed juice,
Bx = % brix in first expressed juice, and
F = % fibre in cane

The CCS is a measure of the sucrose that is commercially obtainable from cane. Sometimes, it is determined in accordance with the methodology specified in the grower's Cane Supply Agreement which varies slightly from region to region.

This pricing formula is proposed and not yet tested and implemented. Further, the incorporation of the proportion of by-products is still nascent and the manner in which they are to be incorporated still remains gray. Often, molasses, bagasse and ethanol have been included in the price sharing formulas. Ethanol is only included in Brazil and Colombia. Using industry average parameters, the proposed formula was explored

Table 23: Sugar milling parameters in Kenya

Parameter	Value
Pol % cane is a measure of the sucrose content of cane	0.11
R is the expected boiling house recovery	0.75
K is the expected mill extraction	0.91
Farmers share is a fixed part of the net sugar Cane price (SCPC)[7]	0.50
Monthly average net price of sugar after deducting taxes and levies	80,153
E % is the proportion of extraneous matter delivered as cane	0.04
Percentage of the value of the by-products as fixed by SCPC	XXX

4.3.11.1 Comparison of the Current and Proposed Pricing formula

A comparison of the estimated revenue shared price reveals that the actual cane prices and the estimated prices (from the formula) are comparable but have slight variations. The revenue share prices per ton of cane meet the unit cost of production. **While the cost of production is estimated to KSh 2,300 per ton (2.3 KSh/Kg), the price offered for a ton of sugarcane range between KSh 3,500 and 4,000** (Figure 13). Seemingly, the unit price of sugarcane meets the unit cost of production and as such, the revenue accrued to the farmers is higher than the cost of production. The proposed formula, although it excludes the by-products, offers a far lower price compared to the current formula. However, the resultant prices will increase if a factor of the by-products is incorporated.

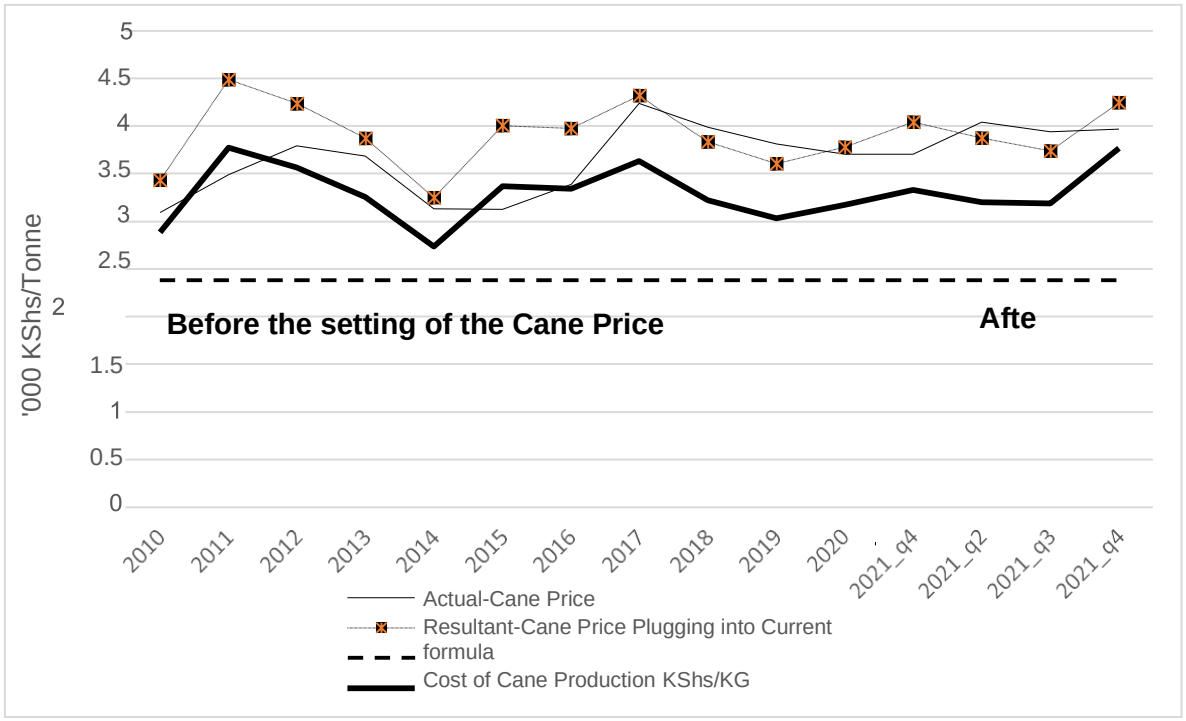


Figure 13: Sugarcane price trends before and after SCPC (Sugar Cane Pricing Committee)

[7] SCPC- Sugar Cane Pricing Committee

What price can compensate the investment level and welfare of farmers.

Despite the fact that the unit price of sugarcane is higher the unit cost of production, the net revenue accrued does not allow the sugarcane farmers to break off the poverty trap. Evidence shows that an average smallholder farmer produces an average of 45 MT per Ha[8]. The average ownership of cane may vary from one region to the other but generally, it is assumed to be 0.7Ha. This means that the total production in MT of cane is estimated at 31 MT for the first plant crop (PC). The productivity takes a slight decline in the ratoon and continue to decline in second and third ratoon. On a similar related trend, the cost of production for the ratoon crop decline to an estimated 30% of the Plant crop cost.

With the productivity kept close to 31 MT for operational purposes, the sugarcane farmer benefits from a revenue of KSh 82,278 from the 0.7Ha piece of cane farm after 34 months. If this farmer, who is depended on sugarcane as a source of livelihood, was to maintain his household above the poverty line, s/he would have "incurred a debt" of KSh 110,500 for which the benefit from the sugarcane does not compensate.

Table 24: Pricing parameters for sugarcane

Parameters for Pricing	Plant Crop	Ratoon Crop 1
Margins/acre	1,531	
Margin per/Ha	3,782	
KShs Per 0.7Ha	2,647	
Productivity (output/HA)-PC (Ratoon?)	63	31.13
Farm Sizes (Ha)	0.7	0.7
Production/0.7Ha-PC (Ratoon?)	44	22
Cost of production per /Ha	**142,572**	
Price Per Tonne (average cane price-(2021)	3,913	3,913
Cost of Producing a Ton of cane (KSh)- (Ratoon costs= 3% of PC)	2,263	137.38
Margin (KSh) per Ton of Cane	1,650	3,775
Expected Returns from Ratoon crop (KSh) after 34 months		71,462
Basic HH expenditure as per the Poverty Line estimate (KSh)		3,250
Minimum Months to wait before return on investment on cane		34
Cumulative Expenditure based on Poverty line threshold		110,500

[8] Ambetsa, F.L *, Mwangi, S.C and Ndirangu, S.N, 2020. Technical efficiency and its determinants in sugarcane production among smallholder sugarcane farmers in Malava Sub-County, Kenya. *African Journal of Agricultural Research.*Vol. 15(3), pp. 351-360, March, 2020. DOI: 10.5897/AJAR2020.14703; Article Number: C1DC15E63166

To arrive at a price per MT that compensates the cost of investment and compensates the "incurred debt" to the sugarcane farmers, one simulates increases in prices to the point where the revenue from the margins made from sugarcane, exceed the cumulative basic household expenditure. The resultant price that intercepts or compensates the investment by farmers is estimated to be above KSh 5,800 per MT of sugarcane (Figure 14)

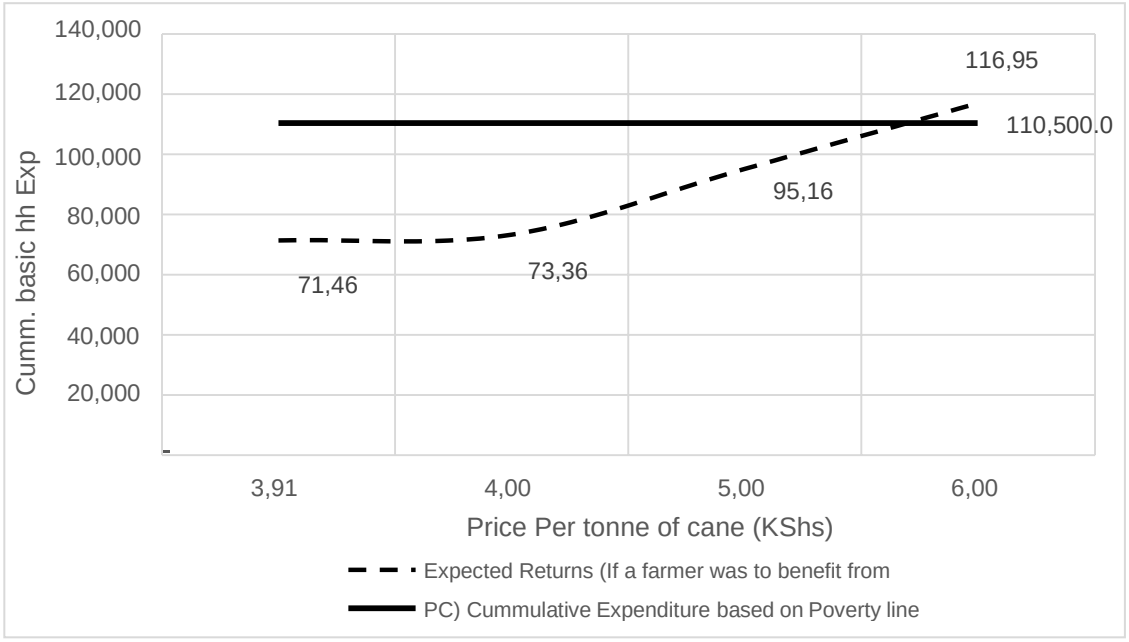


Figure 14: Comparing sugarcane price per ton and poverty level

How is this price achievable?

A simulation using the revenue sharing formula used in pricing cane in Kenya was conducted showing that:

1) Upward adjustments on the FSR (farmer Share). The share of offered to farmers range between 50% and 70%. Kenya offers the 50% which is the lowest proportion offered across the sugar producing countries. This is adjusted to 70%
2) The TC/TS is fixed at 10:1 this is adjusted to 9:1
3) A combination of FSR of 70% and a TC/TS of 9:1

These three scenarios are compared below -Figure 15. The realization is that to achieve a price for sugarcane that compensates the investment costs for farmers, the share to farmers need to be increased to 70% and the TC/TS needs to be improved to 9:1 in general.

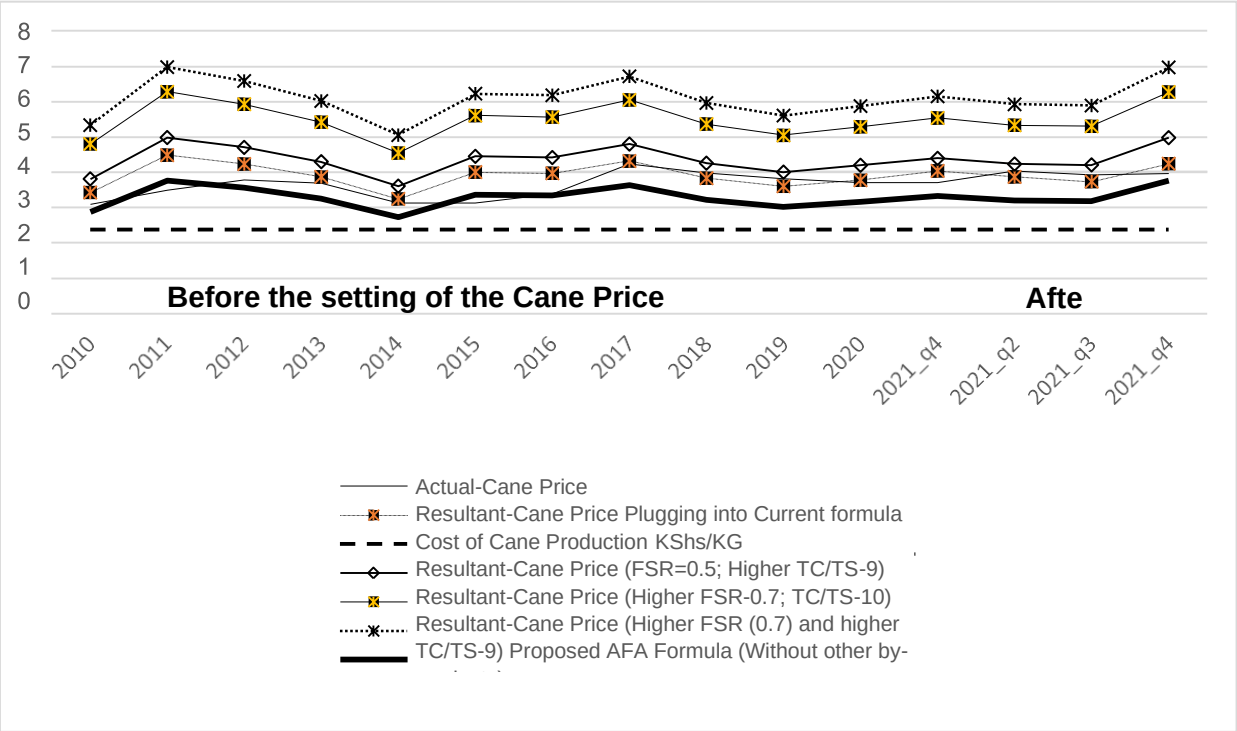


Figure 15: Simulation of cane prices

The formula has also to be beneficial to the millers. Evidence shows that the unit cost of producing a kilogram of sugar far surpasses the ex-factory price given. The difference implies that at any given time, a kilogram of sugar produced by the millers is compensated at a tune of KSh 53. (Average cost- KSh 144 per Kg, less average (2010-2021) ex-Factory price KSh 91 per Kg)-***Figure 16***. This implies that between 2010 and 2021, the government compensated millers to a tune of KSh 28 billion annually for domestic sugar processing.

The pricing situation in the milling industry is particularly gray with the process of price discovery for ex-factory sugar prices obscure. It is absurd how the ex-factory price is less the production cost by KSh 53 per kilogram of milled sugar by public milles. Yet the ex-factory price, is a key determining factor of the revenue for the millers and also in the farmers' revenue. The need to establish the ex-factory price determination process

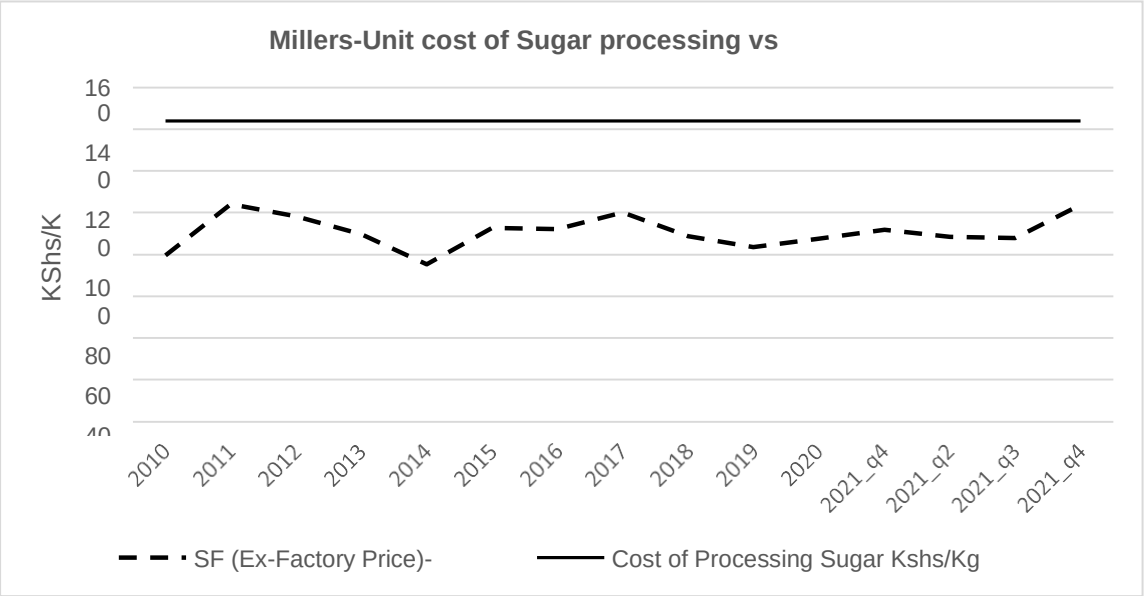


Figure 16: Ex-factory price of sugar and cost of processing (Ksh/Kg)

4.3.7 Analysis of institutional arrangements for marketing of sugar

Stake Holder Analysis

Sugar industry stakeholders are the players involved in every stage of sugar production right from the farm level where sugarcane is produced to factory level where milling and processing is done and the market level where the final sugar and its co-products are disposed for consumer use. The tertiary level stakeholders are the user of the co-products. The key stakeholders in the sugar industry are:

- Growers and communities in the sugar belt
- Service Providers such as sugarcane Transporters, Farmer Institutions (out-growers and societies), Financial Institutions, input suppliers, and Research Institutions
- Millers (White Mill Sugar & Jaggeries)
- Consumers and Traders
- Government (Central Government, Research Institutions, Local Authorities, AFA-Sugar Directorate)
- Investors
- Farmer advocacy organization (SUCAM and KESGA)
- Tertiary industry relying on molasses (Spectra international and ACFC)

It is important to note that the role of each stakeholder is clearly defined to reduce duplication of effort and ensure coordinated development. Figure 4 indicates the players at every level within the sugar stakeholders' value chain. The major stakeholders and their roles are described below:

Farmers/Growers

Farmers were recognized by the Kenya Sugar Act 2001 as growers who produce sugarcane or any other scheduled crop in Kenya for the manufacture of sugar. Therefore, farmers play the role of production of quality sugarcane with high sucrose content through adoption of recommended crop husbandry practices in the sugar industry.

Out-grower Institutions

These are registered under the Companies Act, Co-operatives and Societies Act, Trade Unions Act or any other organization registered under any other law that the annual general meeting may approve. Their roles include:

i. Provision of affordable farm inputs to farmers;
ii. Provision of credit to farmers;
iii. Carrying out advocacy for farmers; and
iv. Provision of land preparation and cane transportation services to farmers.

Kenya Sugar Research Institute (KSRI)

The Kenya Sugar Research Institute (under KALRO) is charged with the principal object of promoting research and investigating all problems related to sugar in Kenya. The activities being carried out by KSRI are to:

i. Liaise with stakeholders in setting research priorities;
ii. Carry out research on all aspects of the sugar industry with respect to sugarcane production, sugar processing and marketing;
iii. Undertake technology/information dissemination to stakeholders; and
iv. Undertake socioeconomic and policy studies in the sugar industry.

Agriculture and Food Authority – Sugar Directorate

This is the apex body for the industry established by the Kenya Crops Act 2013. The Sugar Directorate functions as a department in Agriculture and Food Authority, in the Ministry of Agriculture. It is vested with the following functions;

i. Regulate, develop and promote the sugar industry;
ii. Coordinate the activities of individuals and organizations within the sugar industry; and
iii. Facilitate the equitable access to the benefits and resources of the industry by all interested parties.

National Government

The National Government is also one of the main players in the industry and is recognized by the Kenya AFA Act 2013 and Crops Act 2013 as one of the interested parties and plays the following roles:

i. Policy formulation;
ii. Financing of the industry;
iii. Regulation of the industry;
iv. Representation of the industry in the International Fora;
v. Provision of suitable infrastructure;
vi. Promoting investment in the industry; and
vii. Providing conducive environment for development

Millers

Millers include sugar factories and jaggery plants which purchase raw materials (sugarcane) from farmers for processing into white & brown sugars as well as jaggery. The activities they undertake are listed below:

i. Collection of sugarcane from farmers;
ii. Prompt payment to farmers for sugarcane delivered;
iii. Production of other co-products of sugar such as co-generation, ethanol, paper, etc;
iv. Production of white and brown sugar.

5. STAKEHOLDER PERSPECTIVES ON KEY INDUSTRY CONCERNS

5.1 Sugarcane Growers

5.1.1 Resource use and technological innovation

i) High cost of leasing land for sugarcane cultivation with rates ranging from KSh 5,000 per hectare in the coastal region to KSh 50,000 per hectare in Nyando region. Harvests are limited to two ratoons, hence low net income to small-scale growers. Maximum profits are usually realized in the subsequent high number of ratoons.
ii) Low availability of improved quality seed cane and mill cane:
iii) Non-existent value addition and limited use of ICT at farm level
iv) Lack of real-time agro-ecological and soil testing services, except in Transmara where the Miller provides a digital GIS service
v) High cost of fertilizer: Prices escalated from KSh 2,500.00 to KSh 4,000.00 during the COVID 19 pandemic period.
vi) Lack of farm diversification and mixed farming among smallholder growers leading to high dependency on sugarcane as the dominant source of income
vii) Limited irrigated cane production despite the prospect of high yields that average 150 tons of cane per hectares. The irrigation project in Kwale is limited to part of the nucleus estate at the new Mill but is hardly operated
viii) Low use of locally available inputs such as farm yard manure for maintaining soil fertility and regular liming to control soil acidity

5.1.2 Extension, harvesting and transportation services

i) Poor extension services resulting in lack of information on Good Agronomic Practices (GAPs) hence low yields and income to farmers except in Transmara where yields average above 130 tons of cane per hectare
ii) Relatively high cost of land preparation for the 'black cotton' soils, especially in the Nyando sugar belt where mouldboard ploughing costs around KSh 20,000.00 per ha
iii) High cost of acquisition, operation and maintenance of agricultural machinery (used in land preparation, crop maintenance, harvesting, loading and transportation of sugarcane) resulting in increased cost of such agricultural services to the growers
iv) Failure or absence of out-grower schemes and institutions that provide common user services resulting in loss of economies of scale and high dependency on Millers
v) High producer losses, up to 10% of the expected value, occasioned by poor practices in harvesting, loading, delayed transportation, transit spillages and low factory availability
vi) Millers should use nucleus estates (NE) fields to demonstrate good agricultural practices. This is lacking as only Public owned mills have NE. Due to the poor financial status at these mills, cane husbandry in the NE is poor, resulting to low cane yield
vii) Most small scale cane growers lack knowledge on Good Agricultural Practices. Homalime Ltd, located in Koru, is a good farm for growers to learn from
viii) Absence of climate change mitigation services from the National and County governments
ix) Poor access to financial services: lack of affordable credit; delayed payment by public mills

5.1.3 Institutions, policy, regulation and governance

i) Restrictive and unfavorable cane farming contracts which encourage crop diversion and exploitative informal brokerage practices
ii) Oligopolistic practices of Millers in determining sugar and cane prices
iii) Proliferation of ineffective and weak predatory grower cooperative societies in Nyando that embrace exploitative practices (*Chuth Ber)* among agricultural service providers
iv) High and widely varying escalated costs of out-grower services resulting in unregulated farming contracts and abandoned crops
v) Sugar millers increasing costs on services they render to growers (e.g Transport) with every cane price increase. To sustain good cane prices, there is need to develop and enforce rules and laws that protects the farmer

vi) Lack of grower representation in weighing of cane supply, especially at trans-loading centers

vii) Weak farmer based institutions and lobby groups

5.1.4 Vulnerability to market risks

i) Lack of control over cane harvesting and supply plans
ii) Importation of poor-quality cane from Uganda by millers in Busia County at the expense of local farmers
iii) Frequent shut-down of mills occasioning heavy debts among large scale growers who are now forced to pawn land for settlement of miller debts. This is rampant in Kwale region.

