



CHALLENGES AND OPPORTUNITIES OF THE SUGARCANE INDUSTRY IN MOZAMBIQUE:

THE CASE OF SOFALA PROVINCE

BANCO DE MOÇAMBIQUE

**DISCUSSION PROCEEDINGS OF
THE 47TH BM ADVISORY BOARD MEETING**

Beira, November 4, 2022

CONTENTS

OPENING REMARKS iii

OPENING SPEECH: BANCO DE MOÇAMBIQUE iv

WELCOME SPEECH: SOFALA PROVINCIAL GOVERNMENT viii

WELCOME SPEECH: BEIRA CITY COUNCIL xi

CHALLENGES AND OPPORTUNITIES OF THE SUGAR INDUSTRY IN MOZAMBIQUE: THE CASE OF SOFALA..... xiv

OPENING REMARKS

The Banco de Moçambique (BM) held its 47th Advisory Board meeting (CCBM), from November 2 to 4, 2022, in Beira city, Sofala province. As usual, the first two workdays were reserved for discussion of matters related to the institution's internal management, and the third day was open to the general public, for the purpose of presenting a research theme of interest related to the province hosting the meeting, in particular, and the country in general.

For the public session, the BM's Board of Directors chose the theme "Challenges and Opportunities of the Sugarcane Industry in Mozambique: The Case of Sofala Province", as the sugarcane industry is an important source of employment, foreign currency earnings and delivery of basic services to the concerned communities in the Sofala Province and the country in general.

The public presentation and debate session was chaired by His Excellency, the Governor of the BM and was attended by internal and external guests. The Governor of the Sofala Province, the Mayor of Beira City , sugarcane farmers, representatives of sugar mills, lending and research institutions, and the press, were in attendance as external guests.

This publication is a record of the speeches and discussions on the theme and comprise: *(i)* the opening speech by the Governor of the BM; *(ii)* the welcome remarks by the Governor of the Sofala Province and the Mayor of the Beira City Municipal Council; *(iii)* the study "**Challenges and Opportunities of the Sugarcane Industry in Mozambique: The Case of Sofala Province**" presented by the Director of the Research Department of the BM; *(iv)* the summary of remarks made by the audience during the debate session; and *(v)* the concluding remarks, summarizing the findings and recommendations of the study.

With this publication, the third in its collection, the BM makes available to the general public and key stakeholders in the sector the study's key recommendations and a summary of the discussions, with a view of finding solutions to the challenges that were identified.

OPENING SPEECH: BANCO DE MOÇAMBIQUE

Governor of the BM
Rogério Lucas Zandamela

Sofala Province, November 4, 2022

The Governor of the Nampula Province,
Former Governors of the Banco de Moçambique,
The Mayor of the Beira City Municipal Council;
Board Members of the Banco de Moçambique,
Former Board Members of the Banco de Moçambique,
Representatives of Government Institutions,
Representatives of International Organizations,
Representatives of Credit Institutions and Financial Companies,
Distinguished Guests,
Ladies and Gentlemen,

Allow me to begin by expressing, on behalf of the Board of the Banco de Moçambique and in my own name, my appreciation for your attendance at the present session of the forty-seventh meeting of the Advisory Board of the Banco de Moçambique.

Special thanks are in order to the Government of the province and the Beira City Municipal Council, for their invaluable cooperation in preparing this event, and the warm welcome and hospitality.

We are equally appreciative to everyone who contributed to making this meeting happen, including the event's Organizing Committee, service providers and the citizens of Beira city.

Ladies and Gentlemen,

We began our work two days ago, which mainly consisted in the analysis and discussion of key internal matters, leading to recommendations that will enable us to further improve the performance of our institution.

During our stay in this city, we interacted with the residents, and were able to witness the economic and social progress that government and municipal authorities have been undertaking, in order to improve the well-being of local communities.

We also had the opportunity to visit some local enterprises, such as the Mafambisse Sugar Mill (Tongaat Hulett) and MEREC Industries, a manufacturing unit dedicated to producing wheat and corn flour, pasta, among other products.

We noted that despite the negative impact of the COVID-19 pandemic and climate shocks on the business community, the aforementioned manufacturing units have, along with other local initiatives, been driving job and income creation, thereby improving the well-being of local households.

As usual, in light of the Advisory Board meetings, the Banco de Moçambique, as part of its social responsibility, provided its support to some local initiatives.

