



# SUGAR INDUSTRY INNOVATION SYMPOSIUM 2022

**REPORT**



# About Us...

A Brief Overview of Who we are, and What we Do

The Sugar Directorate is one of the directorates under the Agriculture and Food Authority (AFA). AFA is a State Corporation established under the AFA Act 2013, with the mandate to regulate, promote and develop all the scheduled crops in Kenya, in accordance with the Crops Act 2013. The Sugar Directorate is in charge of the sugar value chain.

The Sugar Directorate's Vision is to be a world class regulator in the Sugar Sector and its Mission is to sustainably develop and promote sugar crops value chains through effective regulation for economic growth and transformation.

The Directorate hosted the first ever Sugar Industry Innovation Symposium, aimed at identifying innovative solutions to the sector's problems, and maximize the potential, while also facilitating the transformation of the national economy and rural livelihoods.





# CONTENTS

PAGE 06	<b>01_OVERVIEW</b>
PAGE 09	<b>02_SPEAKERS</b>
PAGE 13	<b>03_KEYNOTE ADDRESS</b>
PAGE 14	<b>04_THEMATIC AREAS</b>
PAGE 24	<b>05_AWARD WINNERS</b>
PAGE 28	<b>CONCLUSION</b>

# INTRODUCTION

A look at the first Sugar Industry Innovation Symposium, its context and background.

## The Symposium

The Sugar Industry Innovation Symposium is an event sponsored by AFA-Sugar Directorate that brings together stakeholders in the sugar industry to share and discuss innovative ideas and technologies that can improve the sector's productivity, sustainability, and profitability.

The symposium provides a platform for researchers, policymakers, sugar millers, sugarcane farmers, and other stakeholders to showcase their innovations, share best practices, and explore partnerships that can help advance the sugar industry.

The first Sugar Industry Innovation Symposium was held at the Grand Royal Swiss Hotel in Kisumu, on the 6th and 7th of December 2022, with the aim to provide a platform for stakeholders in the sugar industry to collaborate and share ideas that would help advance the sector, improve the livelihoods of sugarcane farmers, and promote economic development in sugar-producing regions.

The Symposium was officially opened by H.E Prof. Peter Anyang' Nyong'o, the Governor of Kisumu County.





02 \_ S P E A K E R S

## H.E. Govenor Prof. Anyang'Nyong'o

The Governor, Kisumu County

**“ The Sugar Taskforce Report 2019/2020 is a document whose recommendation, if implemented to the letter will result in a total transformation of the industry. ”**

“The sugar industry has lost its past glory, but its nothing a concerted joint effort by all stakeholders cannot fix.This first innovation symposium is a step in the right direction towards the efforts the sugar Directorate has put towards revitalizing the industry. It is important to note that the sugar mills have not taken advantage of the value addition opportunities available within the industry. These opportunities provide an infinite pool of value addition opportunities. The Sugar Taskforce Report 2019/2020 is a document whose recommendation, if implemented to the letter will result in a total transformation of the industry.

The Kisumu County government guarantees its commitment and support towards this noble undertaking mainly through the injection of new energy to farmers through various support services and supporting the leasing of publicly owned mills”



# PS. Kello Harsama

Principal Secretary, Ministry of Agriculture & Livestock Development, State Department for Crop Development



# Ms. Beatrice Nyamwamu

Ag. Director General,  
The Agriculture and Food Authority (AFA)



“Sugarcane farming is a source of livelihood for thousands of Kenyans. It plays a significant role in the Kenyan economy, being a source of income for millions of citizens through involvement in various nodes of the value chain.

As it stands, we are a country classified as an importer of sugar. There is a need to have the local production bolstered and the high cost that has been a thorn in the side of the industry addressed. Of course this requires a multifaceted approach that takes into account the various factors that contribute to the high cost. By improving efficiency, using technology, developing better infrastructure, increasing access to credit, and promoting cooperative farming, it is possible to reduce the cost of production and improve the profitability of cane farming.”

“The industry currently has a crushing capacity of 38,000 TCD against a rated capacity of 51,450 TCD. This presents an opportunity for strategies to increase cane development.

This can be done by increasing government support, investing in research and development, developing infrastructure, promoting marketing and promotion, supporting smallholders, and encouraging diversification. Sugar cane farming has one of the highest concentrations of small-scale farmers distributed in the western part of the country.

We need to improve performance of the subsector, as it affects many lives both directly and indirectly.”