5.1.5 Cross-cutting issues

i) Low engagement of youth and women in cane farming due to limited access to land, agricultural information and other agribusiness resources
ii) Absence of cane crop insurance against insurable losses such as fire, drought, pests, disease and climate change impacts
iii) Impact of population growth on land – land fragmentation

5.2 Sugarcane Harvesting and Transportation Contractors

5.2.1 Harvesting and Transportation Services

i) Poorly maintained fields increase cost of harvesting especially during unfavorable weather conditions; manual harvesting, though expensive, has less infield losses. Implementation of cane payment based on quality will be difficult unless field management practices are improved
ii) Cane spillage penalty is being charged to truck drivers but without proper documentation and evidence
iii) Transport rates are determined by the millers who in most cases own the fleet (farmers are not involved in the negotiation of these rates). Farmers end up bearing the excessively high rates of transport leading to low incomes
iv) High costs of sugarcane transportation arise from poorly maintained roads leading to increased cane spillage. Cane is transported using either tractors or trucks. Nyando sugar zone has a larger number of transporters, most of them using *Opengeles* which have small payloads (only about 6 tons). Only 30% of cane is delivered direct to the factory while 70% is transported to the trans- loading sites
v) Volatility in fuel prices leads to disruption in effective planning and most often the prices increase thus resulting to increased transport costs

5.2.2 Financial Arrangements

i) Double payments of services by farmers arising from malpractices such as *chuth ber* in the Nyando sugar belt (*musololo* in Western region) leads to reduced grower income as all these deductions are borne by the farmer
ii) Delayed payment to sugarcane harvesting and transportation contractors. The contractors are paid by the millers from the farmers' proceeds. Therefore, delayed payments to farmers impacts directly on the contractors
iii) Lack of harmonization of wages across the regions. For instance, in Western, a cane cutter used to be paid KSh 300/ton but this has since declined to KSh 170/ton
iv) Challenges in communicating the cane weights to the farmers which is addressed by sending an SMS alert to growers

5.2.3 Institutions, policy, regulation and governance

i) Poor harvesting coordination in the field, for example the transporters may be sent to the field before the cane harvesting is completed or to fields with underweight loads
ii) Some millers ferry cane from distant locations like Nyando region yet there is over mature (28 months) cane in their catchment. The motivation for this arrangement is not clear

iii) Farmers get to know their cane tonnage through the tractor/truck driver as they are not allowed at the weighbridge -
iv) Burnt cane is a menace in Nyando zone. Most cane fires occur in leased plots since leases are based on number of cane harvests and not time/months. The cane burning is mostly done by arsonists to fasten cane harvesting but this ends up affecting cane quality and harvesting schedules (the process of accepting burnt cane in the mills involves the police and cane quality testing)

5.3 Sugarcane Millers

5.3.1 Technological innovation and competitiveness

i) High cost of primary raw materials (sugarcane)
ii) Inadequate cane supply (quality is below 13% *pol*)
iii) Poor state of public mills due to lack of maintenance for long periods of time resulting in inefficient operations and low reliability leading to high sugar production costs,
iv) Obsolete processing technology
v) Low energy production capacity
vi) High national grid power costs
vii) High cost of spare parts
viii) Low milling capacities that do not support innovations in new early maturing cane varieties. Early maturing varieties need timely and good harvesting practices to avoid high losses in crop yields/sucrose which will determine cane supply quantities and grower prices
ix) General inefficiency

5.3.2 Management and price discovery

i) Lack of transparency in the determination of ex-factory prices (formula and method for producer payment): collusion in product pricing among millers
ii) Poor coordination and enforcement of cane harvesting, loading and transport contracts
iii) Low levels of profitability arising from under-utilization of capacity (machines in state owned mills are antiquated and are operated at low capacity)
iv) High factory operating costs due to poor manufacturing (operation and maintenance) and supply chain practices
v) Over-deployment of labor (lack of optimization of operations) in state-owned mills
vi) Long drawn mismanagement in state-owned sugar companies
vii) Low levels of investment in value addition (for co-products) leading to lack of diversification and dependence on a single product revenue stream
viii) Lack of incentives for product diversification into energy products such as bio-ethanol fuel and export electricity; punitive Power Purchase Agreements (PPA); punitive bio-ethanol taxes,
ix) An undefined local sugar market whose real demand is unknown
x) Huge grower cane payment arrears

5.3.3 Marketing and trade

i) Sugar smuggling across porous borders, especially Uganda and Somalia
ii) Uncontrolled importation of cheap sugar which is coupled with smuggling
iii) Tax evasion causing unfair competition on the local sugar
iv) Multiple taxation regimes for sugar which makes local sugar expensive
v) Low product quality
vi) High sugar price volatility
vii) Inadequate national distribution system
viii) Lack of access to sugar market information
ix) Unfair distribution of risks and benefits in the sugar markets

5.3.4 Environment and cross-cutting issues

i) Non-accounting for environmental impacts in product valuation
ii) Laxity in compliance with environmental control and protection regulations
iii) High skills attrition in the industry

5.4 Sugar Research Institute (KALRO- SRI)

5.4.1 Research programs and outreach

i) Sugar Research Institute (SRI) is currently doing minimal research on sugar cane due to limited funding. In the past the Institute was dependent on a research grant from Sugar Development Levy (SDL) scrapped in June, 2016
ii) The institute has a lot of information on agronomic issues and limited on the other parameters along the cane/sugar production value chain. For example, details of losses along the value chain behold the farm gate such as cane spillage ratios were not available. Also information on research on best environmentally friendly practices was lacking. E.g. waste management
iii) Research information dissemination to the farmers is inadequate as research liaison for extension services is lacking
iv) Indicated that the County Government has no capacity to offer extension services to sugar cane farmers and will need capacity building. The County Government staff were limited to conducting extension services for food crops and had no specialization in sugar cane
v) The slow uptake of improved sugar cane variety is blamed on delay in cane harvesting on account for low factory efficiency

5.4.2 Funding, partnerships and resource mobilization

i) Due to lack of funding, the Institute's ability to deliver on their mandate diminished making them explore other revenue generating ventures. For instance, SRI had received some funding to carry out research on cassava. The proceeds received is used to boost their cash flow
ii) There is low collaboration between SRI, County government and the Millers' agronomists as a way of information sharing and data updating

5.5 Sugarcane Pricing Committee

i) The abolishment of Sugar Development Levy (SDL) which was a consumer levy leading to no funds in the sugar sector
ii) The Committee was informed that sugarcane transport costs account substantially to the overall farmer total production costs
iii) A pricing proposal for sugarcane based on the basics by considering the value chain players' contribution (farmer, miller, trader and consumer) was presented to the Committee
iv) In order to have a fair price payable, it is important to come up with acceptable costs at each level of the value chain and give reasonable mark-ups depending on investment or contribution to the overall cost of production
v) The cane formula was viewed to be skewed in favor of traders who take up to 30% of the total retail price of sugar. This is the difference between the ex-factory and the retail price.
vi) The Committee was informed that excessive importation of sugar was affecting sugar and sugarcane prices. Sugar is also smuggled across the Kenyan borders with Uganda and Somalia.
vii) There is ambiguity in derivation of the ex-factory price used in the pricing formula where the millers seem to be colluding in coming up with this price
viii) Pricing do not consider the cost of sugarcane production and this results in growers being paid below the production costs

5.6 Ministry of Agriculture, Livestock, Fisheries and Cooperatives

5.6.1 Inputs and Technological Innovation

i) Increase productivity of sugarcane at the primary level through enhanced soil management, release of new improved varieties, enhanced nursery management for seed cane multiplication and distribution to farmers
ii) Establishment of a fund for input subsidies, crop insurance and credit scheme to cushion farmers from price fluctuations

5.6.2 Extension, Harvesting and Transportation Services

i) Increase farmers' incomes by encouraging inter-cropping with crops such as soybeans.
ii) Agriculture being a devolved function, there is need to offload devolved functions to the Counties as capacities are built

5.6.3 Financial Services

i) Enhance factory efficiency and investment in diversification to increase revenue streams from additional co-products
ii) Introduction of subsidy value chain support program where the Counties can deposit money with Commodity Fund for disbursement to farmers

5.6.4 Institutions, Policy, Regulation and Governance

i) Restructure sugar value chain for effectiveness and cost reduction
ii) Propose policy reforms touching on: a) Establishment of out-grower's institutions; b) Strengthening of Sugar Research Institute; c) Sugarcane payment system to take into consideration co-products in the pricing formula; and d) Review of sugarcane transportation system in the sector
iii) Improve cooperative society leadership to attract additional resources

5.6.5 Operations, Management and Marketing

i) Elimination of brokers along the value chain and strengthening of farmers' cooperative societies, out-growers institutions and associations

5.7 County Executive Committee Members

5.7.1 Inputs and technological innovation

ii) There was need to evaluate the smallest possible land size for profitable cane farming
iii) Counties may need to consider regional economies of scale where land is not adequate to support a county sugar project e.g. in Siaya, to manage proliferation of low capacity mills

5.7.2 Extension, harvesting and transportation services

i) Whereas extensions services for cash crops were supported by defunct crop boards and not the National government, the current consolidated county agriculture budget is not used for sugarcane extension despite capacity building efforts by AFA
ii) Alternative extension methods, including digital and other electronic media
iii) Certain cash crops including sugarcane are still excluded from the mainstream food crops extension program and have no resource support at the counties

5.7.3 Financial Services

i) There was need to enforce full disclosure on ex-factory price from private mills
ii) Some factories have not operated continuously since its commissioning occasioning great loses to growers and may be in the process of changing hands
iii) Counties should explore opportunities in the facilitation of funding sugarcane agriculture
iv) There was need to review the cane pricing formula

5.7.4 Infrastructure

i) Cess income is consolidated in one finance account. County Cess committees are not functional hence rural roads maintenance has not been effected
ii) There was need to validate Cess funds and its application in rural roads maintenance

5.7.5 Institutions, policy, regulation and governance

i) Crop development was devolved to the counties but related transition issues have not been resolved
ii) Counties have widely varying approach to sugarcane. The new sugarcane counties of Uasin Gishu, Siaya and Narok are positive about sugarcane agriculture. Kisii is actively promoting the construction of a sugar mill and actively encourages cane farming while Trans Nzoia has been contemplating banning of sugarcane to stop its encroachment into the traditional staple maize production zones

iii) The national policy on agriculture extension has not been reviewed to include intergovernmental, sectoral and organizational liaison roles and cash crops like sugarcane, hence the status quo prevails with millers engaging in very limited extension activities
iv) Millers to continue with cane extension services provision
v) The Counties prefer zoning to manage cane development and supply but have not contemplated how this should be regulated
vi) Counties are not executing their regulatory role in the agriculture sector
vii) Need to rationalized multiple government approval requirements for business projects through introduction of a single stop shop
viii) Counties need to evaluate sugar corporate environmental risks

5.8 Sugar Campaign for Change Lobby Group

5.8.1 Extension, harvesting, transportation services

i) Promptly provide growers with information

ii) Through various contract farming arrangements, factories provide inputs and coordinate services such as extension, harvesting and transportation

5.8.2 Financial services

i) Organization and financing of small-scale growers: Farmers have no information on alternative forms of credit and where available such services are over-priced and insufficient

5.8.3 Infrastructure

i) Pricing is based on a formula which considers cane weight, TC/TS ratio, net ex-factory sugar price, farmer sharing ratio. However, this formula depends larger in changes in sugar price determined by sugar importers. The recovery ratio and farmer shares are fixed parameters while sugar price is volatile leading to inequitable remuneration of players. There are reservations on the farmers share as an impediment to efficiency, equity, productivity and sustainable production

5.8.4 Institutions, policy, regulation and governance

i) Capacity build growers to improve information absorption ability
ii) It's important to organize and mobilize growers to communicate their interest with one voice in the quest for reforms in the sugar industry
iii) Provide political empowerment to grower apex body
iv) Shield cane prices from the impact of sugar imports
v) Improve import regulations
vi) There were concerns on the identity of sugar importers, boldness and integrity was required in confronting their negative impact on price stability
vii) Monopolistic power of importers: The current sugar marketing arrangement profits sugar traders more than it profits millers and farmers. They have market power and do bid down the price to sugar producers which is cascaded down to cane producers
viii) Due to information asymmetry there is no scheduled system of meeting deficits, leading to huge volumes of sugar being imported within short periods as opposed to being staggered in line with consumer demand; this leads to a distortionary effect on cane and sugar prices

5.8.5 Operations, management and marketing

i) The Kenyan sugar market is highly priced and a very attractive destination for cheap imports and smuggled sugar
ii) The existence of severe distortions in the form of tariff and non-tariff barriers surrounding various markets in different parts of the world. In the world market, sugar trade is not governed by price signals generated by the normal forces of supply and demand. This distortion requires us to view sugar from a different lens

5.8.5 Socio-Economics

i) A formula for providing a remunerative grower income
ii) Pay fair prices commensurate with the value of sugarcane

iii) From a welfare perspective, one of the biggest concerns in the sugar industry relates to the pricing of cane and how industry profits are distributed through the value chain. Pricing policy is therefore a major lever for influencing the growth of the agriculture sector. Sugarcane price is also an important factor in allocating their land for sugarcane cultivation

5.9 Wholesalers, retailers and distributors

5.9.1 Financial Services

i) The need for cash flow compels millers especially state owned to seek finance from wholesalers who then have an opportunity to negotiate for lower prices thereby exploiting the millers.
ii) Sugar has a pulling effect for traders and anchors other commodities and is therefore an important product

5.9.2 Infrastructure

i) Due to the low local production, the sugar companies delay in fulfilling orders by up to three weeks. The slow process of selling sugar compels traders to bribe mill sales staff to speed up the process

5.9.3 Institutions, policy, regulation and governance

i) There is excessive smuggled sugar in the market. Sugar is smuggled through the porous border of Kenya and Uganda using *boda boda* and private cars *probox*
ii) The security personnel collude with sugar smugglers to aid the illicit trade

Government mills engage in sugar forward sales in times of low cash flow. However, the private mills do forward sales to a small extent

iii) Deliveries were based on market price and not order price. Therefore, millers were taking advantage over traders as they were not involved in price setting and the new price was pushed to them
iv) Counterfeit sugar was reported where blending is done before re-packaging. The quality of such sugar may be unfit for human consumption as the quality measures are compromised

5.9.4 Operations, management and marketing

i) Retail sugar prices are termed fair and ranges between KSh 90 - 110 for unbranded and KSh 100 - 130 per kg for branded sugar. Prices above this range trigger illegal imports
ii) The markup on retail sugar is KSh 3 – 5 per kilo, which calculates to 2-3% gross profit margins.
iii) The distributors make a profit of KSh 100 – 200/50kg bag
iv) Bulk of the sugar is distributed in 50kg bags. Retailers open the 50kg and repack in brown paper without quality assurance as retailers are not supervised. Traders proposed that the factories increase the proportions for branded sugar and that all sugar at the outlets be properly labeled to enhance traceability
v) Branded sugar encounters less price volatility

5.10 Busia Border Management Committee

5.10.1 Institutions, policy, regulation and governance

i) Concealment of goods, for example, sugar bags loaded into tracks carrying maize and beans
ii) Extensive borderline with over 250 roads that are not motorable thus making it difficult to manage
iii) Mistrust and suspicion between agencies leading to concealment of information to the public
iv) There is no framework for small scale traders to be issued with sugar import permits outside the formal routes
v) The existence of the ten (10) kilometer radius on both side of the border that allows for free movement and trade. For example, cheap sugar from Uganda (KSh 2,500 to 3,500 per 50kg bag) is traded freely and competes with the locally produced Kenyan sugar at KSh 4,200 per 50kg bag. This trade goes beyond the allowable 10km radius due to weak enforcement
vi) Importation of sugar by sugar companies using other proxy companies
vii) A suggestion was given on the need to compel large sugar importers to also buy sugar from the local market before being given authorization to import

5.10.2 Operations, management and marketing

i) Inability to carry out full verification of goods due to large number of consignments passing through the border
ii) Absence of cargo scanner at the border for effective verification
iii) Joint patrols are still a challenge. It was mentioned that the is a proposal to have joint command center at Andungosi as well as a Joint Preparation Committee to coordinate joint patrols and surveillance

5.10.3 Risks and cross-cutting issues

i) The Committee was informed that there was need to fast track the East Africa Community integration through enhance capacity building

5.11 Brown Sugar Importers

5.11.1 Financial and marketing arrangements

i) Kenyan sugar is expensive due to perceived hidden costs in processing and inability to produce enough sugar
ii) Why is sugar from Uganda and other COMESA Member States cheap?
iii) Millers influence prices of sugar at the factory level and that sugar importers follow or adopt this ex-factory prices as well as the dictates of demand and supply
iv) Some importers do not have the capacity to clear sugar on arrival and therefore depend on wholesalers who finance the clearing process, thereby leading to a lower negotiated wholesale price
v) The costs of imports including CIF are more or less the same. The legally imported sugar is subjected to the various taxes and charges
vi) Prices of sugar are largely influenced by macro-economic factors: exchange rates; tariffs and other Non-Tariff Barriers (NTBs); and shipping logistics (availability of shipping containers)
vii) Through to the warehouse, the cost of a kilo of sugar is estimated to Ksh 88.638 while retail prices are estimated to Ksh 120
viii) It was also reported that transport cost inclusive of margin/profit is Ksh 400 per bag of 50kg

5.11.2 Risks and Cross-Cutting Issues

ii) They engage in the importation of sugar because of the deficit that exists in Kenya and that they employ approximately 50,000 people
iii) There are some instances where there is also shortage of sugar in the COMESA region
iii) Importers compete with millers for sugar into the local market

6. RECOMMENDATIONS

6.1 The Structure and Organization of the Recommendations

Overview: The detailed evidence and analysis elsewhere in this Report show that there are many factors that must be addressed to improve and stabilize farmers' incomes. Some reforms must address inefficiencies and distortions; other reforms should focus on the market failures, especially those that currently undermine transparent price discovery; others should address regulatory failures; a few should deal with illegalities and industry-wide sharp practices and others should focus on policy and regulatory gaps, overlaps and conflicts.

Starting at the **farm level**: incomes will neither improve nor stabilize unless policy interventions address distortions and inefficiencies in **sugarcane production, harvesting and transportation**. Farm level inefficiencies account for nearly a third of the loss in productivity. Transport cost – rather than labor- is the farmers' single largest cost, accounting 22% of total farmer costs - which excludes the cost of the 5% cane lost through spillage en-route to trans-loading sites or the mill-gate, depending on who transports the cane to the mill.

At the **processing level**, the inefficiencies of the state-owned sugar mills – transmitted to the final sugar price through exceptionally low conversion rates (Tonnes of Cane into Tonnes of Sugar, TC/TS) - have the largest knock-on effect on the price paid to the farmer for sugarcane.

In **sugar marketing and trade**, opaque pricing and in-country flows of lawfully imported as well as contraband sugar have the most significant impact on the final price of sugar, itself a key determinant of farm-gate price of cane.

At the level of **industry**, the sugar sub-sector requires three critical instruments to be designed and implemented: one, an overall policy with a clear goal and mission; two, a clear, long-term strategy to integrate various elements and activities in the subsector and three, comprehensive legal framework to support both the policy and the strategy.

There are also **cross-cutting issues** that need policy attention: the most urgent and important of these are integration of gender issues and inclusion and participation of youth in small-holder agriculture generally and in the sugar sub-sector in particular.

Below are five thematically arranged matrices that summarize the recommendations of the Task Force. These are clustered and discussed in four columns organized as follows: a) the first column of each matrix sets out the concerns voiced by stakeholders from the Task Force's public hearings and memoranda; b) the second column sets out the Task Force's recommended policy intervention; c) the third column specifies the outcome that the policy intervention is expected to achieve and d) the fourth column is the critical assumption underlying each of the Task Force's recommendations.

There are also short overviews to each of the five matrices sketching out the high-level content of the specific matrix.

6.2 Summary of Recommended Interventions

6.2.1 Sugarcane Production, Harvesting and Transportation

Inefficiencies, losses and poor practices in production, harvesting and transport have the largest impact on farmers' incomes. As Ambetsa, et al (2021) demonstrated - see elsewhere in this Report - technical inefficiencies at farm level cost sugarcane farmers up to 29% in productivity loss. The study's conclusion implies that a farmer who harvests 60 MT of cane per hectare could have - without additional investment- reaped 77.4 MT per hectare (equivalent to 1.7 MT of foregone sugar, with all its implications on the national sugar deficit) by improving the technical efficiency of farm-level activities. Other measures that will positively impact production, increase productivity and improve and stabilize farmers' incomes are: incentivizing farmers to use appropriate cane seed varieties; improving uptake- by disseminating knowledge and better extension services of new high-

yield, high ratooning varieties; training farmers on better agronomy, including on measures to maintain and improve soil fertility by applying fertilizers, lime and organic manure; supporting farmers through pooling arrangements to mechanize and cut labor costs on critical on-farm activities such as crop establishment and maintenance and providing access to affordable inputs especially fertilizers.

Additional policy measures should focus on implementing institutional, infrastructural, financial and market reforms that provide adequate funding for the Sugar Research Institute; improve SRIs downstream linkages with farmers and county governments. For example strengthen and fund SRI's capacity to bring new varieties to the market; create credit schemes that are both inexpensive and accessible; develop a more dynamic and responsive can pricing system; make better use of cess in cane-growing counties in order to reduce infrastructure costs (transport alone accounts for 22% of costs of producing cane); reduce the dependency of farmers on miller-supplied services such as transport, harvesting and in-kind credit; institute better regulation of harvesting and control of spillage during transport (spillage costs farmers up to 5% of the cane)[9] and develop a tamper-proof, fully accountable and transparent cane weighing system to replace the current potentially easy-to-manipulate system.[10]

The specific interventions to achieve these results are detailed in Table 25.

[9] Risk sharing for in-transit sugarcane: An important issue is how to share the risk associated with cane in transit. At the moment, the farmer bears the risk until the cane is weighed at the trans-loading site or at the mill-gate. Since the transport from the farm-gate to the mill gate or the trans-loading site is organized by millers- at a cost that they set- there is a strong case for risk sharing. The miller charged with transit of the cane from the farm gate has little incentive to abate spillage (see elsewhere in this report). Under these circumstances, The Task Force believes that it would be best if the ownership of the cane vested in the buyer at farm gate unless, of course, the farmer prefers to deliver own cane to mill or some other designated location.

[10] The two trans-loading sites that the Task Force visited appeared to operate transparently. In one site, the farmers were promptly notified by SMS as soon as the cane was weighed. However, at the other site the Task Force noted that the manager was unduly concerned to monitor what his weighing clerks were telling TF members and without a representative of the farmer at the weighing, the incentive to under-weigh is just too much.