In the case of Beira city, the Banco de Moçambique was touched by the state of the *Centro Infantil Melanie* and *Centro Siloé*, and decided to fund the rehabilitation of these centers, by improving and equipping their infrastructure.

Ladies and Gentlemen,

The third and final day of our Advisory Board meeting is reserved for a discussion open to the general public on a theme of interest to the local economy, in particular, and nationwide, in general.

This year, we chose the theme “Challenges and Opportunities of the Sugarcane Industry in Mozambique: The Case of Sofala Province”.

Allow me to mention that in addition to the studies already available on this topic, we offer our own contribution, which does not per se close the debate on the topic, but rather, raises questions as to which actions are needed to overcome the constraints hindering the potential development of the entire sugarcane sector value chain.

Although the study is confined to the specific case of the Sofala province, we believe that by the end of this session, we would have gathered inputs and takeaways regarding the main bottlenecks and opportunities to maximize sugarcane production and its byproducts in the country.

One of the study's findings is that, despite protectionist measures and incentives granted to the industry, it still operates far below its potential, and current sugar production is declining.

For instance, the total sugar production in the last 5 years peaked at 415 thousand tons in 2019, which dropped to about 270 thousand tons in 2021, also reducing its contribution to employment, gross domestic product and foreign exchange earnings.

Still concerning the impact on the reduction of sugar production on employment, almost half of the 30 thousand employees as of 2013 had been laid off by 2021.

In addition, the weight of sugar in the processing industry dwindled from 11 percent in 2013 to just 2 percent in 2021, while export earnings plunged from 156 million dollars to about 40 million dollars in the same period.

Besides the aforementioned, producers acknowledge a lack of transparency in the process of setting sugarcane prices, as well as the absence of an integrated strategy for maximizing the sugarcane value chain.

In order to maximize gains in the industry, the study suggests, among other aspects, laying down and implementing of a Master Plan to boost sugarcane sector.

In our view, such a Plan should comprise a clear diversification strategy for the exploitation of sugarcane cane byproducts, investment coordination mechanisms, research, price setting and social responsibility.

It is our conviction that the discussion that will follow the presentation of the document prepared by our team, will serve as a basis for guidelines that will help to maximize gains in the sugarcane industry in Sofala Province and nationwide.

Ladies and Gentlemen,

In closing, I would like to reiterate my welcome to all participants and I trust that we will once more benefit from a frank, open and constructive debate.

I hereby declare the public session of the forty-seventh Advisory Board meeting of the Banco de Moçambique open.

WELCOME SPEECH: SOFALA PROVINCIAL GOVERNMENT

**Governor of the Sofala Province
Mr. Lourenço Ferreira Bulha**

Beira, November 4, 2022

Mr. Rogério Lucas Zandamela, Governor of the Banco de Moçambique,
Former Governors of the Banco de Moçambique,
Deputy Governor of the Banco de Moçambique,
Board Members of the Banco de Moçambique,
Representatives of Credit Institutions and Financial Companies,
Members of the Provincial Executive Council and Representatives of State Institutions,
Administrator of the Beira District,
Mayor of the Beira City Municipal Council,
Managers and Staff Members of the Banco de Moçambique,
Representatives of the Sugarcane Sector of Sofala Province,
Entrepreneurs,
Distinguished Guests,
Ladies and Gentlemen!

It is our pleasure to address all participants of this forty-seventh (47th) Advisory Board meeting of the Banco de Moçambique on the theme “Challenges and Opportunities of the Sugarcane Industry in Mozambique: The Case of Sofala Province”.

We take this opportunity to express our appreciation for the invitation and we welcome you to our Province at this Advisory Board meeting.

Therefore, on behalf of the Province's citizens and on my behalf, please accept our warmest greetings to all participants in attendance.

A special thanks is in order to the Organizing Committee of this meeting, under the guidance of His Excellency, Rogério Lucas Zandamela, for having chosen our Province to host this major event on the “Challenges and Opportunities of the Sugarcane Industry in Mozambique”, which will enable a better understanding of the issues hindering the Sugarcane Industry sector.

Ladies and Gentlemen,

Sofala province has favourable conditions for sugarcane production given the abundance of fertile soils, water from the the Zambeze, Púngue and Búzi river valleys, the availability of rail and port

infrastructure, which provides tremendous advantages for the flow of national production, despite the constraints of road access routes.