# Mr. Willis Audi

Ag. Director  
AFA - Sugar Directorate

“The Sugar Directorate has been actively participating in the continued revival of the Sugar Industry, we have employed various multi-faceted approaches to keep the industry on this upward revitalization trajectory through collaboration with our stakeholders, various government and non-governmental organizations, we have endeavoured to restore our stakeholders confidence in the sustainability of the industry.

I cannot emphasize enough the need for a multi-sectoral approach to support this industry, this symposium presents the most ideal forum for this interaction to happen, the exchange of ideas and building of a collaborative framework among us all will contribute greatly towards promoting the long-term sustainability of the industry and ensure its continued success.”

03\_KEYNOTE ADDRESS

# Lilian Lihasi, PhD

Agricultural Innovation and Extension Expert



## DELIVERING HIGH IMPACT INNOVATION FOR SUSTAINABLE GROWTH OF THE SUGAR SECTOR.

“Smallholder farmers produce 80% of Africa’s food supplies but have limited access to finance, inputs, market, information and other services. Technological innovations can mitigate all these constraints. There is need to combine innovation, investment and policy to harness the power of the Fourth Industrial Revolution to benefit smallholder farmers.

Innovation is another tool for creating more value for your customers. Unfortunately, the industry is grappling with the same challenges for the past years, key among them being the high cost of production and low productivity. This calls for innovation from an organizational context stemming from: understanding the mandate; the unique capabilities of your organization; timing and the structural aspects of your organization.

Innovation is about improvement. A strong innovation culture is the engine that drives the organization to constantly get better, move forward, and innovate.

In an increasingly globalized and knowledge-based world the ability to innovate, adopt new innovations and learn how to use them, is inevitable if the industry is to stay relevant and keep up with changes.

### **Possible resolutions:**

- Align processes in order to deliver high-impact innovations
- Deliver concrete actions with tangible impacts in the field”

# Mr. Paul Ayalo

Senior Trade Officer - Fairtrade

## SUGAR INDUSTRY - A SOLUTION TO THE ENERGY CRISIS

“The Kenya Population and Housing Census indicates that 55.1% of Kenyan Households use firewood for cooking, followed by 23.9% using LPG. Dependence on fuels such as charcoal, firewood, and kerosene, pose serious health, environmental, and socio-economic challenges for Kenyans.



2.4 Million MT of bagasse is generated annually. This can be a clean energy source for Electricity Cogeneration, Ethanol Cooking fuel, solid biomass fuel (Briquettes) and Bioethanol fuel thus creating revenue. Excess bagasse can be turned into both carbonized and non-carbonized briquettes. Ethanol as a cooking fuel is still nascent with just 1.2 million litres produced annually. Demand is expected to rise to 16 million litres in year 1 rising to 192 million litres in year 10.

The challenges hampering sustainable energy production in the sugar sector include: inadequate technical capacity; a weak policy framework; financial constraints and low power purchase tariffs offered to millers.”

### **Recommendation**

AFA-SD constitutes a multi-agency team to negotiate for better Power Purchase Agreements for millers.

# Mr. Asa Okoth

Deputy Director (AFA - Sugar Directorate)

## THE ROLE OF THE SUGAR SECTOR IN THE TRANSFORMATION OF FOOD SYSTEMS

“Food systems are the sum of actors and interactions along the food value chain, from input supply and produce of crops, to transportation, processing, retailing, wholesaling, and preparation of foods, to consumption and disposal.

Research and Innovation should be harnessed as a catalyst in transformation of food systems, as we drive towards sustainability. Static food systems are generally failing us. They are unable to produce greater quantities of food to feed growing populations, meet nutritional needs, benefit everyone equally and equitably and regulate consumption.”

### **Recommendations:**

- Develop and implement a National Sugar Policy
- Develop and strengthen sectoral sustainability management systems
- Advocate for sustainable land tenure and land use policies
- Implement sustainable smallholder sugar cane farming
- Balance the powers of value chain players







# Dr. Betty Mulianga

Director, Sugar Research Institute

## FOSTERING CLIMATE RESILIENT SUGARCANE FARMING

“The agriculture sector is one of the largest sources of greenhouse gas emission in Kenya, contributing about 58.6% to total emissions. Climate change is increasing risks in production with serious implications in agriculture, natural resource base, food security, livelihoods and the stability of the wider economy.

In Kenya, projections indicate that rising temperatures will significantly affect the availability of water and the quality of soil, worsening the effects of severe drought. There is need to reduce GHG emissions in the sector, this will play an important role in sequestering carbon in soil and trees.