Table 25: Recommendations and Impact Matrix

Concern	Proposed Intervention	Expected Outcome/Impact	Assumptions
Low productivity			
Poor seed cane varieties	Strengthen roll-out, multiplication and uptake of new seed varieties beginning with the 21 varieties already developed.	Adoption of improved cane varieties increased Increased average number of ratoons by farm size and by region Improved national sugarcane yield and increased yield per unit area.	Extension services to support up- take widely available Increased adoption of yield improving cane varieties.
Inadequate funding for research at SRI	Provide adequate and stable funding to the Sugar Research Institute to enable coverage of the entire value chain and deepen the Institute's human resource base	Increased budgetary provision for SRI to undertake its functions. SDF reinstated and fully operationalized	Availability of extension services Increased adoption of yield improving cane varieties No hindrances in access to credit and markets There will be adequate funding to support the

Concern	Proposed Intervention	Expected Outcome/Impact	Assumptions
Poorly funded extension services coupled with inadequate research information to farmers	Strengthen and implement the National Agricultural Extension Services Policy and liaise with JASSCOM on implementation of this policy at the county levels.	Existence of a functioning NAESP and well-coordinated JASSCOM in place.	sector
	Establish a legal framework for Conditional Grants to create "Matching Funds Appropriations System" whereby national government earmarks transfers to counties on condition that they provide matching funds for agricultural extension services.	Well-funded extension service at county level. A framework for funds march between counties and national government in place.	The government will commit resources to new irrigation works in sugar-suitable areas
	Provide or strengthen extension services (transfer of knowledge for right usage of fertilizer based	Improved usage of soil test based fertilizer usage by the farmers ICT based extension package put in place and rolled out for use in the industry	

Concern	Proposed Intervention	Expected Outcome/Impact	Assumptions
	on soil testing) leveraging ICT to increase innovation as well as adoption of more resilient and productive varieties		No hindrances in access to credit and markets There will be adequate funding to support the sector The government will commit resources to new irrigation works in sugar-suitable areas.
Depleted/ exhausted soils	Strengthen- through training and outreach programs to farmers on fertilizer application based on soil analyses. Enact policies and take measures to reduce cost of fertilizers by, for example: a) Subsidizing fertilizer (or develop a program to lower prices) b) Bulk imports, c) Applying a pan-territorial pricing strategy where farmers pay the same price regardless of their location Promote use of locally and cost-effective soil fertility improvement measures such as application of lime and use of organic materials such as compost manure, green manure etc	Increased adoption of soil testing as a perquisite for fertilizer application across the industry. Fertilizers available to farmers at affordable prices Increased adoption of use of locally available soil fertility improvement matter and additives	
Low sugarcane production which results to low total sugar production leading to domestic production not meeting demand for sugar	Increase cropped area to minimize sugar deficits by: Area expansion into non-tradition- rain fed regions- Trans Nzoia and Trans Mara (on a small-holder and medium sized basis) - subject to appropriate safeguards to ensure continued food production Encourage investment in new areas by:	Increased use irrigation across the industry. Progressively Reduced annual imports quota Increased area under cane from current 200,513Ha to 350,000Ha Sugarcane expanded to new areas of Tana River, Siaya and Sabaki on	

		large scale.	

Concern	Proposed Intervention	Expected Outcome/Impact	Assumptions
	Opening up areas for irrigation e.g. in Tana River, Siaya and Sabaki (on a large-scale basis) Develop appropriate policies for attracting new investments in the sugar sub-sector		
High cost of crop establishment and maintenance attributed largely to a) Labor; b) Seed cane and c) Fertilizers			
Mechanization on of land preparation	Manage escalating labor costs in the sugar cane belt by promoting mechanization of land preparation- where farm sizes and topography permit – using common pool equipment or relying on affordable hire services by County governments	More investment in mechanization by private service providers and AMS centers for cane establishment and maintenance Reduced cost of land preparation, crop maintenance and harvesting and transport in absolute terms	Existence of functional and competitive markets that promote use of more efficient/profitable resource combinations in cane farming
Weed management	Adopt measures that incentivize or encourage farmers to practice integrated weed management (combining manual, chemical and mechanical means) to reduce labor costs	Increased adoption of innovations relying on relatively inexpensive and locally available resources for cane establishment, weed management and cane maintenance Reduced cost of weed management across the industry	Stability in consumer tastes and preferences Continued public/County support to farmers in their quest to access real time market information for their decision making
Adoption of appropriate varieties	The Sugar Research Institute (SRI), working in collaboration with millers, farmer organizations and counties, to ensure availability and modalities for increased adoption of appropriate and affordable planting materials.	Increased adoption of improved cane varieties Establishment of seed merchants across the industry to produce and supply quality seeds for the industry.	Cost-saving innovations and use of locally available alternatives to industrial fertilizers Resources for farmer training,

Cost of fertilizer	Reduce the cost of fertilizer as well as crop responsiveness to fertilizer applications through the following innovations/practices:	Increased adoption and use of soil improvement methods and technics including regular application of appropriate fertilizers and organic manure	awareness campaigns and demonstration farms are available.
Concern	**Proposed Intervention**	**Expected Outcome/Impact**	**Assumptions**
	Institute bulk orders for fertilizer by a centralized institution (as currently done by KTDA for tea) and charge cane farmers the same price for fertilizers irrespective of their location Promote the use of alternatives to chemical fertilizer and herbicides as currently done by some successful farms (e.g. Homalime) by educating and encouraging farmers who own livestock to use farm-yard manure in their sugarcane fields[11] Subsidize fertilizers for sugarcane production.	. Framework for Bulk discount methods for purchase of fertilizers established Fertilizers available at affordable prices	More efficient and strategic pricing of machinery and other imported farm inputs such as fertilizer e.g. through import duty and tax rationalization
Low farm gate prices and farmer incomes that do not support livelihoods			

[11] Recommendations on fertilizer application rates must be based on soil analyses since responsiveness to fertilizer application declines as fallow periods shorten and soil salinity increases, especially on the small farms in most growing regions (except in regions such as Transmara and Trans Nzoia). This will regular soil analyses by SRI working closely with County Governments.

Value-chain inefficiencies	Increase farm-gate by adopting measures that: Eliminate sugar value chain inefficiencies that inhibit transmission of market signals to the farm level by requiring transparency in the provision of data on consumption, production and the size of the sugar deficit. Control the entry of contraband sugar imports into the country through enhanced enforcement of regulations.	Mechanisms for regular inter-agency meetings to review resource sugar production and use patterns and costings across the value-chain. Better data on value chain inefficiency Reduced contraband imports.	Existence of free/competitive market systems (no market failure and distortions arising from ineffective policies and legislations) Adherence to contractual agreements between farmers and millers

Concern	Proposed Intervention	Expected Outcome/Impact	Assumptions
Alternative sources of farm-level incomes	Support farmers to diversify their income sources to reduce vulnerability to cane price shocks.	Increased farm level diversification (increasing share of alternative enterprises in total household income)	Effective facilitation of farmers' adoption of technological innovations for example through County-led extension education and availability of yield improving innovations by SRI Proper management and transparent determination of ex-factory prices
Responsive Cane pricing system	Adopt and implement a dynamic cane pricing formula that rewards both quality at the farm-level and efficiency at the milling level Ensure the pricing formula is based on ex-factory prices that are determined fairly and transparently.	Gross margins for sugarcane production increased	
4. Adaptation to environmental and climate change effects			
Farm-level uptake of climate smart practices	Mitigate against adverse effects of climate change by supporting farmers to increase their uptake of climate-resilient technologies and organic farming such as: trash-blanketing (mulching); rainwater harvesting; use of locally available materials to control weeds and crop pests and diseases.	Increased uptake of climate-resilient technologies and organic farming practices that rely on locally available resources	Availability and awareness about climate smart technologies A clear industry regulatory framework for adaptation to climate change and mitigation plans
Counties to promote climate	Counties to enact measures that promote awareness about climate change impacts and	Regulatory framework for industry-wide surveillance, training,	

Concern	Proposed Intervention	Expected Outcome/Impact	Assumptions
responsive cane farming	enhance farmers' adaptation capacity[12]	capacity building and penalties for non-compliance	Effective inter-agency consultative forums aiming at addressing environmental impacts of the sugar industry and climate change adaptation strategies Active involvement of the private sector in service provision, especially affordable insurance products
Effluent and pollution management	Regulators- both Sugar Directorate and NEMA- to adopt measures, consultatively with Counties, that ensure sugarcane mills comply with environmental requirements on air pollution and effluent disposal.	Millers complying with air pollution, effluent disposal and other environmental requirements	
Crop insurance to mitigate climate effects	Design and implement insurance programme to mitigate crop loss caused by climate-related incidences	Affordable insurance products made more readily available and accessible	
Development of functional markets and reliable infrastructure			
Improved roads in the sugar belt	Counties to enact measures- including, where possible, ring-fenced budgets- to ensure that cess is used for proper maintenance of infrastructure, especially roads, since amount and variability of rainfall adversely affect roads, raising harvest and transport costs.	Infrastructure in sugar belt is improved sufficiently to positively impact on transport costs	Both national and County governments support, especially on infrastructure and research information
Mitigating market risks	Ministry of Agriculture to design and implement- in consultation with JASSCOM- a National Policy Framework for Deepening Access to Insurance Services for the Agricultural Sector including, for example, providing, where appropriate,	Increased availability and adoption of affordable insurance plans	Willingness and active involvement

[12] As weather patterns change unpredictably due to climate change, crops with heavy water footprints such as sugarcane may be seriously affected and their productivity compromised even under the best management practices. The SRI must be encouraged to take a lead on design of coping measures.

Concern	Proposed Intervention	Expected Outcome/Impact	Assumptions
	funds for de-risking private insurance firms covering high risk farming activities. Counties to work together with insurance firms to provide affordable insurance products to protect cane farmers against market risks		of the private sector in service provision, especially affordable insurance products Availability of market information and farm level awareness about how to use it. Government and County support especially on infrastructure development and market Treasury commitment at both national and county government to support counter volatility funds
Market information	Counties to adopt measures- including timely provision of market information and investment incentives- that support farmers' to reduce excessive reliance on sugar and mitigate against growing demographic pressure	Production and marketing strategies enable sugarcane farmers to venture into alternative and more promising income generating sources that guarantee their food and nutritional security	
A Response to Price Volatility Fund	Establish a Fund (along the lines of the Commodity Fund to cushion farmers against income volatility[13]	A sustainable funding mechanism for cushioning sugarcane farmers against production uncertainties and other market related extreme events	
Little or no access to affordable, transparently disbursed credit			
Affordable credit	Repurpose the sugar portfolio of the Commodities' Fund to provide farmers with affordable and easy to access credit	Decreased cost of credit leads to increased investment	Economic stability and efficient monetary management (stable interest and exchange rates)
Effective	Strengthen farmers associations	Effective farmers'	

[13] Income volatility arises from cost and price variations both of which can be occasioned by factors exogenous to the farm, including market failure and anti-competition practices in the industry

			Empowerment of farmer organizations Responsive public sector, particularly to emerging financial challenges
Concern	**Proposed Intervention**	**Expected Outcome/Impact**	**Assumptions**
farmers organizations	and cooperatives and promote institutional innovations that facilitate mass access to affordable credit and spread of financial risks through legal, regulatory and policy reforms.	organizations facilitated mass access to affordable credit	
Truth and disclosures in lending to farmers	Provide transparent Access-to-Credit policies and mandate – through regulations- truth-in-lending by requiring full disclosures of terms of all lending including in-kind credit by millers and other providers	Increased proportion of affordable credit services	
Losses arising from harvesting and transport operations			
Inefficient harvesting and transport operations.	Enact measures- through regulations and provision of incentives for mechanization- that reduce labor costs[14] and eliminate extortionate payments (also known as *chuth ber* in cane harvesting and loading).	Reduced post-harvest losses from 20% to 10% Malpractices that spawn multiple payments by farmers minimized	Improved infrastructure Transparency in contract negotiation and enforcement
Delayed or non-harvesting of matue cane	Enforce compliance - through better regulations and strong oversight by the Sugar Directorate - with contractual agreements for cane harvesting and delivery to designated mills[15]	Costs and risks associated with cane transportation to the mill shared fairly between the miller and the farmer	

[14] In reference to COTU guidelines, farmers' organizations can set realistic wage caps combined with a requirement that workers offering such services are registered and compelled to comply with agreed upon regulations.

[15] Breach of contractual terms is an abiding problem in the sugar sector and both millers and farmers are culpable. Incentives to cheat cut both ways: a contracted farmer gets a better price elsewhere and is tempted to hawk his cane at the better price. A miller with a contract to a group of farmers gets the offer of low-priced cane from a cane-broker and breaks his commitment to those under contract to the mill. There is then a sub-optimal equilibrium: neither the millers nor the farmers are reaping all of the benefits that contracting is supposed to confer in theory.

Tampering with cane weights at the weigh bridge (lack of	Introduce infrastructure- including mobile weighing equipment- that facilitates weighing of cane at the farm level with in-built digital capability to transmit those	A transparent, auditable cane weighing system established	
Concern	**Proposed Intervention**	**Expected Outcome/Impact**	**Assumptions**
transparency)	weights to the sugar mill. Conversely, where the weighing is done at any other level, there must be measures to ensure that the farmer is fully represented		Regulatory oversight on industry operations Industry policy, laws and regulations in place and effectively enforced. Farmers organizations are able to make claims.
Loss of cane through spillage enroute to the trans-loading sites and the factories	Review cane ownership and transportation modalities such that the miller, through its transport agent, takes responsibility for the harvested cane and risks associated with delivery of cane to the factory Bar millers from engaging in the transport of cane to avoid conflicts of interest	Cane risk transferred to miller at the earliest possible step in the harvesting and transportation chain A competitive system of cane transport	
Cost of transport	Reduce the cost of transport by adopting high payload trucks (this is predicated upon improvement of road infrastructure)	Reduced cost of cane transport	
Role of regulator	Cane transports rates established and enforced by the Regulator Cane harvesting schedules to be done by the millers and deposited with the Regulator	A well-structured and efficient cane harvesting and transport system	

6.2.2 Sugar-Cane Processing

As already highlighted, inefficiencies and distortions in sugar cane processing have a pronounced impact on the farm-gate price of cane. These include a) the transferred cost of massive losses, periodic bailouts and weak corporate governance in the state-owned mills; b) the implicit cost of raw-material waste arising from a single-product use of sugar-cane (Sugar cane is principally used to produce sugar, a relatively low-value product); c) the effect of weak contract enforcement on property rights and transactions costs in the subsector; d) the conflict of interest built into allowing millers and miller associated companies to import sugar and the potential effect of this on the domestic sugar deficit.

Inefficiencies in state-owned mills need to be addressed as a matter of urgency. It is difficult to compute the exact cost of overall milling inefficiencies on farmers' incomes because the inefficiencies of private sector mills are masked by the prodigious losses and institutionalized inefficiencies of the state-owned mills. But as the analysis elsewhere in this Report clearly shows, eliminating the governance and financial burden of troubled state-owned mills would have a considerable impact on farmers' earnings. Farmers lose in two ways from wastage in public mills: through 'rescue costs' represented by periodic, tax-payer funded bailouts to enable these mills to continue operations and 'inefficiency costs'- the losses incurred by farmers when the mills operate far below optimal parameters. For example, and as noted in earlier in this report the case of Nzoia at a TC/TS ratio of 16:1 as against a national average TC/TS 10:1 wastes 5 MT of cane which translates to half a MT of foregone sugar. That is a direct charge on the farmer's income. The bailouts are opportunity costs, that is to say, benefits that could have accrued to sugar farmers if the funds had been used to support farmers, say through fertilizer subsidies and inexpensive credit. Given these realities, any medium term policy reforms to raise and stabilize farmers' incomes must wean public mills off bailouts; optimize the installed capacities in those mills; modernize their old equipment and replace all obsolete machinery; improve their corporate governance; strengthen internal and external accountability and change how the mills recruit, retain and manage their staff.

The use of sugar cane as a raw material should be optimized. The extraction of sugar alone sub-optimizes sugarcane's potential as a multi-product raw material and does so in the worst manner possible because it privileges the least profitable product over other, more lucrative, high value

products: electricity, ethanol and agro-chemicals. This is a sector-wide problem that cuts across both public and private mills. By foregoing the production of all these other products, sugar processors under-reward the farmers' efforts and dis-incentivize additional investments in increased productivity. The Task Force recommends a set of measures that will incentivize millers to diversify their product base and enhance farmers' incomes with a portion of earnings from these additional high value products.

Some of the inefficiencies in the sugar industry can be addressed through effective enforcement of contracts. As already highlighted, the sugar sector is easily the most litigious sub-sector in Agriculture in Kenya with the state-owned mills alone facing over 4000 court cases as of June 30, 2020. No system of property rights can exist without a stable contract regime and an effective and affordable system of dispute resolution. Breach of contract and delayed and costly dispute resolution are transaction costs, a hidden tax on incomes. Reforming the defective and deficient contracting regime in the sugar subsector is therefore not merely a measure to stabilize property rights but also a means to reduce transactions cost and raise the farmers' incomes through institutionalized certainty and enhanced predictability.

Millers ought to be barred from importing sugar required to bridge the domestic deficit since allowing them to import incentivizes them to enlarge the deficit by under-processing domestic sugar-cane, the margins on imported sugar being higher than those on costly-to-produce local sugar.

Below is a summary of the recommendations of the Task Force on the subject of sugar processing.

Concern	Policy Intervention	Expected Outcome/Impact	Assumptions
Inefficiencies in management and operations in public mills			
Under-utilization of installed capacity[16]	Increase factory milling capacity in the industry per mill to a minimum of 4,000 TCD to support diversification. This could be achieved by reconfiguring the national milling capacity.	Milling capacity increased	Market stability that allows industry growth/expansion and hence more efficient capacity utilization and technological innovation Millers access to affordable credit both domestically and internationally Regulatory oversight and capacity to ensure effective, transparent and compliant management of sugar mills
Use of old, often obsolete technology[17]	In lieu of privatization, support public sector millers- through tax incentives and corporate governance reforms- to invest in state-of-the-art technologies that are environmentally friendly	Improved productivity. Improved competitiveness of public sector mills	
Weak human resource capacity in	Review as well as rationalize employment and public service policies to enhance skills upgrading; staff retention and succession planning.	Adequate and more productive human resource	

[16] The machines installed in state owned mills are antiquated and all are operated at low TCD.
[17] This is compounded by purchase of counterfeit parts as well as over-reliance on manual processes.

Concern	Policy Intervention	Expected Outcome/Impact	Assumptions
public mills[18]			
High levels of indebtedness by the public mills	Fast-track debt write-off and rehabilitate public mills to become more efficient and competitive		
Variable mill performance and low levels of investment in value addition (for co-products)			
Inconsistent supply of raw materials	Increase sugarcane production by improving productivity and the area under sugarcane.	Productivity improved and area under cane expanded	Market stability that allows industry growth/expansion and hence profitable engagement in value addition Support by County governments in terms of infrastructure and prioritization of the sugar value
Incentives for value addition and product diversification	Promote more investments in value addition (co-products and power generation) through appropriate incentives such as a) import duty waivers on equipment and spares b) Adopt appropriate National policy on power purchase tariffs that support green energy c) Adopt appropriate contractual arrangements between millers and KPLC for power generation and supply to the national grid.	Increased investment in diversification and enhanced profitability	

[18] The task force visited two public sector mills, reviewed the audit reports of all five and heard evidence from both farmers and managers of these mills. The mills face a plethora of human resource challenges skills attrition (paradoxically hand in hand with over-employment); inadequate training and lack of succession planning at the senior management levels.

Concern	Policy Intervention	Expected Outcome/Impact	Assumptions
Supportive business environment (such as tax regimes; access to infrastructure services and enforcement of contracts)	Provide policy support for an enabling business environment by improving sector relevant Doing Business Survey Indicators Regular survey of the business environment	Favorable business environment that supports competitiveness	chain Support by national government in terms of funding R&D, enacting conducive investment policies and legislations and value addition incentives
iii)Enforcement of contract and environmental laws in processing operations			
Respect for contracts with cane producers	Strengthen farmers' organizations in order to enhance their ability to organize as well as speak collectively for the farmer on matters related to contracts Fast-track regulations to provide for enforcement of and consequences for breach of cane purchase contracts. Provide through regulations a requirement that the terms of cane purchase contracts be fully disclosed to farmers and farmers' organizations spelling	Predictable and more efficient cane production, harvesting, transportation and milling structure with all players respecting their contractual obligations Simpler better enforced contracts	Supportive policy and legislative framework for contract enforcement Institutional innovations and producer empowerment aimed at enhancing their bargaining power against millers Wide adoption of contract cane
	out a) all the terms and conditions of the contracts; b) the charges to be levied for any service rendered under the contract; c) the basis and calculation of those charges; d) the periodicity of renegotiation and renew and e) the right of farmers to opt out of miller provided services.		farming

Concern	Policy Intervention	Expected Outcome/Impact	Assumptions
Weak enforcement of the National Environment Policy and laws on pollution	Develop and enforce sugar industry pollution abatement policies that incentivize millers to adopt less polluting technologies Require the Sugar Directorate, through regulations, to collaborate with NEMA and county governments to strengthen environmental surveillance in the Sugar Belt. Regulator to design and implement mechanism and strategies to disseminate information and create awareness on environmental risks and threats Incentivize mills – through Regulatory Marks of Environmental Quality - to adopt International Financial Standards for Environment Accounting Build robust regulatory capacity to monitor and enforce environmental standards through funding, training and capacity building at national and county levels	Sugar industry environmental regulatory policy document (with clear guidelines, regulations, compliance requirements and penalties) Credible mechanism for resolving environmental disputes and challenges An environmentally conscious and competent regulator	Political commitment Public awareness among stakeholders Effective lobbying for reforms in the industry
iv) Participation of millers in sugar importation			
Sugar mills barred from importing sugar	Review Sugar Bill in entirety and propose amendments to prohibit millers from importing sugar. Enforce strict vetting requirements for sugar	A revised sugar bill that eliminates conflict of interest between milling and importing Millers focus on producing sugar production and value	Adequate regulatory capacity for surveillance of milling operations and validation of sugar imports

Concern	Policy Intervention	Expected Outcome/Impact	Assumptions
	importers to curb involvement of millers and their subsidiaries or proxies in the import of sugar.	addition rather than trading activities such as importing sugar	Effective and efficient policy and legislative framework that rationalizes milling and import operations to remove vertical integration between sugar processing and trading Supportive political will
Lack of consistent input-output data.	Require, by regulations, that all mills consistently submit returns to the Regulator showing cane inputs against mill-rated capacities; production volumes for sugar and other by-products; and any capacity expansion plans Strengthen the capacity of the regulator to analyze and validate data	Reliable sugar processing information An empowered, data-savvy regulator	Adequate Regulator's capacity for data validation of returns from the millers

6.2.3 Marketing and Trade

Ultimately, it is the intersection of demand and supply that determines the farmer's cane price at the farm-gate. This Report has already noted that national consumption significantly outstrips domestic supply, making imports critical and inevitable to the demand for and supply of sugar. Given that the price of sugar is built into the formula for calculating the price paid to the farmer any reforms that influence or change how imports are managed; that determine how much sugar is imported; that establish a statistically robust method to establish the size of the domestic deficit and that change or influence how imports are planned and scheduled will all be crucial elements of the farmer's cane price.

An abiding concern among stakeholders the Task Force has elsewhere noted, is poor price discovery arising mostly from lack of transparency in how sugar prices are determined. This defect ought to be urgently remedied by measures that strengthen the Regulator's capacity to demand, collect and analyze millers' input and output data so that deficit figures can be validated.

Reliable data is also necessary to establish the true scale of smuggling. Testimony heard by the Task Force in Nyanza and Western Kenya indicates that contraband sugar is a significant and growing problem on the Uganda-Kenya border, a better policed border than the un-customed border with Somalia (which is formally closed) where smuggling has gone on for years. There is some evidence indicating that the Somalia border is a spillway for large illicit imports of sugar. Given the relationship between volume of sugar imported and domestic sugar prices and the effect of such prices on the farmers'

earnings, it is necessary that the regulator develop the tools and build the capacity to intelligently estimate the volume of contraband sugar coming into the country on a regular basis.

The discussion of imports brings forth international trade issues, especially the now increasingly complicated question of how to wean the sugar sector off the COMESA safeguards. The Task Force is cognizant that though these measures have cushioned the sub-sector during its difficult times, Kenya will find it difficult to strengthen domestic production; shift to a quality-based payments system; reduce dependency on imports or diversify its sugar industry under the existing 'safeguards regime', which, it must be underlined, has partly immunized Kenya's inefficient public mills from market forces and removed a sense of urgency from the need to privatize or, at very least, lease those mills.

To give impetus to reforms and to restructuring of these mills, it is essential that there be a credible transition time-table to a 'post-safeguards' future. That ought to be done in tandem with additional institutional reforms: including steps to domesticate international trade treaties and agreements; strengthen treaty reporting and enhance parliamentary oversight over such treaties and agreements.

Below is a summary of the Task Force's recommendations on these and related issues.