Therefore, we hope that, on the one hand, this meeting will contribute towards identifying the main bottlenecks hindering the growth of the sugarcane industry and on the other, the fostering and identification of opportunities for processing and recycling of byproducts throughout the entire sugarcane value chain.

Distinguished Guests;

Ladies and gentlemen,

Given the low efficiency of the mills in the region; the need for further research and technical assistance; the need for associationism to promote the interests of the industry; the need to engage all stakeholders in the value chain in the process of production and marketing, we find that it is possible to reverse the situation.

Even so, whilst acknowledging the significant contribution of the sector to exports and to the stabilization of the balance of payments, we would like to commend the efforts made towards ensuring that domestic sugar prices remain competitive in the region.

To conclude, we wish all participants a good discussion, and hope that the expected outcomes are achieved.

Thank you for your attention.

WELCOME SPEECH: BEIRA CITY COUNCIL¹

**Mayor of the Beira City Council
Mr. Albano Carige**

Beira, November 4, 2022

¹ Free transcript of the speech by the Proceedings editor.

Ladies and gentlemen,

First, I would like to thank God for the great blessing bestowed upon this city for being chosen to host the 47th Advisory Board meeting of the Banco de Moçambique.

Let me remind you that this city is located at the center of the country, and faces many challenges, and in recent times, it has been severely affected by climate change specifically, tropical depressions, cyclones and torrential rain. In this light, this major event has motivated us, and we realize that, despite all these climate shocks, we still have a strong alliance and feel we are much appreciated and special for, there are many cities, but this Advisory Board meeting is being held in Beira under the theme “Challenges and Opportunities of the Sugarcane Industry in Mozambique - : The Case of Sofala Province”.

Moreover, let us use the takeaways from the discussion on this major theme and similarly expand it to other major industries. Beira is a city known for the best prawns in the world. So, perhaps in the future, why can't we challenge companies to invest in opportunities available in the fishing industry? Beira exports many products to many corners of the world, so perhaps we could use said products to showcase to the world that we are major players in these areas.

I want to thank the His Excellency, the Governor of the Banco de Moçambique immensely, for going beyond this great Advisory Board meeting. When the Governor arrived, I told him that we now have a garden that used to be a place where malicious people often extorted others. Today, from Friday to Sunday, it has become a tourist hotspot, attracting weddings, birthdays, and several other activities that contribute towards transforming Beira's landscape, thanks to the Banco de Moçambique.

That said, I welcome you all to this city, enjoy all that it offers and please give us your feedback so that we can improve, for we wish to become a landmark. I spoke to Dr. Comiche regarding major challenges I face in Beira, but I told him that I know he also faces similar challenges, as many people think that Maputo has everything, but when they arrive there, they have to live with many habits and customs, both challenges in their own right.

We are also here to learn, and my only recommendation would be to put into practice all that is achieved here. Let us attempt to transform all these notes, be it in paper, pictures or photographs into reality, for I am absolutely sure that conditions are in place to foster a breakthrough.

With the exported sugar, we can immediately increase our GDP per capita. Moreover, if we increase income, we shall reduce foreign reliance and would not be so hindered by the Ukraine-

Russia war and others. We have to do something, for if we produced larger quantities of grain we would not be so hampered by this whole situation.

Once more, thank you, Mr. Governor.

This opportunity has galvanized and challenged all in attendance.