Challenges in sugarcane research funding and poor collaboration in the industry are due to conflicting Acts which regulate different stakeholders. Stakeholders need to develop their capacities in research and push for favorable legislation for the industry.”

### Possible Resolutions

- Carry out soil analysis and implement the resolutions
- Promote best land preparation practices
- Adoption of improved sugarcane varieties
- Adoption of the Single Eye Bud Technology
- Develop carbon sequestering technologies
- Adoption of remote sensing models for decision making
- Explore technologies on diverse sugar products already in the market



## Mr. Tom Dienya

Head of Statistics at the Ministry of Agriculture and Livestock Development

### ACCELERATING DATA-DRIVEN STRATEGIES FOR BOOSTING INDUSTRY TRANSFORMATION

“Data and Digital Transformation is the process of using data, digital technologies and Artificial Intelligence to discover the root cause of problems; plan and create new or improved business processes, better products, or better services.

Getting it right guarantees plentiful benefits including efficiency; making the customers happy; increased agility and resilience; increased intelligence based on data-driven insights, hind-sights and foresights. Failure to do it right leads to stagnation, getting out-competed, and eventually driven out of business.

Solutions have to be found on how the Sugar Subsector can use data and digital systems to enhance customer satisfaction for optimal farm operations, SMART Agriculture and to manage sugarcane harvesting and transportation.”

#### **Recommendation**

Invest in data collection, data analytics, data science and the use of data to support agricultural transformation and innovation.

## Gitahi Kunyuga

Director & Co-Founder, Yamaroku Limited

### THE ROLE OF THE PRIVATE SECTOR IN ADVANCING INNOVATION, COMMUNICATIONS AND TECHNOLOGY FOR A SUSTAINABLE SUGAR INDUSTRY AND IMPROVED LIVELIHOODS



“Yamaroku Limited KORU, deals with production of agricole-style rum. Unlike industrial rum, which is made from molasses and water, Agricole Rum is made from sugarcane that is filtered, fermented, distilled and then aged for three months to three years.

Sugarcane juice is used as a feedstock to produce Koru Rum. In their production they focus on craftsmanship, sugarcane agronomy, soil management and climate. The benefits of the private sector in advancing innovation through value addition include: reduction in postharvest losses, industrial growth in rural areas, new employment opportunities, increase in foreign currency and increase in tax revenue.

Kenya prides itself in having quality cane yet there is a gap in cane value addition and product diversification. “

#### **Recommendation**

Kenya needs to have regulatory amendments to ease the business ecosystem for innovators. The private sector is committed to support innovation because they onboard unique problem solving skills and initiatives.

# Dr. Solomon Kamau

Lecturer - University of Nairobi

---

## SOIL HEALTH MANAGEMENT PRACTICES IN ENHANCING CANE CROP PRODUCTIVITY

Deteriorating soil fertility is a major problem facing the sugar sub-sector. Soils are inherently infertile, mainly deprived of nitrogen and phosphorus, coupled with low soil pH. Exploitation of soil nutrients with little or no replenishment are the main causes of fertility decline.

More land surface is being brought into sugarcane cultivation. However, sugar production per unit area has been declining. Soil health management has an impact on cane crop productivity. Soil conservation would increase yields, maintain a balanced climate cycle and maintain a healthy eco system.

Biochar is a carbon-rich material produced through partial combustion of organic biomass in oxygen-limited conditions and used as a soil amendment. It improves nutrient density of soils, water holding capacity, reduces fertilizer requirements, increases crop yields and enhances soil fertility. Additionally, it has the ability to reduce carbon emissions in our atmosphere, a phenomenon commonly known as carbon sequestration. Bagasse with high C: N ratios can be pyrolysed into biochar for adding to soils.

### Recommendations

- Use of organic manure to improve soil fertility and physical structure
- Carry out soil testing to apply the right fertilizer type and dose

### Mr. Sospeter Ndede (Cane Farmer)

“Soil management practices begin from land preparation to cane harvesting. It is in order for cane farmers to practice trash burying and use of filter press mud as substitute to fertilizers.”



# Dr. Samuel N. Ruhiu

Senior Lecturer - University of Nairobi (Faculty of Computing and Informatics)

## HARNESSING AND SCALING DIGITAL TECHNOLOGIES FOR ENHANCED PRODUCTIVITY IN THE SUGAR VALUE CHAIN



“In order to harness digital technologies, there must be those that the stakeholders can convert to what they value to do and to be. Innovations can be unsuccessful. Digital-enabled innovations are likely to be successful if relevant, useful, usable and enabling. Innovations add value through human centered designs that encompasses design thinking and user experience design.”