Concern	Policy Intervention	Expected Outcome/Impact	Assumptions
Transparency in sugar marketing and price determination in the domestic market			
Inadequate data in marketed volumes and pricing.	Strengthen regulatory oversight by requiring traders to submit returns to the Regulator on their marketed volumes; capacity expansion plans as well as marketing arrangements and production forecasts	A regularly updated database on marketing and trade volumes A reliable and transparent price discovery mechanism Sugar prices to incorporate Cost of Production (COP) and margin for processors.	Regulator capacity for data validation of returns from the millers and traders Government policy on market liberalization and facilitation of a competitive industry price discovery mechanism
Poor integration of sugar distribution system	Tighten the management of the domestic marketing system by addressing the sources of non-integration of fragmentary distribution including contributory factors such as transport costs and border control lapses- especially the border with Somalia.	A nationally integrated domestic distribution system in which the Eastern region is seamlessly linked to core sugar producing regions in the Southern and Western regions	Policy action on international border points
Lack of data on the extent of the problem of sugar smuggling[19]	Develop a new method for calculating the domestic deficit based on accurate consumption data Develop a transparent formula for issuing sugar	More objective estimates of national demand A more reliable, better coordinated and fully capacitated multi-agency	Clear industry policy on sugar importation based on objective analysis of production and consumption trends

[19] The volume of smuggled sugar is unknown. Though there is anecdotal information on sugar crossing into Kenya from Uganda, the amount coming through other, more porous borders such as that with Somalia is unknown but suspected to be large. There is urgent need for better data collection on key questions such as what are the sources of this smuggled sugar; who is involved; and what are the volumes? There are policy issues that need to be addressed in tandem with better data collection. These include addressing border porosity, improving surveillance capacity and deciding whether the closure of the Kenya/Somalia border is helpful at all given that when closed the border is uncustomed. It will also be critical to collect accurate data on the annual deficit since any sugar consumption above the official deficit represents smuggled sugar.

	import permits Strengthen inter-agency collaboration through robust reporting and accountability mechanisms and joint action at all border crossings	Taskforce managing border crossing points Illegal imports significantly reduced/eliminated	Adequate capacity building and funding of multi-agency border management committees
Planning and scheduling of imports	Regulator to develop capacity to calculate the domestic production and consumption patterns based on regularly updated and triangulated data. Provide real-time market information on supply, prices and import requirements,	Transparency in the process of determining import demand (deficits), import procedures, sources of imports and expected impacts on consumer and producer prices	Well funded and capacitated Regulator Port performance is improved
Impact of sugar imports on producer and consumer welfare	Regulator undertakes periodic studies to establish the impact of sugar imports on domestic prices[20]	Findings of industry studies commissioned by the Regulator disseminated to stakeholders and incorporated into policy reforms	Adequate funds for market studies
Regional and international considerations			

[20] There is a need for creating an objective body of evidence on the trade-offs with food production; how imports affect relative sugar prices and hence incentives for increasing production and productivity; and how consumers respond to changes in sugar prices

Implementation and compliance with regional and international trade agreements	The Ministry of Agriculture, National Treasury, the State Law Office, The Parliamentary (Senate and National Assembly) Departmental Committees for Trade and for Foreign Affairs and the State Department for Trade to develop a joint policy and strategy for strengthening compliance with international trade agreements including within it with clear stipulations for a) mechanisms for fast-tracking domestication of international agreements; b) Parliament to exercise oversight and c) institutionalizing international treaty reporting	Increased compliance with regional trade agreements and other international protocols through a time-based policy framework for institutional capacity building and adherence to evidence-based decision making Multi-sectoral committees convened through initiatives of the Regulator aimed at promoting awareness about regional and international trade and quality requirements that need parliamentary approvals	Political will, institutional capacity building and funding Underlying legislation in place Parliament fully cognizant of its international law

	and compliance.		
Meeting COMESA's safeguard conditions[21]	Strengthen and implement a clear road map, including milestones and targets, for restructuring cane production and the cane payments system, based on quality that also incorporates a timetable for weaning Kenya off COMESA safeguard measures	National Sugar Sector Restructuring Strategy detailing a pathway from COMESA safeguard measures effected	Political will, institutional capacity building and funding
Compliance with food safety regulation	The Regulator t build sufficient capacity for surveillance and enforcement of compliance with food safety regulations Establish a mechanism through which the regulator regularly collaborates with the Kenya Bureau of Standards, KeBS, to strengthen market surveillance by enforcing marks of quality and rules of origin	Harmonized sugar industry standard Capacity of regulatory agencies for surveillance and enforcing compliance strengthened	Political will, institutional capacity building and funding of inter-agency management committees Adequate funding and capacity for the Regulator KEBS fully engaged with sugar quality issues.
Oversight capacity regional and trans-national trade issues	The State Law Office, the Ministry of Agriculture, the State Department for Trade and the twin offices of Speaker of the Senate and the Speaker of the National Assembly to lead their institutions in developing a	Parliamentary oversight over international trade in agricultural produce and products strengthened.	Political will, institutional capacity building and sustainable funding Legislative

[21] These conditions include reducing production costs, instituting sucrose-based payment system for sugarcane and rationalization or privatization the operations of public mills.

	strategy and capacity-building plan to strengthen parliamentary oversight over international trade issues in Agriculture.		commitment

6.2.4 Industry Regulation and Sustainability

It is difficult to develop a diversified yet well-integrated sugar sub-sector without a robust, overarching policy and a long-term strategy that are both backed by a comprehensive legal, regulatory and administratively efficient institutional framework.

The overarching policy should articulate a clear vision and long-term goal for the sugar sub-sector. It should provide two things: one, an overall direction on current challenges and two, clearly articulated forward linkages that are essential to the sub-sector's long-term profitability and sustainability. The subsector issues that need urgent attention are: increased production and productivity; efficient processing; fairer, data-based trading and marketing and improved sector governance – whilst the forward-linked industries essential to subsector profitability and long-term sustainability include electricity generation, power ethanol, agro-chemical and fertilizer production and paper manufacture.

A long-term strategy also needs to be formulated. The strategy should define industry linkages; create strong inter-ministerial and inter-agency collaboration and accountability mechanisms and elaborate tools and measures that link the critical 4Is - Investments, Incentives, Institutions and Infrastructure – to long-term policy goals and welfare outcomes at the household level.

Finally, both the policy and the long-term strategy ought to be backed by a comprehensive legal framework. That means that the current laws, regulations and institutional arrangements need an overhaul. The required makeover includes policy actions to a) revise and enact the current Sugar Bill; b) measures to align the regulatory framework- regulations, rules, administrative practices- to the Sugar Act once it is enacted; and c) providing resources to support a medium-term institutional design, training and capacity-building programme to strengthen the sector's core agencies, especially the Regulator, the SRI and KEPHIS.

Below is a summary of the Task Force's recommendations on these and related issues.

Concern	Policy Intervention	Expected Outcome/Impact	Assumptions
Overarching sector strategy, policy and legal framework			
Long-term vision and sector strategy and policy framework	Develop and fast-track the implementation of a sugar sector policy and long-term strategy geared towards increased industry competitiveness and sustainability of the sugar industry benchmarked against global leaders on such issues as farm-level productivity; efficient processing; product diversification; technological	Clear roadmap spelling out milestones and targets at each segment of the value chain. An industry more competitive and efficient in terms of: Sustaining stakeholder profitability (and livelihoods in the case of	Political good will and support from industry players

	innovation and compliance with environmental and safety standards.	smallholder farmers) Savings/earnings of foreign exchange Reduced tax burden arising from weaning public mills of Treasury support Strong economic linkages with other sectors through by-products. Better, climate-smart responsiveness	
Legal framework for the sugar sector	Fast-track implementation of the Sugar Bill through consultations and collaboration with Parliament, including especially, holding urgent meetings with the Senate Committee on Agriculture Ministry Agriculture to identify- urgently- additional issues from Task Force Report that need to be included in the Sugar Bill 2019	Enactment of the sugar bill and implementation of the Sugar Act Enhanced transparency and integrity in the Industry	Political good will and support from industry players
Long-term training, capacity building and research in the Sugar Sector			
Long term training and capacity building	Develop and implement industry-wide (entire sugar value chain) training programs supported by industry and county governments taking into account industry forecasts of human resource requirements; current establishment and severity of skills' attrition The Sugar Directorate to initiate dialogue with training institutions on developing specialized training for the sugar Sector	Industry capacity building strategy paper developed Adequate trained and skilled manpower Reduced labour cost	Adequate funding to support training and capacity building programs Demand for training
Research and	Strengthen the outreach and communication function of the SRI to make it more proactive in delivering services to actors across the	Industry Research and	Adequate research

Development (R&D) plan that Drives	value-chain	Development (R&D) plan developed	funding and human Capacity

innovation and product development	enable the Institute to undertake research across the value chain Strengthen the outreach and communication function of the SRI to make it more proactive in delivering services to actors across the value chain[22]	SRI becomes more proactive in supporting productivity growth and product development (value addition) in the sector	Harmonious relationships among the collaborating institutions
Regulatory overlaps and conflicts between primary regulators and secondary regulators	Reduce duplication of regulatory functions (by national and County governments) through regular consultative meetings of the Inter-Governmental Relations Technical Committee (IGRTC) Strengthen border management agencies to eliminate current silo operations. Establish one-stop-shop in which all secondary regulators have desks (virtual/physical) at the primary regulator (Customs border points)	Harmonized regulatory framework with clearly defined institutional roles at both County and National government A strengthened and efficient border management Committee	Adequate funding and human resource Seamless coordination between National and County government
A national energy policy that integrates non-traditional power sources	Convene a high-level inter-ministerial committee combining representatives from Agriculture Energy Trade and industry to oversee the development of a national strategy on sugar-cane development, co-production, and co-generation.	Increased co-power generation and supply to the national grids from sugar processing Enhanced incomes and competitiveness to the sugar industry	Affordable credit for infrastructural investment of co-generation Availability of raw material for power generation Favorable tariff regime

[22] Cross-reference the recommendations of the 2019 Sugar Taskforce

6.2.5 Industry Cross-Cutting Issues

Some of the industry-wide issues such as environmental issues; climate change impacts and overarching policies and regulations have already been covered elsewhere in these recommendations. Of the cross-cutting issues that ought to be incorporated, gender integration and the inclusion and participation of the youth are the two most pressing policy issues.

At a high policy level youth participation and gender equity should be meaningfully incorporated into all sub-sector policies and plans. But this should be in depth incorporation, not token mention. From its hearings, the Task Force noted, for example, that cane expansion into non-traditional regions - such as Trans Nzoia - will compete with food crops- if not now, then most certainly in the medium- term. This will increase land pressure- unleashing centrifugal pressure for uneconomic fragmentation- that potentially undermine food production and impact national food security. The Task Force recommends policy-driven rather than market driven cane expansion into new regions to ensure that food production is not compromised. Decline in food production and nutritional security has a negative impact on household reproduction. It undermines overall household nutrition, child development and maternal health and, invariably, disproportionately burdens women. The Task Force recommends that specific, gender-responsive measures and clear policy prescriptions on the joint growth of cane production and food security be incorporated in both the overarching Sugar Sector Policy and Long-Term Sugar Sector Strategy and Plan proposed in Part 4. These policy prescriptions should define a policy stance that enables sugar production to increase in lock-step – rather than at variance - with other national goals, especially food security and gender equity.

Below is a summary of the Task Force's recommendations on these and related issues.

Concern	Policy Intervention	Expected Outcome/Impact	Assumptions
Taking gender into account	Constitution's 'participation and inclusion criteria' and to spell out clear targets and milestones on the inclusion and participation of women and the historically marginalized Develop policies that mitigate the impact of area expansion into new cane growing regions on food production and nutritional security	A more gender responsive and gender inclusive sugar subsector A sugar sector growth programme that is food security responsive	Political will
The role of the youth in the Sugar sub-sector	Regulator to commission study on barriers to youth participation and	A clear policy and strategy on youth inclusion in sugar subsector	Political will

	inclusion in sugarcane farming in order to foreground the development of sugar sector policy and strategy for enhanced youth involvement in sugar sub-sector.		

7. INCOME STABILIZATION IMPLEMENTATION FRAMEWORK

7.1 Income stabilization implementation plan

7.1.1 Summary of main concerns and interventions

Value Chain Level	Concerns (Challenges and Opportunities foregone)	Interventions
1. PRODUCTION	i) Low productivity (seed cane varieties; depleted/exhausted soils; poor agronomic practices- low, delayed fertilizer application; wrong planting materials; lack of information and knowledge about varieties) ii) Persistent inability of domestic production not meeting demand iii) Low farm gate prices and incomes that do not support livelihoods iv) High cost of crop establishment and maintenance attributed largely to: a) Seed cane b) Fertilizer c) Labor v) Poor adaptation to climate change vi) Vulnerability to market risks such as volatile cane prices vii) High cost of credit to farmers (credit in kind- KISCO - vs commercial and other forms of credit; commodity fund loans?)	**i) INREASE PRODUCTIVITY** 1) Subsidize fertilizer (or develop a program to lower prices through bulk imports as done by KTDA, and apply a pan-territorial pricing strategy where farmers pay the same price regardless of their location) 2) Provide or strengthen extension services (transfer of knowledge for right usage of fertilizer based on soil testing). Revamp extension service provision applying ICT 3) Strengthen and implement extension services policy and liaise with Jasscom on implementation of this policy at the county levels **ii) INCREASE CROPPED AREA (MINIMIZE DEFICITS)** 1) Area expansion into non-tradition- rain fed regions- Trans Nzoia and Trans Mara (on a small-holder and medium sized basis) - subject to safeguarding food production. 2) Open up new irrigated areas in Tana River, Siaya and Sabaki (on a large scale basis). What needs to be done to bring in investors. Integrated sugar development – development of fodder – silage **iii) INCREASE FARM GATE PRICES** 1) Allow the market to align sugar demand to supply thereby reducing imports (and by extension, illegal imports) – prices determined by forces of supply and demand 2) Support farmers to diversify their income sources (reduce vulnerability) (see above) 3) Review the cane price formula – its components and methodology-how to value products from cane- to ensure fair payments to farmers. - relative shares between farmers and millers) 4) Increase profitability of sugarcane production **iv) REDUCE THE COST OF CROP ESTABLISHMENT AND MAINTENANCE** 1) Reduce labor costs 2) Promote mechanization of land preparation operations where farm sizes and topography permit)

Value Chain Level	Concerns (Challenges and Opportunities foregone)	Interventions
		3) Apply integrated weed management practices to reduce labor costs - combining manual, chemical and mechanical; register cane cutters
		v) MITIGATE AGAINST ADVERSE IMPACTS OF CLIMATE CHANGE 1) Support farmers to increase their uptake of climate-resilient technologies such as: trash-blanketing (mulching); rain water harvesting 2) Counties to promote awareness about climate change and enhance farmers' adaptation capacity 3) Counties to collaborate with the Regulator to ensure sugarcane mills comply with effluent disposal and other environmental requirements 4) Counties to ensure Cess is used for proper maintenance of road infrastructure
		REDUCE VULNERABILITY TO MARKET RISKS 1) Establish a Fund (along the lines of the Commodity Fund) to cushion farmers in case of extreme price declines 2) Counties to support farmers; transition to alternative enterprises by providing market information and investment incentives
		vii) REDUCE COSTS AND RISKS ASSOCIATED WITH CREDIT i) Support farmers to access affordable credit ii) Promote institutional innovations such as cooperatives that facilitate mass access to affordable credit and spreading of financial risks iii) Require full disclosure of terms of in-kind credit by millers and other credit providers- is credit by millers a revenue stream
2. HARVESTING/ TRANSPORT	i) Late or non-harvesting of mature cane ii) High transport costs and double payments for harvesting iv) Tampering with cane weights (lack of transparency) v) Loss of cane through spillage (en route to the trans-loading sites and factory)	1) Reduce post-harvest losses (e.g. occurring through cane spillage, late harvesting and tampering with weights)
		2) Review contractual arrangements in order to reduce the cost of harvesting sugarcane and other malpractices like *Chuth Ber*, double deductions for services offered by the mills and non-harvesting of contracted sugarcane
		3) Reduce the cost of transport by adopting high payload trucks and reducing the transaction costs
		4) Improve road infrastructure

Value Chain Level	Concerns (Challenges and Opportunities foregone)	Interventions
3. PROCESSING	i) Inefficient operations in public mills arising from, inter alia: a) Under-utilization of capacity (machines especially in state owned mills are antiquated and are operated at low TCDs b) Poor pricing c) Over-age technology (machinery) ii) Lack of transparency in determination of ex-factory prices (and formula for producer payment). This is related to the concerns on non-accounting for environmental impacts in product valuation of sugar iii) Low levels of investment in value addition (for co-products) iv) Engagement in sugar importation creates conflicts of interest as well as dampening interest in investments in increased milling capacity (or the desire to collect cane from contracted farmers) v) Lack of enforcement/respect for contracts vi) Skills attrition in public mills (retirements; lack of training; succession planning) vii) High cost of processing in public mills (Reliance on expensive grid power; decrepit equipment and obsolete machines – manual processes; counterfeit parts) viii)Taxation on equipment and spares (general policy on taxes) ix) High levels of indebtedness by public mills	ncrease milling and operational (capacity utilization) efficiency in all mills Fast-track debt write-off, privatization and, rehabilitation in public mills Review the cane pricing policy and methods to account for shareable value of co-products and wider socio-economic impacts of the industry; and increase transparency by automating and publicizing the prices in real time (BUT note problems at Tea auction and propose corrective measures - extend discussion to trade and marketing) Promote more investments in value addition (co-products and power generation) v) Regulator to reassess the policy of issuing importation permits to millers (and their known subsidiaries/proxies) as a means of minimizing conflicts of interest in milling whilst also promoting compliance with contractual obligations to cane farmers vi) Regulator to liaise with millers and farmers' organizations/representatives to ensure contracts are strictly respected/adhered to and penalties put in place for contract violations [Reword as: Enforce regulations that penalize millers who do not collect contracted cane (develop and disseminate a contract governance framework; take account of the association and their role) vii) Promote improved management practices in public mills: A more global solution would be to pay off their debts and privatize or, alternatively, shut them down viii) Develop and implement a Sugar/Ministry energy strategy on co-production, co-generation between Ministry of Agriculture and the Ministry of Energy ix) Develop and enforce sugar industry pollution abatement policy: a) Incentivize the adoption of less polluting technologies b) Develop and implement regulations to contain pollution, including fiscal measures, punitive and non-punitive measures c) Regulator, together with NEMA and Counties, to work towards strengthening environmental surveillance mechanisms d) Design and implement information dissemination and awareness creation mechanisms and strategies e) Incentivize mills to adopt international financial standards for environment accounting (ISO-like recognition), and to build regulatory capacity to monitor and enforce environmental standards

Value Chain Level	Concerns (Challenges and Opportunities foregone)	Interventions
4. MARKETIING AND TRADE	**i) Domestic Market** a) Lack of transparency on determination of ex-factory price and the practice of forward sales b) Existence of contraband/ unbranded sugar in large quantities in the market (see macro-governance on smuggled sugar) c) Poor planning and scheduling of imports (estimates of supply and demand). Uncertainty about the data on sugar demand (Do we know the demand for sugar in Kenya without imports?) d) Impact of imports on prices seems to affect farmers more than other VC players (income effect of price decline) e) Illegal imports (what are the sources; who is involved; and what are the volumes) **ii) Regional and international issues** a) Poor implementation and compliance with regional trade agreements and other international protocols b) Country's inability to meet requirements (eg sucrose based payments for sugarcane and rationalization of processing operations) under the COMESA safeguard measures leading to continuous applications for renewal for protection of the sugar industry	i) Regulator to always have a handle on domestic production and consumption requirements as well as their long term projected values and (demand and supply) price elasticities ii) Develop a transparent formula for issuance of import permits iii) Commission market studies to determine the impact of sugar imports on domestic prices (for example, what are the trade-offs with food production; how to imports affect relative sugar prices and hence incentives for increasing production/productivity?) iv) Regulator to work with other government agencies and KRA to document how illegal imports get into the country (specifically naming the importers, borders, and facilitators - and finally, taking appropriate actions) a) The Ministry of Agriculture/Trade to put in place modalities for improving the country's compliance with international/regional free trade/Customs agreements on agricultural commodity trade
5. INDUSTRY	i) The industry lacks a training/capacity building policy Lack of a coordinated and adequately capacitated Research and Development (R&D) plan that can act as the driver of technological innovation and product development in the sugar industry iii) Long-term industry competitiveness and sustainability (adaptation to emerging cross cutting development trends such as: population growth and implications on land fragmentation; urbanization; globalization; and, climate change)	i) Develop and implement industry-wide (sugar value chain) training programs supported by industry (and county governments?) ii) Increased funding for research at Sugar Research Institute (SRI) iii) Increase competitiveness and sustainability of the sugar industry and benchmark against global leaders (for example in productivity/resource use efficiency, returns on investment, technological innovation and compliance with environmental standards) iv) Fast-track implementation Sugar Bill (urgently meet Senate Committee on Agriculture) - (Refer to section on macro-governance) v) Both national and County governments should develop long term plans for dealing with the consequences of emerging development trends such as population growth,

Value Chain Level	Concerns (Challenges and Opportunities foregone)	Interventions
		urbanization, globalization and climate change.
6. MACRO-REGULATION	i) Absence of an overarching sugar sector policy (look into and assess applicability of capacity building strategy) ii) Absence of a long-term sector strategy iii) Inadequate legal framework (sector legislation-sugar bill) iv) Inadequate cross-sectoral framework linking fuel, electricity and sugar sector v) Regulatory overlaps and conflicts- (primary regulators vs. secondary regulators) vi) Inadequate oversight over regional and trans-national trade and regulatory issues vii) Ieffective inter-agency co-ordination on sugar imports viii) Lax border controls on illegal imports (Somali, Busia especially)	a) Develop and fast-track the implement of a sugar sector policy and long-term strategy b) Urgently identify key issues (additional) from Task Force work that need inclusion in the Sugar Bill 2019. (Enforcement of agreements and contracts amongst sector actors; regulation transloading sites- accountability; transparency; calibration of machines; strengthen regulatory oversight on imports; improve sugar pricing formula to take account of production costs) c) Establish high-level policy body combining agriculture and energy to oversee co-production, co-generation and sugar-cane development. d) Establish one-stop-shop in which all secondary regulators have desks (virtual/physical) in the primary regulator. e) Strengthen parliamentary oversight over international trade agreements. f) Strengthen market surveillance by enforcing marks and origin labels. g) Integrate border control agencies to function as one. (Committee is operating as Silo)

7.1.2 Implementation Plan (time frame and costing)

The implementation matrix is with time frame and costing is annexed

[Introductory narrative, matrix in the Annex]

7.2 Sugar Industry Income Stabilization Fund

One of the Terms of Reference of the Taskforce was to propose a plausible and sustainable a price stabilization framework for the sugar sub-sector. The objective of income stabilization is to reduce commodity price fluctuations to allow them move within an acceptable range. While some variation in prices may be considered to be a normal aspect of well-functioning markets, volatility becomes problematic when price movements are large and unpredictable (EU, 2016). Such policies are meant to ensure that value chain actors get the requisite benefits from their investments.

Generally, agricultural sector is confronted by price volatility more than any other sectors of the economy. Some challenges of commodity price volatility include creation of financial risks to farmers, reduces appetite for long term investments. Revenue reduction among farmers, negatively influences the economic welfare of farmers. High food prices, especially in developing countries arising from such price volatility increases the cost of food which represents a large share of their income.

Considering the inevitable nature of agricultural price volatility, many countries around the world have long standing and established measures of agricultural price stabilization and support which have been devised with special reference to their own problems and their social, economic and political circumstances.