CHALLENGES AND OPPORTUNITIES OF THE SUGARCANE INDUSTRY
IN MOZAMBIQUE: THE CASE OF SOFALA PROVINCE

BANCO DE MOÇAMBIQUE
THE 47TH BM ADVISORY BOARD MEETING

Beira, November 4, 2022

OVERVIEW

EXECUTIVE SUMMARY	4
I. INTRODUCTION	5
II. LITERATURE REVIEW	7
2.1. Global Overview of Sugarcane and Sugar Production	7
2.2. Main International References in Sugar Production	10
III. PERFORMANCE AND CONTRIBUTION OF THE SUGARCANE INDUSTRY IN MOZAMBIQUE	17
3.1. Sugarcane Production	17
3.2. Overview and Performance of the Sugar Industry in Mozambique	19
IV. CHALLENGES AND OPPORTUNITIES OF THE SUGARCANE INDUSTRY: THE CASE OF SOFALA PROVINCE	27
4.1. Brief Description of the Sugar Industry in Sofala Province	27
4.2. Main Challenges of the Sugar Industry	28
4.3. Main Opportunities in the Sugar Industry	31
V. PROPOSED MEASURES TO MAXIMIZE GAINS IN THE SUGARCANE INDUSTRY IN MOZAMBIQUE	32
VI. FINAL REMARKS	34
VII. DISCUSSION POINTS	35
REFERENCES	36
ANNEX 1: Methodology and Institutions Contacted	39
ANNEX 2: Organization Chart of the South African Sugar Association	40
ANNEX 3: Summary of the Audience's Remarks at the Public Presentation of the Study	41
ANNEX 4: Closing Remarks of the Discussions	52

Tables

Table 1: Global Sugarcane Production in 2020	7
Table 2: Some Socio-Economic Indicators of the Industry in Select Countries (2020)	9
Table 3: Measures Implemented by the Brazilian Government to Boost the Sugarcane Sector in the 70s	10
Table 4: Sugar Industry Performance Drivers in India	12
Table 5: Relevant Aspects of the Eswatini Sugar Industry	13
Table 6: Main Drivers of the Mauritius Industry Transformation	14
Table 7: Policy Measures Implemented by the Government of Mauritius	14
Table 8: Key Lessons from International Experiences	16
Table 9: Active Sugar Mills and Production Capacity in Mozambique	19
Table 10: Comparative Analysis of the Sugar Industry Efficiency - 2021	22
Table 11: Average Brown Sugar Retail Price (1kg)	22

Table 12: Sugar Industry Weight in GDP (%)	22
Table 13: Social Benefits of Communities for Sugar Industry	24
Table 14: Summary of Government Incentives to the Sugar Industry	25
Table 15: Developments in Sugar Consumption (Tons)	26
Table 16: Proposed Actions to Boost the Sugar Industry	33
Table 17: Institutions Contacted	39

Figures

Figure 1: Sugarcane Byproducts	9
Figure 2: Sugarcane Value Chain in Mozambique	20
Figure 3: Map of the Sofala Province and the Capacity of Sugar Mills	27
Figure 4: Analysis of Strengths, Weaknesses, Opportunities and Threats in the Sugar Industry	31

Charts

Chart 1: Global Sugarcane Production in Tons (1961-2020)	7
Chart 2: Largest Producers and Consumers of Sugar (% of World Production)	8
Chart 3: Largest Exporters of Sugar between 2016 to 2021 (% of World Production)	8
Chart 4: Domestic Sugarcane Production (1961 - 2020) - Tons	18
Chart 5: Developments in Sugarcane Planting in Select Countries (1961-2020) - ha	18
Chart 6: Developments in Sugar Industry Jobs	23
Chart 7: Developments in Sugar Industry Tax Revenues	23
Chart 8: Sugar Exports and Imports (USD million)	24
Chart 9: Developments in the International Sugar Price (c/USD/Pound/Weight)	24
Chart 10: Sugar Production in Mozambique (1961 and 2021) - Tons	25
Chart 11: Consumption Per Capita in Select Countries (kg)	26
Chart 12: Total Jobs in Sofala Province vs Jobs in the Sofala Province Sugar Industry (2017 - 2021)	29
Chart 13: Weight of Jobs in Sofala Province in the Total Sugar Industry (%)	29
Chart 14: Developments in Sugar Exports and Imports and Sugar in Sofala Province .29	
Chart 15: Developments in Sugar Industry Tax Revenues in Sofala Province in Total Industry	29
Chart 16: Developments in FDI in Sofala Province Sugar Industries	29
Chart 17: Weight of FDI in the Sugar Sector on Total FDI	29
Chart 18: Sugar Production per Season in Sofala Province	30
Chart 19: Cultivated Area and Production Sugarcane in Sofala Province	30

Boxes

Box 1: Sugar Industry Stakeholders in Mozambique	20
---------------------------------------------------------------	----