### Recommendations

- Need for industry players to Work with research and research-based innovation Institutions that will enable identification of solutions
- Establish Multidisciplinary Teams
- Launch calls for innovating teams; hackathons and maker-thons



# Mr. Dan Onyango

Ag. Deputy Director, Agriculture & Food Authority

## VIRTUAL EXHIBITION

“The Virtual Exhibition is an online promotional events platform designed to communicate and engage with the targeted audiences for information on the products/services offered through virtual interaction. The Virtual Exhibition serves the purpose of reaching out to many stakeholders, both locally and internationally, around the clock on a 24/7 basis.

It offers an opportunity for sharing of information and data with stakeholders (exhibitors) from every value chain in the agriculture sector. This platform will enable the Directorate launch new products/services to be hosted in Directorate designated booths. The Platform can enable stakeholder showcase their products and services using a stand-alone booth.”



05\_AWARD WINNERS

# Innovators Excellence Awards

The highlight of Sugar Industry Innovation Symposium was the awards ceremony for innovators in various categories. The presentation of awards is aimed at promoting an innovation mind-set among industry players. The focus areas

for the awards are soil nutrition, value addition, packaging and branding technologies, Climate Change Adaptation and Mitigation Technologies, and Cost Reduction Technologies in Sugarcane Farming.

The awards were presented as follows:

1. Top Innovator: Masinde Muliro University (MM Kilimo)
2. 1st Runners Up Top Innovator: Diana Asewe from the Sugar Directorate (Mobile NIR)
3. Young Innovator: Lytha Mayanja from the Sugar Directorate (Flavoured Sugar)
4. Digital Innovator: Willis Oduor from Kulea.ai (Sugar Marketing)
5. Most promising Innovator: Joseph Kiilu from Chemelil Sugar Co. (Economic and Mathematical profit model for sugar factories)

The winning innovations shall be incubated by AFA-SD as an intervention to spur creativeness and adoption of new technologies in the industry.

3. YOUNG INNOVATORS  
TITLE - FLAVOURED SUGARS 30,000  
PRESENTER - LYTHA MAYANJA

4. DIGITAL INNOVATOR  
TITLE - KULEA.MA SUGAR MARKETING PLATFORM 30,000  
PRESENTER - WILLIS ODUOR



**Top Innovators:** Innocent and Ian (left) from Masinde Muliro University Receive their award from Mr. Willis Audi - Ag. Director, AFA Sugar Directorate for their innovation *MM Kilimo*



**1st Runners Up Top Innovator:** Diana Asewe



**Young Innovator:** Lytha Mayanja



**Digital Innovator:** Willis Oduor



**Most Promising Innovator:** Joseph Kiilu

## CONCLUSION

# NEXT STEPS

To spur the subsector, the following interventions, need to implemented.

- 1) Implementation of the Sugar Taskforce Report
- 2) Policy and Legislative framework to support the industry
- 3) Counties invest more resources to support the sugar industry, including enhanced extension services
- 4) Sufficient funding for the industry (SDL to address funding gaps in the Industry)
- 5) Sugar is not the main product of the cane; there are many other products. The Millers explore all means possible and innovations to make use of all by products from the sugar cane
- 6) Development of a National Sugar policy
- 7) Adoption of GAPs in cane farming
- 8) Embracing Innovation and technology among industry players
- 9) Adoption of early maturing and high yielding varieties
- 10) The Symposium be made an annual event
- 11) Negotiations on PPAs with the Ministry of Energy
- 12) Affordable farm inputs to cane farmers

The main outcome of the Symposium was a “joint call for action”, which covers the main recommendations emerging from presentations and panel discussions. The call reinforces a clear path for AFA-SD, Millers, County governments, Government Agencies, Farmers and other private sector players to work together for implementation of innovative solutions to the Sugar Industry problems. The Symposium was closed by Tom Dienya, Head of Statistics, Ministry of Agriculture and Livestock Development.



# SYMPOSIUM TEAM







## SUGAR INDUSTRY INNOVATION SYMPOSIUM

### 2022 REPORT

#### ADDRESS

Sukari Plaza,  
New Loresho Estate,  
Off Waiyaki Way,  
51500-00200  
Nairobi, Kenya

#### GET IN TOUCH

[www.sugarinnovation.org](http://www.sugarinnovation.org)  
[info@sugarinnovation.org](mailto:info@sugarinnovation.org)  
+254(0) 703 802 247



**SUGAR INDUSTRY**  
**INNOVATION SYMPOSIUM**