Some of the factors that contribute to price volatility include the following:

i) Market factors

In the short-term, market forces of supply and demand are inflexible on agricultural products. Considering that food is a basic human necessity, demand remains inelastic while supply takes a bit of time to adapt considering that it cannot move faster. As a result, even small changes in agricultural supply or demand can cause large variations in prices, causing permanent market instability. Other factors which are macroeconomic in nature such as exchange rates and oil prices may have significant impact on price fluctuations.

ii) Climate change and weather variability

Climate change is perhaps one of the challenges of our time. As has been the case over the years, agricultural production process is sensitive to adverse weather conditions, climate change, as well as plant or animal diseases.

iii) Political economy

The significance of politics and economic growth (political economy) has never gained prominence before than it is today. Government policy on both Agriculture and Trade Policies play a significant role in agricultural price volatility. Both regional and multilateral trade has led to free movement of goods and services with limited enforcement of Tariff and Non-Tariff Barriers. As such the open borders imply that countries that re not competitive may lose on their ability to produce agricultural produce and products.

iv) Financial investments and speculation

Investor speculation in agricultural produce and products is one of the key drivers of price volatility. This may be coupled by hoarding of an Agricultural produce/product which results into a man-made deficit. This tends to create price volatility.

7.2.1 Objectives, Funding, Structure and Administration of the Income Stabilization Fund

Objectives

The objects and purpose of the income stabilization shall be to mobilize resources towards efficient and effective price and income stabilization for the sugar sector**.**

The specific objectives include:

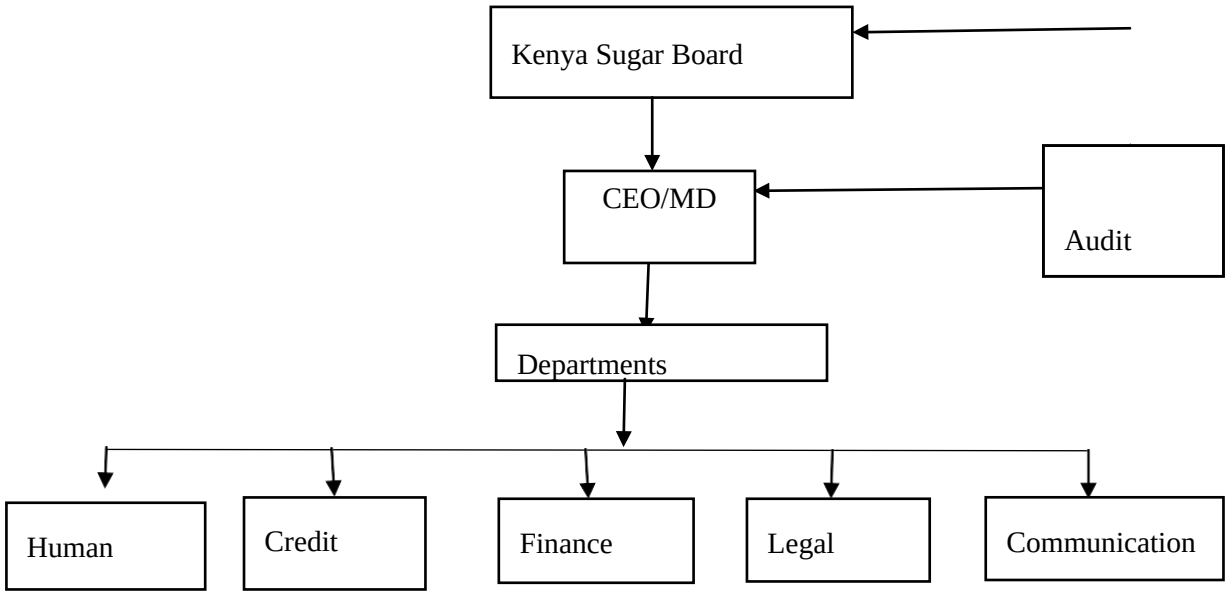
i. Purchase buffer stocks;
ii. Offering extension services to farmers;
iii. Capacity building of the farmers;
iv. Rehabilitation of sugar factories;
v. Input subsidy to sugarcane farmers;
vi. Promote value addition, co-generation and any other diversification processing level; and
vii. Perform any other purpose approved by the board that would enhance sugar price and income stabilization.

Sources of Funding

The resources for income stabilization shall be drawn from the following: -

i. Sugar Development Levy;
ii. Moneys appropriated by the National Assembly;
iii. Grants and donations;
iv. Returns accruing from investment of the Fund;
v. Moneys provided by the County Assembly; and
vi. Any moneys accruing to or received by the Fund from any other source as may be approved by the Cabinet Secretary.

The Administration Structure of the Fund



Source: Taskforce conceptualization

Sustainability and Equity Considerations

Transparency and accountability of the Fund will be undertaken by having a separate bank account for the purposes of the Fund. All the relevant laws of financial reporting and auditing shall be observed and enforced as specified in the Regulations. In addition, payments out of the fund shall only be to eligible and registered stakeholders along the sugar value chain.

The Administrator of the Fund shall ensure that at the initial stages of operationalization of the Fund, the funds are not depleted, and only a 50 percent pay out from the fund shall be made, and this shall progressively be increased as the funds grow to a maximum of 75 percent. Moreover, to ensure sustainability of the Fund, the money shall only be invested as above advised and in portfolios that can easily be liquidated for payment purpose.

7.2.2 Risks associated with operationalization of income stabilization fund

A proactive approach to strategic risk management is essential in anticipating and mitigating potential risks that could impede the realization of Sugar Subsector's plan and objectives. Strategic risk assessment is a systematic and continual process for assessing the most significant risks facing an enterprise. It is anchored and driven directly by the sector's core strategies. Linkage of top risks to core strategies helps pinpoint the most relevant information that might serve as an effective leading indicator of emerging risks.

The strategic risk analysis is aligned to the Subsector's strategic objectives and environment. It aims to inform a proactive approach to risk monitoring, mitigation and management. The risk management process and the resultant reporting shall reflect and support the Subsector's strategic objectives and environment. The Subsector strategic risks have been classified as operational, reputation, supervisory/compliance, strategic and financial, based on standard GARP risk classification.

Table 26: Risk Analysis

Risk Category	Risk Event	Risk Probability	Risk Impact	Risk Mitigation	Risk Mitigation Agent
Strategic The risk arising from adverse business decisions, improper implementation of decisions, lack of responsiveness to industry changes or the impact that the decisions of a management team have on a business	Hiring of unqualified, inexperienced personnel to manage the Fund Political interference on the decisions made by the Board	Medium	High	Strengthen human resource by competitively hiring qualified personnel Training and capacity building The Board to make independent decisions devoid of political interference.	Sugar Board
Financial Risks: Credit	Weak KYC principles	Medium	High	Develop clear KYC principles	Sugar Board

Risk Category	Risk Event	Risk Probability	Risk Impact	Risk Mitigation	Risk Mitigation Agent
The risk arising from a borrower's probability to default on any contract with the financier or failure to perform as agreed. Liquidity The risk arising from inability to meet liabilities when they fall due without incurring unacceptable losses. Interest Rate The risk arising from adverse movements in interest rates Foreign Exchange The risk arising from adverse movements in currency exchange rates	Delinquent borrowers	Medium	High	Undertake due diligence and critical evaluation of borrowers	Management and Credit Committee of the Board
	Diversion of the loan to other unintended uses	Medium	High	Pay directly to suppliers of goods and services (have thresholds minimum and maximum) Undertake random checks to verify that the loans have been used for the purpose it was given.	Management and Credit Committee of the Board
	Inadequate financial resources	High	High	Proper budgeting and implementation of the resource mobilization strategy through initiatives such as diversification of income streams.	Sugar Directorate Kenya Sugar Board
	Lack of implementation of the approved budget and work plan.	Medium	High	Implement the activities of the approved budget	Sugar Board
	Increased cost of importing machinery due to due to delayed processing and disbursement of the loans	Low	Medium	Hasten the process of loan application by reducing bureaucratic process.	Management and Credit Committee of the Board
Market The risk that a business may experience loss due to unfavorable movements in	Depressed market prices	High	High	Control and monitor issuance of sugar import licenses Train and equip BMC to ensure compliance with	Management and Credit Committee of the Board

Risk Category	Risk Event	Risk Probability	Risk Impact	Risk Mitigation	Risk Mitigation Agent
market prices Or due to Competition The risk that your competitors will eat into your market share or take you out of the market completely				sugar importation across the border. Require where necessary that borrowers enroll in business training management courses	
	Cheaper/convenient credit from other financial institutions (both regulated and unregulated)	Medium	Medium	Improve on turnaround time for accessing credit Make the Fund convenient and speedy accessible Create awareness on the benefits of the loan from the Fund among borrowers	Sugar Board
Operations The risk of loss resulting from inadequate or failed internal processes, people and systems or from external events	Internal inefficiencies Delay in the establishment of a functional Board including appointment of the Chairman of the Board	Medium	Medium	Create strong internal systems (audit and non-audit) Operational excellence FastTrack constituting of full functional Board	Office of the President, responsible MDAs and SCAC.
	Inaccurate data, data manipulation, mismatch of data, system/human error among other	High	High	Set up a system of validating information collected from various sources	Sugar Directorate
	Lack of stakeholder good will	Medium	Medium	Undertake comprehensive stakeholder analysis and mapping to inform targeted stakeholder management and	Sugar Directorate

Risk Category	Risk Event	Risk Probability	Risk Impact	Risk Mitigation	Risk Mitigation Agent
				enhance and sustain stakeholder goodwill	
	Technology failure and frequent breakdown Use of outdated technology occasioned by the industry to adopt state of art technology and innovation	High	High	Undertake regular, proactive and planned maintenance Targeted funding for adoption of new and state of art technology Develop a framework for offering tax incentives to encourage adoption of new technology and innovation	Sugarcane millers The National Treasury
Regulations The risk arising from violations of, or non-conformance with, laws, rules, regulations, prescribed practice, or ethical standards issued by the various regulators from time to time.		Medium	Medium		
	Failure to enact the Sugar Bill, 2019 into law Delay to enact the Sugar Bill, 2019	Medium	High	Expedite the enactment of the Sugar Bill, 2019	AG and Parliament
	Enactment of the Sugar Bill, 2019 with its current provisions establishing the Sugar Development Fund	Medium	High	Repeal Clause 19 (1) of the Sugar Bill, 2019 and establish the Sugar Development Fund pursuant to the provisions of Section 24 (4) of the Public Finance Management Act (No. 18 of 2012) and Section 207 of the PFM National Government Regulation, 2015.	Sugar Directorate

Risk Category	Risk Event	Risk Probability	Risk Impact	Risk Mitigation	Risk Mitigation Agent
	Violations of the provisions of the Sugar Act, 2019 (If enacted) and Regulations	Medium	High	Strict enforcement of the provisions of the Sugar Act, 2019 (if enacted).	Sugar Directorate
Environmental The risk arising from uncertainty about environmental liabilities or the negative impact of changes in the environment	Closure of the mills who are borrowers and fail to comply with NEMA requirements Inability to repay the loan due to adverse effects of climate change weather resulting to loss of yield	Medium	Medium	Encourage mills to comply with the NEMA regulations Undertake R&D to come up with cane varieties that are resilient to climate change	Sugar Board SRI
Reputation Risks	Release of information to the wrong people or wrong information to stakeholders	High	High	Observe due process in information dissemination; Verify validity and accuracy of all information Strengthen sector governance structure to prosecute offenders	
Compliance risks	Provision of inaccurate/incorrect or untimely information	High	High	Develop data validation policies and procedures; Develop and implement information dissemination	Sugar Directorate

Risk Category	Risk Event	Risk Probability	Risk Impact	Risk Mitigation	Risk Mitigation Agent

7.3 Monitoring and Evaluation Plan

The price stabilization framework will be implemented in a phased manner with the first phase covering three years from 2022. The monitoring and evaluation (M&E) plan shall provide lead institutions and stakeholders charged with specific implementation tasks with the requisite data and protocols for tracking progress towards achievement of stated objectives. The plan also provides pathways for receiving timely feedback in order to ensure that emerging problems are identified expeditiously and appropriate corrective actions taken. The qualitative/quantitative baseline levels for the indicators to be tracked over the first three-year phase are stated in the Framework Implementation Plan. It is envisaged that the M&E plan will entail a number of activities and organizational/reporting structures as follows:

i) Institutional organizational (management committee) domiciled at AFA Sugar Directorate
To ensure the overall co-ordination of the M&E framework within the Authority, the following will be done:

1) An M&E committee will be formed to continually monitor the progress of the Price Stabilization Framework. This committee will consist of Heads of Department.
2) The objectives and initiatives should be cascaded to all SD Departments detailing the key activities required by the Departments to implement the Framework.
3) The Head of Directorate will champion the implementation of the Framework.
4) The Heads of Departments to hold monthly meetings chaired by the Director SD. During the meetings, the Heads of Department will provide feedback on their respective sections on the implementation of the Framework, together with areas that may require changes in strategic approach.
5) Departmental plans should then be rolled every year and level of achievement of the Framework goals documented.
6) SD will undertake an evaluation of the Price Stabilization framework implementation in 2024 and initiate the development of the next Phase of the Framework.

ii) Timed progress reviews and reporting to stakeholders with a view to assessment of the price stabilization framework with respect to its relevance, efficiency, effectiveness, impact and sustainability.

1)On a quarterly basis, the M&E committee to report to the Board/Ministry of Agriculture/Industry stakeholders, on the progress made towards achievement of the planned goals.

2)Annual reviews will be made to incorporate changes found necessary through the constant monitoring and evaluation mechanism.

iii) Framework implementation management procedures: strengthening institutional capacity for evidence based planning, implementation and review (through sourced technical support where necessary)

a) A training needs assessment will be undertaken of the M&E Committee to identify and meet capacity needs.

b) Technical support will be provided and external evaluation undertaken by M&E experts from outside the implementation team in order to enhance objectivity.

iv) Production of periodic M&E knowledge products such as:

a) Implementation progress reports on key objectives and thematic objectives such as costs, prices, productivity, quality, value addition, market diversification, etc.
b) Subject matter specialist meetings in different sugar growing zones and or with players at different value chain levels such as processing, packing, warehousing and related logistics, etc.
c) Periodic specialized reports such as market studies, impact assessment and midterm reviews
d) Production of promotional and dissemination documents for educational and awareness creation for stakeholders and target markets e.g. policy briefs, lobbying, posters and discussion forums

e) Develop and implement an effective M&E dissemination strategy

8. RISK MANAGEMENT FRAMEWORK

8.1 Sugar sector primary risks and their sources

This section addresses the potential risks likely to influence the implementation of the proposed policy interventions (Implementation Plan). Unlike uncertainties, risk is defined as a stochastic event where probability of occurrence is computable, assuming availability of historical data. Economic actors in the sugar value chain are generally similar since they map resources (inputs) into outputs but the underlying objectives are quite different. Millers and commercial sugarcane farmers are strictly profit maximizers in the traditional sense. Smallholder farmers on the other hand are both producers and consumers supplying labor to their own farms and sugar factories as well as purchasers of farm inputs and sugar. Analysis of risks facing smallholder cane farmers, and their risk aversity, must take into consideration the objective they attempt to optimize, which invariably has to do with food and nutritional security, perceptions and culture (rather than money income or profit per se).

The risks facing different value chain actors will depend on their financial objective and sphere of operation. Since millers, transporters and traders are assumed to be profit maximizers (max of PQ- wX), their risks emanate from variance in product prices, P (influenced, among others, by demand and competition), production scale and technological innovation (Q), factor prices (w) and the vagaries of input supply chains (X). Smallholder farmers face similar market and technological innovation risks but they have to be contextualized to account for their response to forces of agricultural transformation/modernization and their dualist role of being producers and consumers.

The primary sources of risks in the sugar sector can be grouped into the following categories:

i) ***Operational and strategic risks:*** management of production processes, scheduling and resource flows; impacts of failure to plan and to respond to emerging development trends (relating to both opportunities and challenges); resistance to technological and consumer demand changes in the industry/market; inability to recruit and retain qualified staff; duplication of effort, especially among service providers

ii) ***Market related risks:*** changes in market forms and competition outcomes affecting access, participation, innovation, costs (factor prices) and benefits (output/product prices and values); existence of parallel markets (counterfeits and contrabands)

iii) ***Financial risks:*** credit access/availability; liquidity; interest rates; foreign exchange variations; over/underfunding and misappropriation of funds

iv) ***Environment and climate change risks:*** affecting enterprise/industry productivity and competitiveness; pollution and loss of bio-diversity; diseases/pests; droughts/floods; resource use/access and conflicts; food safety/health hazards and compliance with good agricultural practices and standards

v) ***Risks arising from demographic changes and migration patterns:*** resource use/access and conflicts; soil mining (loss in soil fertility); changes in provision and access to utilities and other services

vi) ***Regulatory risks:*** institutional capacity for surveillance and enforcement; information and database; agency coordination; and factors influencing compliance by value chain actors

vii) ***Political and security risks***: changes in government, policies and legislations; funding and investment priorities; partnerships; complementary public goods such as infrastructure and R&D; and political support and commitment/goodwill

viii) ***Reputation and legal compliance risks:*** behaviour and conduct that is not consistent with stated long term vision and core values of the organization; conflicts of interest; negative publicity that leads to costly litigation and financial loss (or loss of market share)

8.2 The elements of risk mitigation

The objective of the risk management analysis is to ensure that the proposed policy interventions are implemented successfully in a sequential manner as shown in the chart below.

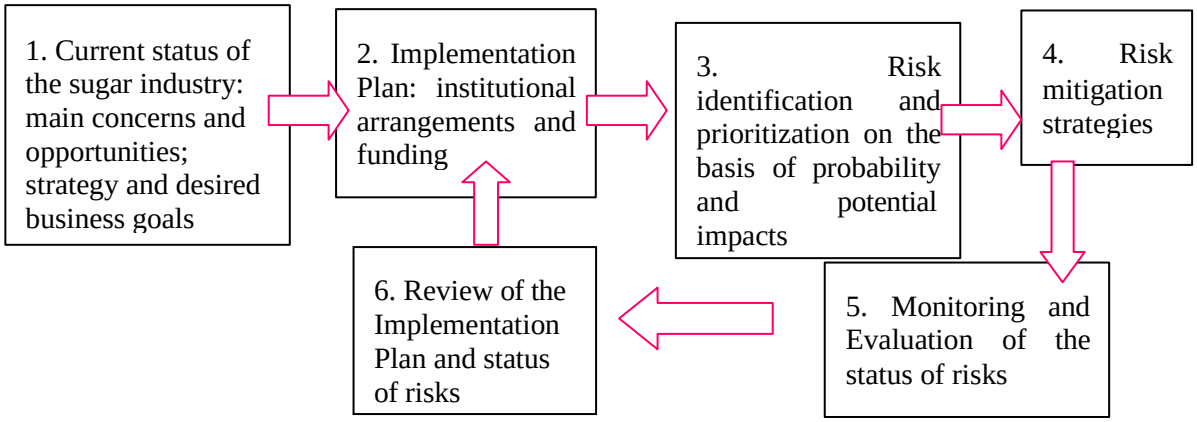


Figure 17: Developing a risk compliant implementation plan

Risk management requires information/data to determine the likelihood (probability) of the risks and their associated impacts or losses. Generally, the risk probabilities and impacts can be classified as follows: unlikely (L), possible (M), likely (H), imminent or certain (VH). Similarly, risk impacts can be low (L), medium (M), high (H) or critical (VH). Risks that have critical impacts and are also certain must be addressed immediately at the highest administrative level such as Parliament, line ministry, County or Regulator; they can also be mitigated through insurance. Risks that have low or medium likelihood and low probability of occurrence are usually acceptable or tolerable and can be left to mid level management cadres to deal with in their daily operational routines. A more nuanced risk management plan can be derived from the following table of probability/impact combinations.

Table 27: Risk Classification and Prioritization

PROBABILITY	POTENTIAL IMPACT OF RISK			
	Low (L)	Medium (M)	High (H)	Critical (VH)
Imminent (VH)	VH/L	VH/M	VH/H	VH/VH
Likely (H)	H/L	H/M	H/H	H/VH
Possible (M)	M/L	M/M	M/H	M/VH
Unlikely (L)	L/L	L/M	L/H	L/VH

It is important to note that commodity markets (value chains) are fairly dynamic and hence associated risks invariably morph from one category to another in terms of their likelihoods and impacts. It is therefore necessary to undertake M&E surveys periodically in order to realign the implementation plans as well as their results frameworks to emerging risks and/or risk transformations. Risk mitigation options include:

a) Risk transfer or sharing: for example, through vertical and horizontal integration and stakeholder funded programs

b) Avoidance of risks: through innovation and adaptation (e.g. use of climate smart technologies or switching away from risk prone enterprises or markets)
c) Taking insurance cover against extreme events combining high risk likelihood with critical impacts
d) Publicly funded safety-net programs for example against input or product price volatility
e) Tolerating or accepting risks especially those falling in the blue shaded boxes in Table 27.

Finally, on the basis of risk probability/impact combinations (Table 28), it is possible to compute a risk rating (count) for the whole industry or for a segment of the sugar value/supply chain, namely, at cane production/transportation, milling or County level as illustrated below for the hypothetical shares (%) shown (and using the same colour coding as in Table 27.

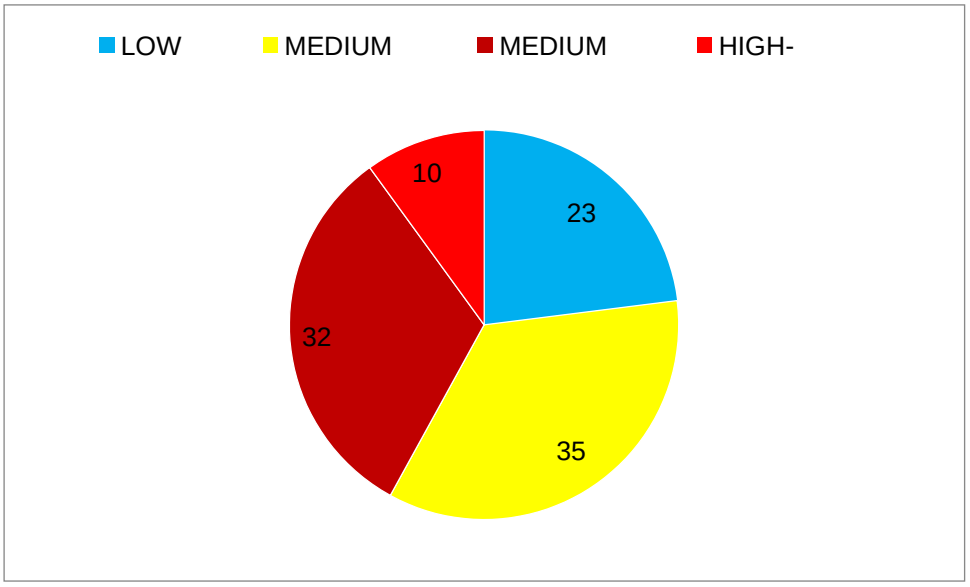


Figure 18: Industry-wide risk count

8.3 Risk-Mitigation Matrix

The principles highlighted in the foregoing sub-sections (8.1 and 8.2) will be applied to the following risk particulars in the sugar value chain and related supply chains for inputs at farm, processing and trading levels

Table 28: Sugar Value Chain Risks and Management Plan

Risk Category	Risk Event	Probability (L, M, H, VH)[23]	Impact (L, M, H, VH)[24]	Mitigation	Risk Mitigation Agent/s
Operations The risk of loss resulting from inadequate or failed internal processes, people and systems or from external events	Harvesting schedules: Mismanagement of harvesting schedules worsens/keeps the problem of cane fires persistent	High (Nyando Sugar Belt) Low (Western & Sony Sugar belts)	High Low	Develop and adopt strict green cane harvesting policies- through better regulation – and regular consultation with millers and farmer's associations. Develop and enforce an industry Code of Practice on abatement measures and mitigation of accidental cane fires.	Sugar Directorate in collaboration with Law Enforcement and County governments
	There is further delay in the appointment of a functional Board compromises sector oversight and increases compliance costs from delayed decisions and political interference.	High	Medium	Strengthen corporate governance in core regulatory institutions by a) urgently constituting a functional board; b) creating strong internal systems including both audit and non-audit processing	Office of the President, Ministry of Agriculture.