Abbreviations

- ACP – Africa, Caribbean and Pacific
- AT – Mozambique Revenue Authority
- APAMO – Association of Sugar Producers of Mozambique
- BM – Banco de Moçambique
- BNDES – National Bank for Economic and Social Development
- CABRI – Collaborative Africa Budget Reform Initiative
- DNA – National Sugar Distributor
- ESA – Eswatini Sugar Association
- EU – European Union
- FAO – Food and Agriculture Organization
- FDI – Foreign Direct Investment
- GDP – Gross Domestic Product
- IGC – International Growth Center
- INE – National Bureau of Statistics
- MADER – Ministry of Agriculture and Rural Development
- MIC – Ministry of Industry and Commerce
- OECD – Organization for Economic Co-operation and Development
- RA – Recoverable Amount
- SADC – Southern Africa Development Community
- SASA – South African Sugar Association
- SWOT – Strengths, Weaknesses, Opportunities, and Threats
- USA – United States of America
- USD – US Dollar
- VAT – Value Added Tax

EXECUTIVE SUMMARY

The sugarcane industry has a high potential for the inclusive development of Mozambique and Sofala province in particular. As regards employability, for example, at the peak of the sugarcane production season, the industry directly and indirectly creates 31 thousand jobs, and the mills employ about 25 thousand workers, half of which are from Sofala Province.

While acknowledging the importance of the sector, the Government provides incentives, notably the exemption from VAT for the sugarcane value chain and the imposition of a surcharge on sugar imports. However, despite such incentives, and the existing sugarcane processing capacity in the country, sugarcane and sugar production continues to decline and the industry is not maximizing its potential. In the case of Sofala Province, from a total of 100 thousand tons of sugar produced in 2017, this figure dwindled to 60 thousand tons in 2021. As a result, the socioeconomic contribution of the industry tends to decline. While in 2021, the industry had a weight of 7% in total manufacturing production and employed 24.5 thousand workers, its weight plummeted to 2% in 2021, and the workforce to 16.5 thousand workers. In some mills, protests emerge from surrounding communities, especially from independent sugarcane growers.

In this context, this study contributes to the discussion around the main constraints in order to maximize socio-economic gains from the sugarcane industry in the country in general, and in Sofala province in particular.

The study suggests that the main structural constraints stems from the persistence of a traditional model of operation in the industry, based on the exploitation of sugarcane solely for the production of sugar. While the most competitive and dominant countries in the sector, such as Brazil and India exploit several byproducts from sugarcane with strategic backing from their government, especially biofuel production and power generation, the Mozambican industry does not fully exploit the byproducts of the sugarcane value chain. The study also finds that the protests from the surrounding communities stem from the beginning of the adjustment process of the sector in order to optimize production costs, for instance, through the mechanization of some agricultural production processes.

In order to tackle the sector's challenges, the study proposes the formulation and implementation a strategy for the promotion of the sugar sector which encompasses (i) diversification to take advantage of byproducts from sugarcane; (ii) mitigation of the impact from climate change and (iii) coordination of social responsibility, investment in research and development, and government incentives tailored to the sector's needs. To minimize conflicts, it proposes that a forum be created with the main sugarcane stakeholders, namely independent sugarcane growers, the government and sugar mills, in order to discuss relevant issues, including the formulation of a sugarcane reference price.

I. INTRODUCTION

The Banco de Moçambique (BM) held its 47th session of the Advisory Board in November 2022, in Beira city. As usual, the last day was reserved for the presentation of research on a theme of interest to the general public for discussion with external participants, including Government representatives, financial institutions, academia, business sector, media outlets and the general public.

For the 47th session, the BM Board of Directors chose the theme “Challenges and Opportunities of the Sugarcane Industry in Mozambique: The Case of Sofala Province”. Its selection stems from the principle adopted by the BM in 2017, which calls for identifying relevant themes for the development of local communities in the province hosting the Advisory Board meeting, and the country in general.

The sugarcane industry is predominant for Sofala Province and for the country, as a source of employment, foreign exchange and provision of basic services for communities in which it operates. With privatization and protectionist measures adopted by the government in the 2000s, sugar production increased by an annual average of 59 thousand tons between 1980-2002 to 369 thousand tons between 2010-2015. Meanwhile, employment in the industry increased by about 24,500 workers in 2015, half of which were from Sofala Province, making it the second largest employer in the country after the public sector. In terms of social benefits, the industry invested about 946 million meticaís (between 2011 and 2020) in health, education, socio-economic development and environmental protection.