[23] *Risk Probability (Likelihood): L (unlikely), M(possible), H(likely), VH(imminent)*
[24] *Risk Impact: L(low), M(moderate), H(high), VH(critical)*

Risk Category	Risk Event	Probability (L, M, H, VH)[26]	Impact (L, M, H, VH)[27]	Mitigation	Risk Mitigation Agent/s
				and c) inducting and training the board and staff of the board.	
Political (The Political leadership is either not committed or is inconsistent in implementing measures necessary to stabilize farmers' incomes)	Policy commitment: The 2022 post-election national executive fails to commit itself to downstream sugar sector reforms	Medium	High	Adopt a plan of action/consultations with county government to strengthen local level reforms/intervention Train/Activate farmers associations and strengthen their claim making capacities	Sugar Directorate Civic institutions/Apex farmers associations
	Legislative inaction: The sugar bill stalls/is abandoned in Parliament	Medium	High	Identify and support 'reform champions' amongst members of the current/new parliament to keep sector reforms alive.	Sugar Directorate with Apex/relevant farmers associations
	Political will 1: There is weak political will or lack of interest to interdict illegal sugar imports or to rationalize the import system for lawful deficit sugar	High	High	Strengthen border surveillance through better co-ordination of the joint agencies that police international entry points.	Ministry of Agriculture to lead consultations with KRA, Internal security, Immigration.

Risk Category	Risk Event	Probability (L, M, H, VH)[26]	Impact (L, M, H, VH)[27]	Mitigation	Risk Mitigation Agent/s
	Political will 2: The Public sugar mills remain in their high indebtedness, persistent decline mode for the foreseeable future	High	High	Fast-track privatization of the public sugar mills.	Ministry of Agriculture and sugar directorate.
Climate Change (The weather effects and ecological response to climate change inflict damage on cane production and productivity and lead to infestation by new pests and diseases)	Extreme weather events: Recurrent cycles of ever worsening droughts and floods undermine production and erode productivity	High	High	Use research to develop and encourage uptake of climate smart/climate responsive cane varieties by farmers Develop policies to strengthening farm-level reception and adoption of resilient/climate responsive varieties Roll-out 'climate adoptive extension services programme for sugar cane farmers	SRI/KEPHIS to lead the science-response MALF&C and Sugar Directorate to lead the policy response County Governments to lead the extension service actions
	New pests/diseases emerge as climate change effects substantially alters the ecology of sugar growing	High	High	Build institutional capacity - through dedicated funding and design of new policies – at both national and local level	Sugar Directorate to take lead but activate collaboration with Counties and Non-governmental agencies (ICIPE?)

Risk Category	Risk Event	Probability (L, M, H, VH)[26]	Impact (L, M, H, VH)[27]	Mitigation	Risk Mitigation Agent/s
	zones			to do pests' and diseases' surveillance	
Financial (The financials of the sub-sector – especially the Public Sector mills remain in a parlous condition and undermine overall goal of improving and stabilizing both prices and incomes)	Credit risk: Action on the high, unsustainable debt in the publicly-owned sugar mills is delayed	High	High	Conduct a policy options study clearly demonstrating how the financials of the public sector mills impact both the price of cane and sugar to underline urgency of need for reform Provide a one-off conditional bail-out- as a prelude to privatization- to address overall financial weakness in the public mills	Sugar Directorate Ministry of Agriculture/National Treasury to re-activate previous cabinet level action
	Liquidity: There are delays in addressing the poor liquidity situation in public sector mills which continues to undermine operations and settlement of current obligations	High	High	Prioritize and develop a rapid privatization/leasing programme for the public sector mills to generate fresh injection of capital.	Ministry of Agriculture/Sugar directorate
	Interest rates: Poor corporate and financial governance	Medium	High	Develop and commit the public sector mills to an	Ministry of Agriculture to provide policy leadership in

Risk Category	Risk Event	Probability (L, M, H, VH)[26]	Impact (L, M, H, VH)[27]	Mitigation	Risk Mitigation Agent/s
	erodes the ability of public sector mills to get reasonably affordable credit from the banking sector			enforceable and legally executable Memorandum on Good Corporate Governance in the Sugar Sub-sector.	consultation with National Treasury Sugar Directorate to provide Technical Support and oversight
	Forex Exposure: Unanticipated weakening of the Kenya shilling against hard currencies increases the cost of deficit imports depressing demand for sugar in the country.	Medium	High	Adopt a medium-term strategy and plan to reduce the quantity of deficit sugar by increasing local production through targeted agronomic interventions (see relevant reforms in the Implementation Matrix elsewhere in this Report)	Ministry of Agriculture in liaison with County Governments
Market (New sources of competition; illicit imports and sector persistence with an non-responsive pricing system introduces structural changes the sugar market)	Illicit sugar: There are delays in taking effective action against smuggled sugar	Medium	High	Undertake study/actions to measure the scale and nature of the problem - esp. what borders are most porous- in order to design appropriately targeted action.	Sugar Directorate
	Competition 1: Artificial sweeteners and sugar substitute depress	Medium	Medium	Commission study on the demographic dynamics driving the	Ministry of Agriculture/Sugar Directorate

Risk Category	Risk Event	Probability (L, M, H, VH)[26]	Impact (L, M, H, VH)[27]	Mitigation	Risk Mitigation Agent/s
	demand for cane sugar			growing artificial sweetener market and design and adopt long-term adaptive policies	
	Competition 2: New areas based on beet-sugar emerge in Kenya, eroding the competitiveness of traditional cane sugar sector	High	High	Anticipate the potential growth of beet sugar industry by developing a long-term policy on both cane and beet sugar production in Kenya.	Ministry of Agriculture
	Pricing: Poor pricing system depresses farm-gate price of sugar cane	High	High	Adopt and implement a dynamic cane pricing formula that rewards quality at the farm-level and efficiency at the milling level	Ministry of Agriculture to provide policy direction Sugar directorate to provide oversight and scrutiny
Regulatory **(**The regulatory environment constrains or burdens reforms designed to increase value and incomes in the sugar sub-sector through weak or non-enforcement of the laws and	Change in the regulatory laws: The laws/regulations fail to support incentivize the development of the sugar value-chain especially in such issues as co-generation; co-production and diversification more generally	Medium	High	Initiate cabinet-level dialogue and inter-ministerial policy commitment between the states departments for trade, agriculture, energy and industry on co-production; co-generation and	The Ministry of Agriculture

Risk Category	Risk Event	Probability (L, M, H, VH)[26]	Impact (L, M, H, VH)[27]	Mitigation	Risk Mitigation Agent/s
regulations)				diversification	
	Judicial decisions: The current trend on litigation of 'public policy questions' leads to judicial blockage or stalling of sector reforms	High	High	Initiate dialogue especially through the Judiciary Training Institute on the constitutional separation and difference between policy questions and human rights issues	Sugar Directorate to initiate and ensure on-going dialogue with the office of registrar, the KMJA and the head of JTI.
Environmental (Failure to internalize the costs of managing factory effluent and pollutants attracts adverse regulatory action or generates negative externalities for adjoining communities)	Adverse regulatory action on mills: NEMA imposes penalties/including factory closures that disrupt the processing of cane in targeted factories.	Medium	Medium	Initiate anticipatory dialogue with mills and design measures to forestall regulatory penalties and other punitive action by NEMA.	Sugar Directorate to initiate action. NEMA- in consultation with Sugar Directorate- to provide technical support for the design and implementation of remedial measures
	Factory discharge creates health problems: Effluent and pollutants create water and airborne diseases that create communal and political conflicts in the sugar-cane growing zones.	Medium	Medium	Initiate anticipatory dialogue with the sugar mills; county departments of health and environment and NEMA to design effective effluent and pollutant management interventions.	Sugar Directorate to initiate the process but the implementation to lie with County Departments of health, environment with technical support from NEMA.

Risk Category	Risk Event	Probability (L, M, H, VH)[26]	Impact (L, M, H, VH)[27]	Mitigation	Risk Mitigation Agent/s
Regional risks (Disagreements amongst state partners in the East African Community, EAC, and COMESA affects cross-border trade in sugar and sugar products)	Trade wars: Retaliatory – tit-for-tat-practices in regional trade negatively impacts domestic production, processing and pricing of sugar in Kenya.	Medium	Medium	Improve co-ordination amongst the ministries of agriculture; trade and regional integration to ensure non-conflictual implementation of regional integration and regional trade agreements.	Ministry of Agriculture to initiate inter-ministerial dialogue.

ANNEXES

Annex I. Price Stabilization Implementation Matrix

PRICE STABILIZATION IMPLEMENTATION PLAN

6.2.1 SUGARCANE PRODUCTION, HARVESTING AND TRANSPORTATION

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
Low productivity										
Poor seed cane varieties. (Lead institution SRI)	Strengthen roll-out, multiplication and uptake of improved seed varieties beginning with the 21 varieties already released	Timeframe for variety certification and release (KEPHIS) see notes from SRI CEO	Area planted with different cane varieties (adoption rates) by farm size and by cane growing region	Cne availability surveys and mill records	MOALF&C County Governments	37.50	37.50	37.50	112.50	16 Counties, trained Biannually, 25 staff for 5 days at a cost 10,000 per day
		Current cane varieties and their productivities at research station and on farms		Cne availability surveys and mill records		2,640.00	4,400.00	6,160.00	13,200.00	Total Area under cane = 220,000, (Sustaitanble production ratio, 30:30:30:10 PC to Ratoon1, to Ratoon 2, to other ratoons

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
		Ratoon productivity: some farmers ratoon over 15 times (e.g. Homa Lime) while the majority achieve only 2-3	Average number of ratoons by farm size and by region Sugarcane productivity by farm size and by region							respectively). Plant Crop ratio 30%, seed rate of 8 Tonnes per Ha, Price of seed cane per Tonne = 5000. This is funding for SRI to establish A nurseries for onward bulking by millers and farmers.
				Cne availability surveys and mill records						
Inadequate funding for research in SRI	Provide adequate and stable funding to the Sugar Research Institute to enable coverage of the entire value chain and deepen the Institute's human resource base	SRI is under-funded	Number of value chain specific programmes executed by SRI	Performance reports; M&E surveys	SDL	400.00	400.00	400.00	1,200.00	In 2013, SRI received Ksh 385,044,000 from the SDL, hence the estimate of 400,000,000

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
	Establish, by regulation, a Sugar development fund to ensure sustainability of research funding				SDL	-	-	-	-	Consumer levy, collected by the miller and remitted to the KRA (will get service level), certain % to go to the fund. The fund to be source of funding for research, cane development, factory rehabilitation and infrastructure development. This is provided for in the sugar bill, currently in parliament hence no costing.
			a) An Extension Policy document developed							

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
			b) Implementation plan for the Extension Policy developed and							
Poorly funded extension services coupled with inadequate research	Strengthen and implement the National Agricultural Extension Services Policy and liaise with JASSCOM on implementation of this policy at the county levels	Extension Policy documents: Kenya Agricultural Sector Extension Policy 2022; National Agricultural Soil Management Policy 2020	cascaded down to the County levels Number of contacts farmers make with	M&E surveys; Industry surveys and county records	MOALF&C	37.5	37.5	37.5	112.5	16 counties sensitized on the extension policy , seven officers per county at

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
information to farmers. Lead institution County Governments)		There is no legal framework to allow Counties to receive conditional grants Organizations offering extension services xxx; Farmer-Extension ratios xxx Limited/no use of ICT approaches	extension agents per year Number of farmers accessing extension education messages through:							10,500 per day for 5 days
	Establish a legal framework for Conditional Grants to create "Matching Funds Appropriations System" whereby national government earmarks transfers to counties on condition that they provide matching funds for agricultural extension services		i) Physical contacts; ii) ICT based forums; iii) Other platforms such as farmer field schools, shows, etc	M&E surveys; Industry surveys and county records	MOALF&C = 160 COUNTY GOVERNMENTS = 160	320	320	320	960	The National government to give at least 10 million per county to be marched by another 10 million by the counties for extension services including soil conservation
	Provide or strengthen extension services (transfer of knowledge for right usage of fertilizer based on soil testing) leveraging ICT to increase innovation as well as adoption of					N/A	N/A	N/A	N/A	As No. above

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
	more resilient and productive varieties									
Declining soil fertility (lead institution MOALF&C)	Strengthen- through training and outreach programs to farmers on fertilizer application based on soil analyses	Fertilizer prices currently paid by farmers vary by region and generally high; Soil fertility and risk of nutrient depletion varies from region to region but higher risks in more densely populated Counties Low use of farm yard manure and other fertility enhancing alternatives	a) Fertilizer prices paid by farmers in different regions	M&E surveys; Industry surveys; County records		79.2	79.2	79.2	237.6	Incetivise farmers on soil sampling and testing by subsidizing ost of soil testing. Area under cane is 220,000 hectares, a target of 30% is redeveloped annualy, translating to 66,000 hectares. Soil from the 66,000 ha will be sampled

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
										and tested at a cost of sh.1,200. The GOK to provide a subsidy of 50% of the cost in the next three yeras.
High cost of fertilizer (volatile prices and unreliable delivery to farmers)	Enact policies and take measures to reduce cost of fertilizers by, for example:				farmers, GOK	2.6 billion	4.4 bn	as above		22,000 hectares (area to be harvested) will reqire at 5 bags planting fertilizers per hectare at 6000 per 50kg bag = 6.6 billion. GOK to subsidize 40% hence 2.6 billion Ksh. two thirds of the area will be harvested annually thus requiring

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
										fertilizer in the subsequent years. To take the form of the e-voucher programme already roled out for other commodities
	a) Subsidizing fertilizer (or develop a program to lower prices) b) Bulk imports, c) Applying a pan-territorial pricing strategy where farmers pay the same price regardless of their location		b) Share of fertilizer costs in total farm costs							
	Promote use of locally and cost-effective soil fertility improvement measures such as									to be executed through capacity

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
	application of lime and use of organic materials such as compost manure, green manure, etc									buildng covered under extension budget
Low sugarcane production which results to low total sugar production leading to domestic production not meeting demand for sugar	Increase cropped area to minimize sugar deficits by:Area expansion into non-tradition- rain fed regions- Trans Nzoia and Trans Mara (on a small-holder and medium sized basis) - subject to appropriate safeguards to ensure continued food production	Total national sugarcane output is 603,000x10 MT Priority value chains (indicated by Counties) that may conflict with area expansion for sugarcane (eg sugarcane displacing maize in Trans Nzoia; tea and maize in Kericho; food crops in Siaya, Bungoma and Kakamega) Area expansion in non-traditional areas poses environmental or resource	Cropped sugarcane areas in: Traditional growing Countiesii) Non-traditional growing Counties Sugarcane area under irrigation in: Traditional growing	M&E surveys; Industry surveys; County records	Private developers	12.25 Bn				Source Kenana report. Expand by 81,500 hecteres that is potential for cane inTana lower (15000 Ha, Coastal Athi (15,000 Ha, - rainfed and irrigated), Rift Valley -11,500 Turkwel and TOT). The cost of production

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
		availability/sustainability concerns (e.g. in Siaya County) and adequacy of irrigation water There are win-win opportunities for coupling sugar enterprise with fodder production in livestock based economies (e.g. in Tana River County)	regions/Countie s ii) Non- traditional and emerging regions							per hectare is 150,000 x 81500 ha = 12.225 bn. The government to incentivise private setor players to invest
	Encourage investment in new areas by: Opening up areas for irrigation e.g. in Tana River, Siaya and Sabaki (on a large-scale basis)									
	Develop appropriate policies for attracting new investments in the sugar sub-sector		Sugarcane production area under integrated management systems (integrating sugarcane production with other synergy enhancing enterprises such as		County Governments	10 million			10 million	Extension services offered on diversification

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
			fodder, especially in ASALs)							
High cost of crop establishment and maintenance attributed largely to a) Labor; b) Seed cane and c) Fertilizers										
Mechanization of land preparation and agricultural operations	Increase availability of equipment for land preparation and agricultural operations	Current labor requirements per crop/season xxx Current labor costs for different farm operations per hectare OP1 – Planting Kshs 8,000; OP2 trash lining – Kshs 1,200; OP3 - weeding Kshs 3,200 OP4 –fertilizes application- Kshs 300 OP5 – harvesting Kshs 250/T,	Real labor costs per ha for different farm operations Area of sugarcane under mechanization by region Cost of mechanization per ha Number of hire service providers by County	Ministry and County data; M&E surveys; Industry surveys		446 mllion			446 Million	50 tractors through AMS at a cost of 5 milliom per one. 28 loaders (2 per factory) at a cost of 7 million per one

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
		workout to about 5% of the total production cost								
	Promote mechanization of land preparation Degree of mechanization per ha: 50% of the value operations where farm sizes and topography permit chain									
		Types of machinery used: Disc plough, mold board, winch, bell loader, harrow, bulldozers, high payload truck, single/double baskets trailers								
		Cost of mechanization relative to labor KSh xxx Providers of machinery or hire services (Farmers; Association; Mill; Other)	Trends in road infrastructure improvement and access to credit (to facilitate mechanization)							
Weed management	Adopt measures that encourage farmers to practice integrated weed management	Proportion of farmers applying integrated weed management is low	Proportion of farmers applying integrated weed management in %	Ministry and County data; M&E surveys;		0	0	0	0	To be done through capacity building,

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
	(combining manual, chemical and mechanical means) to reduce associated labor costs			Industry surveys						budget as costed in Extension services
Adoption of appropriate varieties	The Sugar Research Institute (SRI), working in collaboration with millers, farmer organizations and counties, to ensure availability and modalities for increased adoption of appropriate and affordable improved planting materials.	a) There are 21 improved planting seed varieties that require seed merchants for bulking Seed cane takes about 9 - 12 months, weighs less than mill cane but is offered same price thus discouraging investment Poor extension services to promote adoption of improved planting materials	Adoption rates for improved cane varieties Changes in pricing of seed cane Number of seed merchants engaged in bulking of improved seed varieties Extension-farmer ratios	Ministry and County data; M&E surveys; Industry surveys		0	0	0	0	As costed under intervention of poor seed varieties
Low farm gate prices and farmer incomes that do not support livelihoods										

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
Value-chain inefficiencies	Reduce uncompetitive practices along the value chain especially in transportation, milling and trade	There is limited public initiatives aimed at promoting competitiveness or reducing conflicts of interest arising from vertical integration of agencies and operations	Government and regulatory initiatives aimed at eliminating unofficial sugar imports, especially along the Somali border	Sugar industry surveys		4	4	4	12	Enhance capacity of the regulator and border management committee to avoid uncompetitive practices like conflict of interest, e.g. millers importing sugar. 15 members BMC and regulator 20 total 35 staff trained biannually at Ksh 10500 for 5 days

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
Alternative sources of farm-level incomes	Support farmers to diversify their income sources to reduce vulnerability to cane price shocks.	How do cane prices compare with prices of competing enterprises: Cane prices KSh 4480/ton Competing Enterprise 1. Bananas KSh 12,000/MT; Competing Enterprise 2. Maize KSh 20,000/MT; Competing Enterprise 2. Dairy KSh 33,000/MT; Gross margins for cane in Kshs 1,531/acre compared to other enterprises: Competing Enterprise 1. Bananas KSh 3296/acre;	Trends in cane prices Gross margins for sugarcane production by County Gross margins for competing enterprises, by County Initiatives of Counties aimed at increasing competitiveness of sugarcane production (including youth and gender dimensions) Initiatives of Counties aimed at assisting and supporting smallholder farmers to	Industry surveys, M&E surveys	County Governments-210 Million	80	80	80	240	capacity build farmers on economics of sugar production and alternative enterprises through demonstrations and trainings. Budget 5 million per county per year

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
		Competing Enterprise 2. Maize KSh 4,143/acre Competing Enterprise 3. Dairy KSh 5,298/acre; Strategies and incentives provided by the Counties for the sugarcane value chain (e.g. budgets allocated for roads maintenance[see ASDSP County priority value chains]	transition to alternative and more profitable enterprises (including youth and gender dimensions)							
Responsive Cane pricing system	Adopt and implement a dynamic cane pricing formula that rewards both quality at the farm-level and efficiency at the milling level	Price discovery mechanism and payments for cane is through a pricing formula	A revised cane pricing formula operationalized (formula taking into account valuation of co-	Sugarcane price evaluation reports	National Government	2	2	2	6	Budgeted above under real time data

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
	Ensure the pricing formula is based on ex-factory prices that are determined fairly and transparently		products of milling)		National Government	130	30	30	190	Digitize all sugar cane growing farmers (100M), sensitize farmers on quality based payments to ensure gradual transition from weight based one (30M), regular meetings of farmers, millers and other stakeholders to provide alternate dispute resolution mechanisms
4. Adaptation to environmental and climate change impacts										

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
Farm-level uptake of climate smart practices	Mitigate against adverse effects of climate change by supporting farmers to increase their uptake of climate resilient technologies and organic farming such as: trash-blanketing (mulching); rainwater harvesting; use of locally available materials to control weeds and crop pests and diseases.	Current state of climate change impacts and adaptation in sugar growing regions: unpredictable rainfall pattern affects on cane harvesting and transportation (how are the farmers and Mills adapting their planting and processing operations?) State of road infrastructure: impassable during rainy seasons	Number of farmers adopting climate smart technologies (measured as continuous use/application of the technologies)	M&E surveys	GOK MILLERS	500 million	500	500	1.5 bn	promote climate resilient technologies, capacity build millers on environmental protection and Environmental Management System (ISO 14001) ,introduce insurance program for sugar cane - government to subsidize the cost of insurance
Counties to promote climate responsive cane farming	Counties to enact measures that promote awareness about climate change (CC) impacts and enhance farmers' adaptation capacity	Issues relating to collection and use of Cess for road improvement: Sugar development Levy was discontinued but funds collected through Cess go directly to Treasury	1. Number of farmers aware of the impacts of climate change on their sugarcane production 2.	M&E surveys; County records	County governments	16	16	16	48	As above

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
		and Counties complain that they hardly get the money in quantities that are sufficient for road improvement	County initiatives: Number of programs developed to mitigate climate change impacts Budgetary allocations to the programs c) Extension education messages developed and disseminated to farmers							
	Government and Counties to facilitate adoption of climate smart technologies by improving infrastructure and access to imported equipment (e.g. through duty waivers and zero-rating of imports)	Individual initiatives in cane developments and maintenance e.g trash blacketing, minimum tillage	Number of climate smart programmes	Evaluation reports						same budget as above
				M&E Reports	AFA	6.72	6.72	6.72	20.16	As above

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
Pollution and effluent management	Regulators- both Sugar Directorate and NEMA- to adopt measures, consultatively with Counties, that ensure sugarcane mills comply with environmental requirements on air pollution and effluent disposal	Document/provide evidence of stakeholder concerns about pollution by sugar milling and potential health hazards. National Environment Policy Waterland Regulations Environmental Regulations (EIA/EA) Water Quality Regulations Controlled Substances Biodiversity Regulations Air Quality Regulations Waste Management Regulations Noise Regulations	Number of specific programs developed by the Regulator, NEMA and Counties aimed addressing concerns on environmental impacts of sugar processing (programs can be regulatory, monitoring, educational, incentives or taxes and other penalties)							NEMA to capacity build SD and CG on environment standards as per their mandate. 16 two day training 20 staff per training at 10,500 Ksh
		Available agricultural/crop insurance and income loss protection programs:	Number of climate/weather index based insurance service providers, products offered and premiums							Draft National Agricultural Insurance Policy was

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
Crop insurance to mitigate climate effects	Design and implement insurance programme to mitigate crop loss caused by climate-related incidences	Public - 0 Private – 0 Public/Private partnership - 0 Initiatives by Development partners and NGOs - 0	Number of cane farmers covered under climate/weather index based crop insurance programs	M&E Surveys; County records		500			500	finalised and awaiting CS concurrence prior to presentation to Cabinet for approval. Cane farmers to be included in the program. 250 million contribution by government
Development of functional markets and reliable infrastructure										
Improved production and marketing infrastructure	Counties to enact measures- including, where possible, ring-fenced budgets- to ensure that Cess is used for proper maintenance of infrastructure, especially roads and telecommunication services	Roads-Highway are in good state, Feeder roads are not all weather; Rail, water and air transport network have not been exploited as an avenue for transport. Cane buying/collection centres - There has been an emergency of cane	Length of access roads developed or rehabilitated using funds from Cess Trends in transport costs Storage capacity trends	M&E Reports	County Governments	4.032	4.032	4.032	12.096	Committee of 9 per county to be meeting quarterly (board cost at 7,000)

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
		buying centres in the industry Irrigation equipment and water supply infrastructure- Only available in Coast at Kwale	Investments on irrigation							
Mitigating production and market risks	Ministry of Agriculture to design and implement- in consultation with JASSCOM- a National Policy Framework for Deepening Access to Insurance Services for the Agricultural Sector including, for example, providing, where appropriate, funds for de-risking private insurance firms covering high risk farming activities.	Crop insurance programs are available for other crops other than for sugarcane There is a draft National Agriculture Policy 2021. Private sector partnerships and empowerment programmes such as: EU on seedcane development, bank (Kilimo biashara), Saccos	Number of cane farmers covered under various income protection (price volatility) programs	M&E Reports						Covered under insurance above
	Counties to work together with insurance firms to provide affordable insurance products to protect cane	Currently, no work has been done	Number of cane insurance schemes	M&E Reports						Covered under insurance above

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
	farmers against market risks									
Responding to price volatility	Counties to promote transitioning to less risky alternative enterprises	Currently, there are no effective mechanisms to cushion farmers against extreme price swings (price volatility)	Number of safety net strategies developed to cushion farmers against price volatility (specify whether such strategies will include a contributory or non-contributory Fund, subsidies on farm inputs, affordable credit, waivers on loan repayments or legislations on prices)	M&E Reports						Covered as above

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
	Explore market based or institutional innovative approaches to market risk mitigation (spreading risks and minimizing vulnerability) rather than over-reliance on the Exchequer. Refer to	Diversification of income sources which offers partial protection against vulnerability to price volatility include employment wages, small retail businesses, paid farm work etc. Alternative enterprises in cane growing Counties include: maize and other food crops, horticulture, tea, tree crops such as mangoes and oranges; and chicken, dairy animals. Factors hindering access to markets for these alternative enterprises are: lack of skills and awareness, but in some cases (e.g. dairy), high initial investment costs; lack of strategy and prioritization of the enterprises by the county	Number of programs developed by counties that aim at supporting sugarcane farmers to invest in alternative enterprises Number of farmers opting out of sugar growing in favor of alternative enterprises Quantity of alternative enterprises produced (or growth rates of quantities of alternative enterprises compared to sugarcane output Market	M&E Reports						create awareness, strengthen farmer institutions - (for ease of credit access, bargaining power when marketing, bulk procurement of inputs). Costed elsewhere in this document

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
			information growth)							
	Establish a Fund (along the lines of the Commodity Fund to cushion farmers against income volatility [edit corresponding recommendation] Apply a price/income stabilization in cases of extreme spikes in market prices (Stabilization Fund)	The two funds (SDF and Commodity fund) that exist do not cushion farmers against income volatility. Commodity Fund has not taken over the previous fund (SDF). The Commodity Fund has limited capacity for financing cane development.	Stabilization fund	Legal instruments		3 B n				
Little or no access to affordable, transparently disbursed credit										

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
Affordable credit	Counties to adopt innovative ways of funds mobilization, partnerships and provision of credit to cane farmers, applying successful experiences/benchmarks Repurpose the sugar portfolio of the Commodities' Fund to provide farmers with affordable and easy to access credit	Credit providers and volumes disbursed; SDF to outgrower companies – Ksh 2.4 billion as at 31st March 2021 Commodity fund –Ksh 2 billion Millers – Ksh - Societies Ksh-- AFC Ksh 1.23 billion as at Feb 2022 Commercial banks -- Number of farmers benefitting from the credit facilities xxx Cost of credit (interest rates and repayment terms); Commodity Fund interest 5-8% repayment terms: 3 crop cycles in the ratio of 40:30:30. Rate of defaults is extensive.	i) Number of credit providers and volumes disbursed ii) Number of farmers benefitting from credit facilities on offer Cost of credit (interest rates	M&E Reports M&E Reports			7,500			Sugar Development Levy to offer credit to farmers for cane development. Operating costs within Commodities fund.

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						Yr-1	Yr-2	Yr-3	Total	Description
		Success stories exist among growers who supply cane to miller such as in Transmara and Butali under the Commodity fund. Other crops have benefited from one-Acre Fund model which can be adopted in the sugar sector.	and repayment terms) Farmers' default rates or arrears, quantified Number of Counties and among of funding							
		e) Nature of financial support to farmers by the Counties - Kakamega County government has placed about Ksh 100 million for farmers support under Commfund management.								cost covered above
Effective farmers organizations	Strengthen farmers associations and cooperatives and promote institutional innovations that facilitate mass access to affordable credit and spread of financial risks through legal, regulatory and policy reforms	There are over 235 farmers' organizations in 15 sugarcane growing counties. The largest number being in the Nyando sugar belt.	Institutional innovations (high capacity Coops /SACCOS) formed by farmers as a means of increasing access to credit	M&E Reports	County Governments/Donor Organisations.		32	32	32 96	Cooperatives are a devolved function. The counties to mobilize farmers into viable cooperative societies

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million		
Concern						Yr-1	Yr-2	Yr-3	Total		Description
			and/or lowering risk								through which farmers will access credit for their farm operations. 2 million per each of the 16 counties per year(Get development assistance)
Truth and disclosures in lending to farmers	Provide transparent Access-to-Credit policies and mandate – through regulations- truth-in-lending by requiring full disclosures of terms of all lending including in-kind credit by millers and other providers	Poor disclosure of lending terms and conditions due to poor credit management system.	Increased transparency and accountability in the terms and conditions for credit provision including in-kind credits provided by millers	Farmers' satisfaction surveys	AFA		7		7		The AFA Sugar Directorate to hold meetings between the farmer organizations and millers on contracts. AFA to ensure adherence to contracts. Penalties to be introduced in case of default.

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
Losses arising from harvesting and transport operations										
			Proportion of post-harvest losses or their monetary value by County or by Miller Estimates of labor costs for harvesting and loading							
Costly and inefficient harvesting and transport operations LEAD AFA SD	i) Enact measures- through regulations and provision of incentives for mechanization- that reduce labor costs and eliminate extortionate payments (also known as *chuth ber* in cane harvesting and loading)	i) Current estimate of post-harvest losses as percent of total production is about 20% (compare with average for other crops at about 40%)		M&E Reports	County Government	16	16	16	48	Organize farmers into viable cooperatives as proposed above. Partner with development partners to build the capacity of sugarcane farmers on contract farming. Register all harvesting and loading persons.

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						Yr-1	Yr-2	Yr-3	Total	Description
										Enforce adherence to wage caps. Zero rate tax on agricultural machinery and spare parts. (1 million per county collaborative fee)
	ii) Reduce the cost of transport by adopting high payload trucks (this is predicated upon improvement of road infrastructure)	ii) Estimates of transport costs is 22% of total production cost. KSh 77/ton/km (ranging Kshs 50 103 depending on distance) born by the farmer who also pay *chuth ber* on the spot	Estimates of transport costs	M&E REports		750	N/A		750	CESS money deducted by millers from farmers cane and submitted to the County Government should be well managed and ring fenced for the purpose of infrastructure development through a committee comprising of millers, farmers and county Government.

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
	iii) Cane transport rates and cane harvesting schedules to be established and enforced by the Regulator	iii) The Millers' cane transport rates as well as harvesting schedules are unpredictable; and the Regulator has no enforcement capacity	Millers' cane harvesting and transport schedules established and submitted to the regulator, and regularly updated/reviewed	Conformance Reports	National Government - AFA	10	N/A		10	Sugar Directorate to engage a consultant to come up with transport costing. Meetings with stakeholders to come up with transport rates
Delayed or nonharvesting of mature cane	Enforce compliance with contractual agreements - through better regulations and strong oversight by the Sugar Directorate - with contractual agreements for cane harvesting and delivery to designated mills	Cane losses due delayed or non-harvesting Late harvesting is influenced by poor contractual arrangements between farmers and Mills, frequent machinery breakdowns and weather conditions	Number of cane harvesting defaults Number of Millers with binding contractual agreements	Cane harvesting reports	AFA-SD	16			16	Review regulations to introduce penalties for noncompliance at a cost of 1 million per county
Tampering with cane weights at the weigh bridge (lack of transparency) Lead agency AFA, Sugar Directorate	Modernise infrastructure for cane weighing including mobile weighing equipment- that facilitates weighing of cane at the farm level with in-built digital capability to transmit those weights to the	Complaints of cane losses through tampering with weights and lack of transparency in weighing arrangements is common.	Cane loss through weight tampering; Improved grower satisfaction	Weighbridge records; Growers' satisfaction surveys	Millers	60			60	Millers to introduce portable weigh bridges that facilitates weighing of cane at the farm level with inbuilt digital capability to

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
	sugar mill and grower. Conversely, where the weighing is done at any other level, there must be measures to ensure that the farmer is fully represented									transmit those weights to the sugar mills at 3 Million each, 20 in total. Introduce infrastructure-including mobile weighing equipment-
		It is estimated that 5% by weight of cane is lost through transport spillage.	Cane weights loss through spillage	Cane weights reports						Transport to be regulated
Loss of cane through spillage enroute to the trans-loading sites and the factories. Lead agency AFA, Sugar Directorate	Review cane ownership and transportation modalities such that the miller, through its transport agent, takes responsibility for the harvested cane and risks associated with delivery of cane to the factory	Spillage is influenced by road infrastructure, transport modes and cane ownership transfer arrangements that are unfavourable to cane farmers (who solely bear the risk of loss)		Cane handling risk management reports	AFA, SD	5			5	by Sugar Directorate. Code of practice on transportation of cane to be developed by SD at Ksh 5. Setting prices to be done with stakeholder participation, mobile weighing
			Institutional innovations in cane handling and risk sharing							

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
										bridges to be adopted
	Regulate millers from engaging in the transport of cane to avoid conflicts of interest	Cane ownership favour millers and their transport agents	Level of outsourcing cane transport services				N/A			no cost, will involve urging parliament through the CS to make the necessary amendment to the Sugar Bill
PROCESSING										
i) Inefficiencies in management and operations in public mills										
Under-utilization of installed capacity **Lead Institution: AFA-SD**	Increase factory milling capacity in the industry per mill to a minimum of 4,000 TCD to support diversification. This could be achieved by reconfiguring	Processing machinery and equipment are generally dilapilated and obsolete among state-owned mills which were installed 50-60 years ago and the average capacities are below 3,000 TCD. Private mills have relatively modern	Average daily processing capacity	Factory performance reports	State - P/Commission					Privatize state mills to raise capital - PC budget provision. Olila

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
	the national milling capacity	equipment with higher capacities above 3,000 TCD and approaching the state of the art technologies.								
		The average milling capacity for the 15 mills in Kenya is less than 3000 TCD (amounting to only about 6 million tons of cane annually). This is influenced low cane availability and factory inefficiencies.	Gap in capacity untilization by region and factory	Yearbook of statistics						Merge existing small capacities of state mills
					Private sector	2500	1250	1250	5000	Private millers expand to capacity for diversification
Use of old, often obsolete technology	In lieu of privatization, support public sector millers- through tax incentives and corporate governance reforms- to invest in state-of-the-art	Low investment in acquisition of state of the art processing technologies/machinery (presently rated above 10,000TCD) Frequent breakdown and repairs	Ages of processing machinery/technology; Levels of automation or mechanization in processing Factory time efficiency Cane to sugar conversion ratio by region and factory	Technology evaluation reports Yearbook of statistics Yearbook of statistics	State	2500	1250	1250	5000	Capital for technology upgrading in public mills

	Proposed Intervention	Current Status (Baseline)	Objectively Verifiable Indicators	Means of Verification	Source of funding	Annual Costs KSh Million			KSh Million	
Concern						**Yr-1**	**Yr-2**	**Yr-3**	**Total**	Description
	technologies that are environmentally friendly	Low average sugarcane to sugar conversion ratio (TC/TS) ranging between 9 to15:1; with an average of 10:1 compared with 7:1 in competing countries								
Weak human resource	Review as well as rationalize employment and public	Over-deployment of labor Employment in public mills is governed by public sector policy which have failed to support profit oriented businesses. The wages in public and private mills are comparable. Industry strategies for building and retaining human resource capacity has declined necessitating increased reliance on foreign skilled labour.	Rationalization of human resources Policy change Share of wage bill in total costs of operations	Management reports Public Service/State Corporation Policy review reports Financial reports	State Millers and growers	10 100	5 100	5 100	20 300	Initiate the development of a robust policy on succession planning in collaboration PSC Training of 100 managers and technicians per annum

capacity in public mills	retention and succession planning	weak human resource manifests poor management of public mills evidenced by: a) low processing capacity and frequent shut-downs of the factories; b) high processing costs attributed partly to over deployment of labor some of whom are cane suppliers, old machinery and equipment; c) opaque/manipulative pricing strategies; d) indebtedness and huge arrears owed to workers, farmers, traders and statutory organizations such as Kenya Revenue Authority, NHIF, NSSF and Commodity Fund; and, d) undue influence on farmer based organizations /out-growers	Profitability	Financial reports						
High levels of indebtedness by public mills	Fast-track debt write-off, privatization and rehabilitation in public mills	Estimate of the public mills' combined debt burden is KSh 140 Billion. Debt write off is estimated at Ksh 60	Public mills' combined debt burden	Financial reports and certificates of debt write off	State					Liaise with Privatisation Commission to fast track the implementation of

		billion comprising of Government loans and tax liabilities was approved in the privatization programme to facilitate rehabilitation. The privatization programme has been stalled by court cases.								the sugar industry privatization programs Resolving interdepartmental conflicts
ii) Variable mill performance and low levels of investment in value addition										
Inconsistent supply of raw materials	Increase sugarcane supply by improving productivity and delivery	Cane supply variability is influenced by:	Trends in cane production and supply	Yearbook of statistics						
		a) over-reliance on rain-fed production; b) inefficient logistics in production, harvesting and transportation; c) poor road infrastructure; and d) poor crop husbandry that varies from county to county but is also influenced by farmers' levels of education and their adaptation to market and climate change trends	Areas of cane under irrigation in different counties; Adoption rates for improved cane varieties and agriculture practices; Efficient fertilizer use and increased productivity	M&E reports	Private sector					Refer to the section on production, harvest and transport above
		Unrealised cane development plans	Implementation progress	M&E reports						
Incentives for value addition	Promote more investments in value addition (coproducts	Value addition is insufficient because total cane production	National policy document on energy developed							

and product diversification	and power generation) through appropriate incentives and policies such as:	and factory capacity utilization are low	(and under implementation)							
	a) Import duty waivers on equipment and spares	Current inefficiencies and low profitability in the mills are partly attributed to low TCD levels and technological orientation of processing purely to sugar production instead of other more profitable byproducts (as is already being done in other countries like Brazil and Mauritius)	Number of mills with upgraded milling technologies	M&E reports	State- MoF	0	0	0	0	
	b) National policy on green energy and scaling up cogeneration of power by sugar mills	Co-generation of power and scaling up of production of high value by-products such as ethanol is hindered by lack of scale economies in processing, unattractive power purchase arrangements/tariffs, and high costs of imported machinery and equipment the recommended	Annual quantity of power supplied to national grid by mill/County; Number of mills scaling up production of by-products and actual quantities by mill and by county	M&E reports	State- MoALF&Co	10	5	5	20	Development of an industry policy position on cogeneration
	c) Appropriate contractual arrangements between millers and KPLC for power generation and	County investment strategy on development of value addition capacity/skills is lacking	Provision for capacity building in the County Integrated Development Plan (CIDP)	CIDP	State- MoALF&Co-AFA-SD	10	5	5	20	Development of an industry PPA guideline

	supply to the national grid									

service policies to enhance skills upgrading; staff service policies to enhance skills upgrading; staff

Supportive business environment (such as tax regimes; access to infrastructure services; and, enforcement of contracts)	Provide policy support for an enabling business environment.	Business environment factors such as: Transportation infrastructure, storage/warehousing, market information; fiscal policy issues- tax holidays; duty waivers/exemption; insurance; legal and security services are still below expectation at both government levels.	Adequacy of business service providers (accessilibity, costs and sustainability)	Client, stakeholders and business survey reports	AFA-SD	50	20	20	90	To evaluate weaknesses in the business environment and provide solutions
iii) Enforcement of contract and environmental laws in processing operations										
Poor compliance with contractual agreements	Strengthen farmers' organizations in order to enhance their ability to organize as well as speak collectively for the farmer on	In the current arrangement, small scale producers go through out-grower associations and like large scale farmers also sell directly to the mills	Number of functional famer organizations	M&E reports, implementation of the proposed outgrower model, Sugar general regulations, Stakeholder surveys, Policy,	MoALF&Co	500	200	200	90 0 0	Sensitise and train growers on strong cooperative schemes development
			Number of contract		MoALF&Co					Compliance audits

	matters related to contracts Fast-track regulations to provide for enforcement of and consequences for breach of cane purchase contracts. Provide- through regulations- a requirement that the terms of cane purchase contracts be fully disclosed to farmers and farmers' organizations spelling out: a) all the terms and conditions of the contracts; b) the charges to be levied for any service rendered under the contract; c) the basis and calculation of those charges; d) the periodicity of renegotiation and renewal; and, e) the	Non-compliance with contracts is currently not penalized hence encouraging wastage of large quantities of cane. There are numerous pending court cases involving cane supply contracts between state-owned mills and growers Both millers and farmers are developing reluctant to engage in binding contractual agreements that would compel the millers to pick up mature cane (the Soko Huru phenomenon) It is feared that millers engagement in sugar	enforcement cases Number contract disputes /court cases Number of mills with contractual agreements with farmers or their associations for cane development, harvesting and transportation Number of millers and their proxies engaging in sugar importation	EMC Act, Sensitization, Environmental Quality Scheme, Training , Alignment of IMIS	MoALF&Co					Providing regulations for above matter within same budget

	right of farmers to opt out of miller provided services	importation discourages their support for cane development despite proliferation of mills.									
Weak enforcement of the National Environment Policy and laws on pollution	Develop and enforce sugar industry pollution abatement policies that incentivize millers to adopt less polluting technologies	Performance of existing milling technologies are below those available in the market hence produce more polluting waste.	National sugar industry pollution abatement policy developed	Policy document	AFA	5	5	5	15	Development industryspecific pollution control policies
	Require the Sugar Directorate, through regulations, to collaborate with NEMA and county governments to strengthen environmental surveillance in the Sugar Belt	The regulator is currently the lead agency in the sugar industry as defined by EMCA hence must collaborate with NEMA. There is low awareness on the role of County Government on environmental management.	Number of mills with modern and more environmentally friendly machinery/milling technologies	Technology evaluation reports	AFA	0	0	0		Implementation of lead agency roles as provided for by the EMC Act
				Environmental risk management plan	AFA	5	5	5	15	Develop materials and creating awareness on industry enviromental
	Regulator to design and implement mechanism and strategies to disseminate information and create awareness on	There is no mechanism for environmental rsk management.	Environmental risk mitigations	Training reports	NEMA & ICPAK	5	5	5	15	Development of a standadisation scheme in
					NEMA	2	2	2	6	

	environmental risks and threats Incentivize mills – through Regulatory Marks of Environmental Quality - to adopt International Financial Standards for Environment Accounting Build robust regulatory capacity to monitor and enforce environmental standards through funding, training and capacity building at national and county levels	Lack of mechanisms for creating awareness about environmental conservation and international financial standards for environment accounting to incentivize millers/growers. Low capacity for monitoring and enforcement of environmental standards.	Number of training and capacity building programs. Number of compliance officers aware of enforcement of environmental standards	Training reports						collaboration ICPAK and KEBS Capacity building
iv) Participation of millers in sugar importation										
Sugar mills to be barred from importing sugar (in order to minimise conflicts of interest)	Review Sugar Bill in entirety and propose amendments to prohibit millers from importing sugar.	Millers and their proxies import sugar which is adverse and anti-competition vertical integration practice that works against sugarcane farmers while at the same time promoting malpractices such as illegal imports/packaging of imported sugar and neglect of farmers' mature cane.	Laws/Regulations that control sugar importation by millers or their proxies.	Legislations		0	0	0	0	Lobby for proposed amendement, cross check with regulation

	Enforce strict vetting requirements for sugar importers to curb involvement of millers and their subsidiaries or proxies in the import of sugar.	There are loopholes in the current sugar imports control processes.	Number of mills (and/or their proxies/subsidiaries) having sugar import permits	Sugar importers reports	TMEA	0	0	0	0	Alignment of management system to strict vetting rules
Lack of consistent input-output data	Require, by regulations, that all mills consistently submit returns to the Regulator showing cane inputs against mill-rated capacities; production volumes for sugar and other by-products; and any capacity expansion plans	The current practice of manual submission of data by industry players is prone to manipulation that results in low data quality.	Extent of digitisation of industry data.	M&E Reports	AFA-SD	0	0	0	0	Done under sugar regulation amendments operations budget

	Strengthen the capacity of the regulator to analyze and validate data	Currently data collected includes;- primary and secondary data and related information.	Training programmes on data management	Training reports	State-AFA	10	10	10	30	Boost capacity in data and information management, consultance esrvices (policy analyist).
		Data collected is collated and shared with stakeholders	Number of yearbooks sold/shared	Distribution reports						

MARKETING AND TRADE IMPLEMENTATION PLAN

Concern	Policy Intervention	Current Status (Baseline)	Objectively Verifiable Indicators)	Means of Verification	Sources of funds	Annual Costs(Ksh Million)			KSh Million	Description
Transparency in sugar marketing and price determination in the domestic market						**Yr-1**	**Yr-2**	**Yr-3**	**TOTAL**	