In recognition of the sector's potential to improve the socioeconomic conditions of communities and drive economic development, the Government upholds tax incentives, notably VAT exemption on the sugar value chain and a surcharge on sugar imports. However, despite the protectionist measures that are in force and the current processing capacity, the production of sugarcane is plummeting, against a backdrop in which in some factories protests are emerging from surrounding communities, especially from independent sugarcane growers. Indeed, from an installed production capacity of 530,000.00 tons/year, between 2017-2021, the mills produced an average of 315,418.00 tons/year, equivalent to 60% of the installed capacity. In terms of employment, from a total of 24,500 workers employed at the mills in 2015, the figure dwindled to 16,500 in 2021. Meanwhile, independent sugarcane growers, which are part of the industry's stakeholders and beneficiaries challenge the asymmetry of information in setting the purchase price of sugarcane to their disadvantage. Some studies, such as that of O'Laughlin and Ibraimo (2013), find that the industry multiplier effects of the industry are increasingly limited.

This study identifies the constraints and opportunities for maximizing socio-economic gains in the sugarcane industry. To this end, it examines the performance and socio-economic contribution of the industry, and in light of successful international experiences, undertakes a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis.

Methodologically, the study combines document analysis, field surveys and data analysis. Semi-structured interviews were carried out with key industry stakeholders, including the central and provincial government, associations of sugarcane growers, sugar factories and large consumers. In Sofala province, interviews covered 100% of the mills and a part of the sugarcane growers. We also drew on previous studies focused on Mozambique and international experiences from the major producing countries, including some in the SADC – for more details about the methodology and institutions contacted, see Annex 1.

Results show that the main challenges to maximizing socio-economic gains are related to the persistence of the traditional model of the sugar industry operations centered on the exploitation of sugarcane solely for the production of sugar, amidst the absence of an integrated strategy to address the dynamics of the sector. The Mozambican sugarcane industry is focused solely on the production of sugar, which contrasts with the current model adopted by the most dominant and competitive countries in the sector, which, with strategic support from government, exploit several sugarcane byproducts, especially biofuels and energy. Diversification enables the production mill to be optimized and competitiveness to be maintained via cross-subsidies. In addition to the challenge of focusing on a single product, there is also insufficient modernization of sugarcane production, especially by independent growers, and the low investment in support infrastructure, which also adds to low levels of productivity, output and competition.

The sector also faces asymmetry of information between mills and sugarcane growers in the setting of prices, which does not stimulate production. While sugar producers are represented by a national association that protects their interests, cane growers are not similarly organized, which hampers their active participation in discussing the problems faced by the sugarcane sector, including the process of setting the sugar cane selling price. In Sofala Province, for instance, producers state that they only learn of the sugarcane-selling price at the end of the sugarcane season, that is after all costs inherent in the production process have been deducted.

The study proposes the formulation and implementation of a strategy to stimulate the sugarcane industry. The strategy should include guidelines on diversification to make full use of sugarcane byproducts (energy, fuel) and sugar (special sugars). It should also address aspects related to support infrastructure, including the mitigation of impacts of climate change, social investment, research and development, government protection, among others. In addition, it proposes the setting-up of a forum involving the main sector stakeholders for discussing the industry's issues, including the formulation of a reference sugarcane price.

Besides this introduction, the study comprises six more chapters. Chapter II addresses the world sugar outlook, focusing on the experiences of some countries in sugarcane production, sugar marketing and streamlining the industry sector. Chapter III dwells on the outlook and performance of the industry in Mozambique, including the main challenges and opportunities, and explores the specific case of Sofala Province in Chapter IV. Chapter V presents the main

findings of the study, and Chapters VI and VII proposes measures for maximizing socioeconomic gains in the sugarcane industry and issues for debates.