Inadequate data on marketed volumes and pricing **Lead Institution;** AFA	Strengthen regulatory oversight by requiring traders to submit returns to the Regulator on their marketed volumes; capacity expansion plans as well as marketing arrangements and production forecasts (Overlap)	Manual transmission of data to AFA by millers. Data gaps exist as submission is not strictly enfored. Data integrity not assured.	Reports generated by the integrated data system	Unified/integrated data collection system; singlewindow data repository that can be viewed centrally and querried	Source 1: MOA	10.4064	10.4064	10.4064	31.2192	Employment of 4 field staff; Field work allowance @ 4 days per month, Upgrade
Poor integration of sugar distribution system Lead Institution; AFA (SD)	Tighten the management of the domestic marketing system by addressing the sources of non-integration of fragimentary distribution including, contributory factors such as transport costs and border control lapses- especially the border with Somalia.	Unregulated sugar flows in the domestic market; porous border crossing with high insecurity	Barcodes with geo-referenced data on origin of product; Compliance Audit reports	Sugar traceability system; enforcement of the KEBS labeling requirements	Source 1: MOA Source 2: County	0.4032	0.4032	0.4032	1.2096	Registration of the
Lack of data on the extent of the problem of sugar	Develop a new method for calculating the domestic deficit based on accurate consumption data	Consumption data is estimated	Accurate consumption data	Improved consumption estimation model incorporating more variables	Source 1: MOA	5	0	0	5	Engage a consultant to carry out study on consumption trend against

smuggling Lead Institution; AFA (SD)										domestic production
	Develop a transparent formula for issuing sugar import permits	Political interference in the licensing regime	Reports generated by the system, realtime	Single window system which provides for transparency on permits and import quota	Source 1: MOA	0	0	0	0	To be undertaken by SD using operational budget provided
	Strengthen inter-agency collaboration through robust reporting and accountability mechanisms and joint action at all border crossings	AFA present in most of the gazetted OneStop-Border-Posts. Collaborartion with other border post agencies is low	Monitoring reports; Action plans and implementation reports	Top level collaboration framework clearly indicating the specific roles of each collaborating agency	Source 1: MOA	262.4	2.4	2.4	267.2	Automate processes at the border points and facilitate multi-agency surveillance at the borders;
	Regulator to develop capacity to calculate the domestic production and consumption patterns based on regularly updated and triangulated data.	Data received from millers is utilized as is	Up-to-date data sets	Data quality assurance mechanism;Improved consumption estimation model incorporating more variables	Source 1: MOA	3.024	3.024	3.024	9.072	Upgrade of the IMIS to validate sugar industry data
Planning and scheduling of imports Lead Institution; AFA (SD)	Provide real time market and information on supply, prices and import requirements; environment;	Market information is currently provided by KALRO/SRI; Regulator; Ministry of Agriculture; County governments; NEMA; sugar mills	Market statistics provided by various organizations	Up-to-date data repository - Webbased and/or centralized system		11.3	9.3	9.3	29.9	Develop ICT infrastructure at a cost of 2 million, additional staff (2 at a salary of Ksh. 200,000)

	regulations and standards	Official brown sugar imports was 252,180 mt at a cif value of KSh 63,460/MT for the year 2021	Status records for sugar supply, consumption and imports/exports							and studies (2.5 Million) to get the data and general office administration costs at 2 million
	Control the entry of contraband sugar imports into the country through enhanced enforcement of regulations	Based on an annual demand of 1.2 million mt and domestic production of only 700000mt, unrecorded sugar imports are significant (exports are negligible but do occur when there are surpluses)	Import data from border post entries; Multi-agency one-stop-border-posts	Government and regulatory initiatives aimed at eliminating unofficial sugar imports, especially along the Somali border		80	10	10	100	
Impact of sugar imports on producer and consumer welfare Lead Institution; AFA (SD)	Regulator undertakes periodic studies to establish the impact of sugar imports on domestic prices	No impact assessment has been been.	Ex-factory sugar prices; Sugarcane price: Grower's income	Market survey reports with actionable recommendations	Source 1: MOA	80	10	10	100	Border managemnt control unit to be facilitated to perform their functions efficiently through provision of vehicles and motor vehicle running costs and modern surveillance techniques e.g use of drones,

										long range high defination cameras and scanners. The borders are Malaba, Busis, Isebania, Lungalunga, Namanga, Ethiopia Somali, Taveta and Mombasa Port
Regional and international considerations										
Implementation and compliance with regional and international trade agreements Lead Institution; AFA (SD)	The Ministry of Agriculture, th National Treasury, the State Law Office, The Parliamentary (Senate and National Assembly) Departmental Committees for Trade and for Foreign Affairs and the State Department for Trade to develop a joint policy and strategy for strengthening compliance with international trade agreements including within it clear stipulations for a) mechanisms for	The focal point for reporting and compliance to trade agreements is the Ministry of Trade. There appears to be a disconnect between AFA and the Ministry of Trade.	Implementation Reports submitted to the Ministry of Trade; Calendar of all regionl and international negotiation forums; Negotiation positions; Reports and actions from the negotiation forums; Training Needs Assessment of the negotiating teams; Training programmes for the negotiaitng teams	Routine reporting to the Minisry of Trade on the status of implementation of regional and international trade agreements that touch on sugar; Proactive participation in all regional and international trade negotiations; build the capacity of AFA negotiating team	Source 1: MOFA	0	0	0	0	MOFA to convene participants to develop joint policy and strategy for strengthening compliance with international trade agreements

	fasttracking domestication of international agreements; b) Parliament to exercise oversight and c) institutionalizing international treaty reporting and compliance.									
Meeting COMESA's safeguard conditions	Strengthen and implement a clear road map, including milestones and targets, for restructuring cane production and the cane payments system, based on quality that also incorporates a timetable for weaning Kenya off COMESA safeguard measures	COMESA safeguards have been in play since 2002. In twenty years, the sugar sector is still grappling with the same challenges of inefficient prodcution systems.		A sugar industry revitalization roadmap with a mutual accountability framework.	Source 1: MOA	500	500	500	1500	Compliance with COMESA's Safeguard conditions including commissioning and maintenance of 11 CTUs + contingency

Compliance with food safety regulation Lead Institution; AFA (SD)	The Regulator to build sufficient capacity for surveillance and enforcement of compliance with food safety regulations	Poor enforcement of food safety standards;	Accreditation of AFA as a food certification agency; capacity building programmes for compliance officers; improved compliance audit checklists for sugar factories; collaboration framework with other enforcement agencies	Build the capacity of AFA to certify sugar millers for compliance to food safety requirements; Collaborate with other agencies in the enforcement of food safety regulations		0	0	0	0	To be handled internally
	Establish a mechanism through which the regulator regularly collaborates with the Kenya Bureau of Standards, KeBS, to strengthen market surveillance by enforcing marks of quality and rules of origin	Low compliance to KEBS labeling requirements	Development and implementation of a sugar traceability system	Implement a mechanism that enables value chain players to digitally confirm origin and quality compliance of all sugars		0	0	0	0	Activity is within KeBS and KEPHIS mandate

REGULATIONS AND INDUSTRY SUSTAINABILITY

Concern	**Policy Intervention**	**Current Status (Baseline)**	**Objectively verifiable Indicators**	**Means of Verification**	**Sources of Funds**	**Annual Costs- KSh Million**			**KSH Million**	
Overarching sector strategy, policy and legal framework						**Yr-1**	**Yr-1**	**Yr-1**	**TOTA**	**Description**
Long-term vision, sector strategy and policy framework Insert this at all levels of Intervention Lead Institution: Agriculture and Food Authority	Develop and fast-track the implementation of a sugar sector policy and long-term strategy geared towards increased industry competitiveness and sustainability benchmarked against global leaders on such issues as farm-level productivity; efficient processing; product diversification; technological innovation and compliance with environmental and safety standards.	Confirm current status of policy making in the sugar sector if there is no guiding national policy document. Generally, agriculture sector development is guided by various past policy documents such as Strategy for Revitalizing Agriculture (2003), ASDS (2009), ASTG (2019), CAADP and sector Taskforce reports. Implementation of recommendations of these past initiatives have always been fraught with institutional and budgetary challenges. Development, adoption of technological innovation and commercialization of food crop in particular have lagged due to low levels of competitiveness against cheaper imports but currently also facing risks associated with declining soil fertility, regional integration, globalization and climate change	Number of new technological innovations aimed at increasing sugarcane productivity (or processing efficiency). Number of technological and institutional innovations aimed at achieving stable market prices (minimizing price volatility). Reduction in deficits as part of the achievement of the policy goal of import substitution. Increased skills for workers at farm level (crop husbandry) and at factory level (strategies for dealing with skills attrition)	Sugar Industry Policy; Sugar Industry Strategic Plan; M&E framework for the implementation of the Sugar Industry Strategic Plan; Centrally accessible implementation reports with provision for stakeholder querying;	Sources: S1= SD	5	0	0	5	Su Polyalidh S

		A sugar sector policy document must address the above issues in a devolved context, an issue that raises host of other challenges								
Legal framework for the sugar sector Lead Institution: Agriculture and Food Authority - Taskforce	Fast-track implementation of the Sugar Bill through consultations and collaboration with Parliament, including especially, holding urgent meetings with the Senate Committee on Agriculture	Brief narrative on the Bill and what (thematic highlights or objectives) it hopes to achieve regarding governance.	Sugar Bill developed and under implementation	The Sugar Bill; stakeholder feedback platform; Regulatory Impact Assessment; Implementation Framework; Implementation Reports	Sources: S1= SD	5	0	0	5	Hold a 5 days workshop with the Senate Delegated Committee on Legislation in Msa
	Ministry of Agriculture to urgently identify additional issues from Task Force Report that need to be included in the Sugar Bill 2019	Memorandum of the additional issues submitted to parliament	The proposed clauses in the memorandum	The final Sugar Bill		0	0	0	0	Covered in v above
Long-term training, capacity building and research in the Sugar Sector										

Long term training and capacity building **Lead Institution: Agriculture and Food Authority**	Develop and implement industry-wide (entire sugar value chain) training and internship programs supported by industry and county governments taking into account industry forecasts of human resource requirements; current establishment and severity of skills' attrition	The industry lacks a training/capacity building policy and the mills have no internship programs or strategies for dealing with skills attrition (company succession plan)	Sugar industry training/capacity building policy developed. Number of industry training programs developed and implemented at various levels that cover various aspects. Number of industry stakeholders receiving training on specific issues of relevance	Industry Training Policy; Training Needs Assessment for the industry; Industry Training Plan; Implementation Report; Impact Assessment Reports	Sources: S1= SD, County Govt S2 = Mills	5	36	36	[77]	(i) SD to develop Capacity building programme within their budget (Yr 1) @5million Capcity building (Yr 2 & Yr 3) Internship – 16 Mills. Each mill to nominate 5 staff for specialized training at NITA (Yr 2& 3) 16 mills linked with University for internships. 5 interns every year. Per mill.
	The Sugar Directorate to initiate dialogue with training institutions on developing specialized training for the sugar sector	The earlier training programmes in the industry were discontinued in 2005 due to lack of funding.	Partnerships with sugar industry centres of excellence regionally and globally; number of industry players trained	Memoranda of understanding with sugar institutes regionally and globally; Training Plans and Implementation Reports						

Research and Development (R&D plan that drives innovation and product development	Strengthen the capacity, adequately fund and enhance the autonomy of the Sugar Research Institute (SRI), to enable the Institute to undertake research across the value chain.	There is a draft national agriculture research policy document tha is not specific to sugar crop. Sugar Research Institute (SRI) engages in the following programs: a) Crop development comprising breeding and adaptive research, agronomy, field trials and bulking of improved cane planting materials. Contracting of seed merchants currently facing challenges, particularly a pricing structure that is not differentiated from that of mill cane). b) Socio-economics, including data collection and statistical analysis) Soil testing services (applying an ultra-modern laboratory that is currently under-utilised), including on-farm soil testing for farmers, at nominal fee. Regional soil testing profiles and reports were last released in 2015 as part of KALRO annual reporting. c) Soil testing services	A national sugar research policy document that includes adequate institutional capacity and funding.	Sugar research policy document	Sources: S1= SD	5	0	0	5	

		(applying an ultra-modern laboratory that is currently under-utilised), including on-farm soil testing for farmers, at nominal fee. Regional soil testing profiles and reports profiles and reports were last released in								
	Strengthen the outreach and communication function of the SRI to make it more proactive in delivering services to actors across the value chain Develop Regulations under the Sugar Act by SD @KSh 5 Million	2015 as part of KALRO annual reporting. d) Outreach activities (e.g. information dissemination and fertilizer use recommendations for different agroecological zones) and support to County initiatives, including those touching on pollution, environmental conservation and adaptation to climate change (climate smart technologies). e) Research on value addition currently concentrates only on sugar juices and brickets) but there have been no partnerships with private sector for	Number of sugar based products/by-products developed by SRI and commercialized domestically or globally as notable brands. Number of partnerships created with other national and global institutions for capacity building, including post-graduate and internship programs. Number of outreach programs and activities (or stakeholders	M&E reports							

		commercialization of the sugar based products All the above services have been drastically curtailed due to lack of financial resources and low human capacity: (SRI has a rather small research team comprising only 8 staff with degrees above Masters level). Low budgetary allocations have now ironically driven the Institute into converting its improved cane seed to commercial sale to millers.	supported/trained). Amount of resources mobilized over and above government funding, for example through consultancies							
Regulatory overlaps and conflicts between primary regulators (the main sector supervising body) and secondary regulators **Lead Institution: Agriculture and Food Authority, IGTRC, KRA**	Reduce duplication of regulatory functions (by national and County governments) through regular consultative meetings of the IGRTC	Policy is defined by the National Government in accordance with (Schedule Four (4) of the Constitution 2010. There are conflicts on insuance of licences and permits for products and processing facilities.	Number of complaints	Sugar industry survey on customer satisfaction reports	Sources: S1= SD	3	0	3	6	Hold annual workshops to collaborate with the Intergovernmental Relations Technical Committee (IGTRC) to facilitate engagements between the National and the County Governments on duplications of

										regulatory functions. The workshops to held on alternate years
	Strengthen border management agencies to eliminate current silo operations.	There exists a border management committee with low capacity.	Institutional capacity of border management committee (BMC)	Performance reports		0	0	0	0	Capacity) built BMCs on common aspects their regulatory mandates.
	Establish one-stop-shop in which all secondary regulators have desks (virtual/physical) at the primary regulator (Customs border points)	There are one-stop-shop at the following border points; Malaba, Busia, Isibania, Namanga, Taveta, Oloitotok, Lungalunga, Mombasa, Mandera, Moyale, Liboi	Number of shops	BMC reports		0	0	0	0	BMC exists at all one stop Border Points commonly known as One stop Border Posts (OSBTP).
A national energy policy that integrates nontraditional power sources Lead Institution: MOALF&C	Convene a high-level inter-miniterial committee combining representatives from Agriculture, Energy, Trade and Industry to oversee the development of a national strategy on sugar-cane development, coproduction, and co-generation	The current status is that the Energy Policy and related Regulations that favour coproduction have not been implemented.	National strategies on sugar coproduction.	Strategic plan		0	0	0	0	This is already mainstreamed in the TF Work. There is no to establish a body to undertake functions which are already being handled by the County Government

Cross-cutting Issues *a) Taking gender into account*	Spell out clear strategies on inclusion of youth, woman and the marginalized	There is no strategy on inclusivity of youth, woman and the marginalized in sugarcane agriculture with regard to access to land, credit and incomes.	Number of youth, woman and marginalized people involved in agriculture.	M&E reports						
Total Budget						**18,885.49**	**9,235.49**	**10,998.49**	**30,598.46**	

Annex II**: PFM (Sugar Price/Income Stabilization Fund Regulations) 2021**

LEGAL NOTICE NO……..……..

PUBLIC FINANCE MANAGEMENT (INCOME STABILIZATION FUND REGULATIONS), 2022

ARRANGEMENT OF REGULATIONS

THE PUBLIC FINANCE MANAGEMENT ACT

(No. 18 of 2012)

IN EXERCISE of the powers conferred by section 24 (4) of the Public Finance Management Act, 2012, the Cabinet Secretary makes the following Regulations—

PUBLIC FINANCE MANAGEMENT (INCOME STABILIZATION FUND REGULATIONS), 2021

PART I—PRELIMINARY

Citation. **1.** These Regulations may be cited as the sugar sector income Stabilization Fund Regulations, 2021.

Interpretation. **2.** In these Regulations, unless the context otherwise requires—

"Act" means the Sugar Act, 2019;

No. 23of 2020.

"Administrator of the Fund" means the Chief Executive Officer of the Sugar Board of Kenya.

"Beneficiary of the Fund" means sugarcane farmers and processors, cane transporters, cane harvesters;

"Board" means the Kenya Sugar Board established under Section 3 (1) of the Sugar Act, 2019;

"Cabinet Secretary" has the meaning assigned to it under section 2 of the Public Finance Management Act, 2012;

"Income stabilization" means all measures aimed at minimizing volatility of the incomes of sugarcane farmers.

"Price stabilization" means measures taken to reduce commodity price fluctuations;

182

"Investment" means the process of allocating money or resources to an asset with the hope of earning a return.

Scope of Regulations **3.** (1) These Regulations shall apply to the objects and purpose of the Fund specified under regulation 5.

PART II — INCOME STABILIZATION FUND

Objects and purpose of Income Stabilization **4.** (1) The objects and purpose of the income stabilization is to cushion sugarcane farmers' incomes against price shocks and price fluctuations.

(2) This may be undertaken by the following measures: -

viii. purchase buffer stocks;

ix. offering extension services to farmers;
x. Capacity building of the sugarcane farmers;
xi. rehabilitation of sugar factories;
xii. input subsidy to sugarcane farmers;
xiii. promote value addition, co-generation and any other diversification processing level; and
xiv. perform any other purpose approved by the board that would enhance sugar price and income stabilization.

Sources of Fund and initial capital

5. (1) The Cabinet Secretary may establish an income stabilization Fund which shall consist of the following sources: -

ed by the National Assembly;

nts of the Fund;
ssembly; and
by the Fund from any other source as may be approved by the Cabinet Secretary.

(2) The Cabinet Secretary may determine the initial capital of the Fund, which may be KSh. 3 Billion appropriated during FY 2022/2023.

Expenditure of Fund.

6. (1) There shall be paid out of the Fund payments in respect of any expenses incurred in pursuance of the objects and purposes for which the Fund is established.

(2) The expenditure incurred on the Fund shall be on the basis of and limited to annual work programs and cost estimates which shall be prepared by the Administrator of the Fund and approved by the Board at the beginning of the financial year to which they relate.

(3) Any revision of the approved annual work programs, and of any cost estimate shall be referred to the Board for approval.

PART III — MANAGEMENT OF THE FUND

Sugar Board of Kenya

7. The Fund shall be managed by the Kenya Sugar Board of Kenya established under Section 3 (1) of the Sugar Act, 2019.

Committee of the Board on Price Stabilization

8 (1) The Board shall establish a Committee to be known as the Sugar Price and Income Stabilization Fund Committee. The Committee shall comprise of -

a) Principal Secretary responsible for agriculture or a representative nominated by the Principal Secretary in writing.
b) Principal Secretary responsible for trade or a representative nominated by the Principal Secretary in writing.
c) Principal Secretary responsible for National Treasury or a representative nominated by the Principal Secretary in writing.

d) Chief executive officer of the Kenya Sugar Board (Ex-Officio).
e) At least three (4) independent members of the Board.

(2) The quorum of the Committee shall be four members in any meeting of the Committee.

Functions of the Committee of the Board on Price and income Stabilization.

(3) The Committee of the Board on Price and Income Stabilization shall—

a) Mobilize resources for growing the Fund;
b) Develop investment plans and strategy;
c) Monitor the movements in the international sugar benchmark price, and domestic sugar prices;
d) Undertake analysis to identify distress periods,
e) Recommend to the Board amount of payout from the Fund; and
f) Perform any other role as may be assigned by the Board.

Administration of the Fund.

10. (1) The Administrator of the Fund shall be the Chief Executive Officer of the Kenya Sugar Board of Kenya.

(2) The Administrator of the Fund shall—

No. 34 of 2015

a) Open and operate a designated bank account at the Central Bank or a commercial bank approved by the Board;
b) Prudently manage the Fund;
c) Ensure proper books of accounts and record are kept;
d) Prepare, sign and submit to the Board statement of account on the Fund every year;
e) Ensure that the account is audited in accordance with the relevant legislations;
f) Prepare and submit for consideration by the Board quarterly and annual reports on financial performance of the fund; and
g) Be the custodian of all the assets, equipment, and property under the Fund.

Secretariat of the Fund.

11. (1) The Sugar Board of Kenya shall be the Secretariat of the Fund.

(2) The Head of the Secretariat (CEO of Kenya Sugar Board) shall —

a) Be responsible for the day-to-day management of the Fund;
b) Implement the decisions of the Board; and
c) Perform any other duty as they may be assigned by the Board.

PART IV— CRITERIA FOR ACCESSING THE FUND

Access to the Money

11. The Fund shall be accessed for the following purposes: -

a) Cane development;
b) Cane harvesting;
c) Cane transportation; and
d) Processing of cane;
e) Purchase of inputs for cane, implements 9add omnibus)

(2) The money accessed shall be in form of a loan with a modest interest rate of 5 to 8 percent annually.

(3) The CEO of the Board shall develop a criterion /guidelines for accessing the Fund with the approval of the Board;

Repayment of the Loan

12. (1) All borrowers shall have the responsibility of repaying back their loans in line with the terms and conditions specified in the loan agreement;

(2) Any borrower who fails to repay the loan shall face legal action.

Offences and penalties

13 A person who –

a) wilfully applies any proceeds of a loan facility to any purpose other than the purpose for which it was approved;
b) Having obtained a loan facility, willfully destroys or misappropriates any security given in relation to the loan facility;
c) Knowingly gives false information;

Commits and offence and is liable on conviction to a fine not exceeding two million shillings or to imprisonment for a term not exceeding two years or both.

PART VI —FINANCIAL PROVISIONS

Application of Government regulations and procedures.

14. Subject to the provisions of the Act, existing government regulations and procedures shall apply in the administration of the Fund.

Financial year of the Fund.

15. The financial year of the Fund shall be the period of twelve months ending on the 30th of June of every year.

Preparation and submission of a work plan.

16. The Administrator of the Fund shall prepare and submit to the Board for approval a work plan in respect of a financial year.

Withdrawal from the Funds.

17. (1) Withdrawals from the Fund shall only be for purposes of approved use or investment of surplus funds and operational expenditure of the Fund.

(2) The Administrator of the Fund shall keep an up-to-date record of all expenditure and disbursements of the Fund maintained in accordance with the provisions of the Act and Regulations made thereunder.

Opening of Bank account.

18. (1) The accounts shall be held for and on behalf of the Fund shall be in the name of the Sugar Development Fund.

(2) The Administrator of the Fund shall ensure the accounts of the Fund are not overdrawn.

Investment of Funds.

19. The Administrator of the Fund may, with the approval of the Board, and in consultation with the Cabinet Secretary invest any of the funds of the Fund which are not immediately required for its purposes in accordance with the provisions of the Act.

Retention of receipts.

20. All receipts, earnings and accruals to the Fund, and the balance of the Fund at the close of each financial year, shall be retained by the Fund for use for the purpose for which the Fund is established.

Annual reports.

21. (1) The Administrator of the Fund shall prepare annual reports in accordance with the provisions of the Act

(2) In addition, the Administrator of the Fund shall prepare an annual general performance report of the Fund to be submitted together with the report referred to under paragraph 22 (1).

Audit.

22. The books of accounts of the Board including donor funds shall be prepared, audited, and reported in accordance with Articles 226 and 229 of the Constitution, the Public Finance Management Act, 2012 and the Public Audit Act, 2015.

No. 34 of 2015.

No. 18 of 2012

PART VII— MISCELLANEOUS PROVISIONS

186

Conflict of interest.

23. The Board shall not hold any interest in any property of the Fund otherwise other than in their capacity as Board members of the Fund or be interested in the supply of goods or services to the Fund or any other non-pecuniary conflict of interest.

General Offences and penalties.

24. (1) A person who misappropriates any funds or assets from the Fund or assists or causes any person to misappropriate or apply the funds otherwise than in the manner provided in these Regulations, commits an offence and shall, on conviction, be liable to imprisonment for a term of not less than five years or to a fine not exceeding ten million shillings or to both.

(2) In addition to the penalty prescribed under paragraph (1) and subject to existing relevant law, the court may order for the recovery of the monies or assets acquired as a result of the commission of the offence thereof.

Personal liability.

25. The chairperson, member or staff of the Board shall not be liable for any action, suit or proceedings for or in respect of any act done or omitted to be done in good faith in exercise of the functions, powers and duties conferred under these Regulations.

Winding-up of the Fund.

26. The Fund may be wound up in accordance with the provisions of the Public Finance Management Act.

No. 12 of 2012