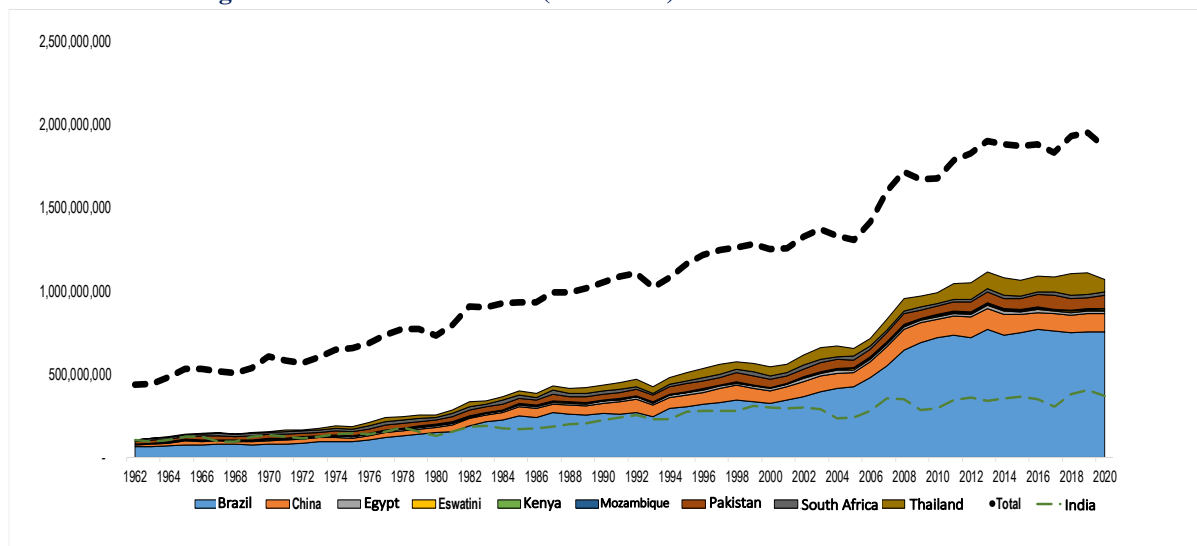
II. LITERATURE REVIEW

This chapter is an overview of the world sugar landscape, focusing on the experiences of a some countries in sugarcane production, sugar marketing and diversification of the industr.

2.1.Global Overview of Sugarcane and Sugar Production

Global sugarcane production has been increasing, including in African countries, but remains dominated by five countries (Brazil, India, China, Pakistan and Thailand). Sugarcane is grown in over 100 countries, and represents an important source of job creation, especially in rural areas (Novacana, 2022). In 2020, global production amounted to 1,870 million tons, and about 76% of the global production was concentrated in five countries, with Brazil and India accounting for over half of the sugarcane produced - Table 1. Africa, represented by 39 countries, contributed to 5.1% of total production, with South Africa and Eswatini occupying the top positions in the continent (FAO, 2022) - Chart 1. Mozambique accounts for 0.2% of total production, despite its agricultural potential and the fact that it has a track record in this crop.

Chart1: Global Sugarcane Production in Tons (1961-2020)



Source: FAO (2022)

Table 1: Global Sugarcane Production in 2020

Country	Cultivated area (million ha)	Production (million tons)	Weight in global production (%)
Global	26.5	1,870	-
Brazil	10.0	757.1	40.5
India	4.8	370.5	19.8
China	1.4	108.7	5.8
Pakistan	1.2	81.0	4.3

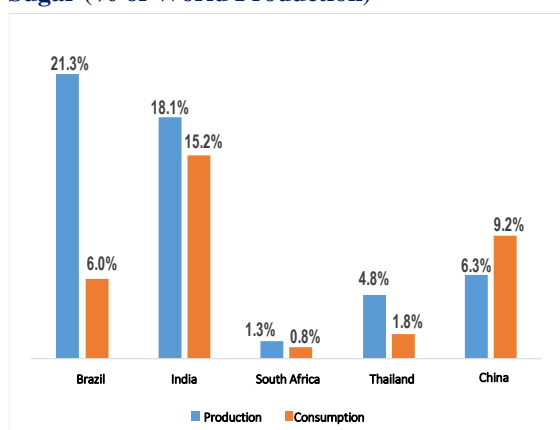
Country	Cultivated area (million ha)	Production (million tons)	Weight in global production (%)
Thailand	1.8	75.0	4.0
USA	0.4	32.7	1.8
Africa	1.6	95.7	5.1
South Africa	0.3	18.2	1.0
Eswatini	0.1	5.7	0.3
Mozambique	0.05	2.7	0.2
Mauritius	0.04	2.6	0.1

Source: FAO (2022)

Global sugar production is concentrated in five countries, and the size of domestic consumption market determining their hegemony. About 70% of sugar produced worldwide is consumed in the respective country of production and the remainder in the international market (Simelane, 2021). These countries have the advantage of a large, diversified and growing domestic market, reflecting rising income and population, especially in India and China², which drives the expansion of their production and other sugarcane byproducts - Chart 2.

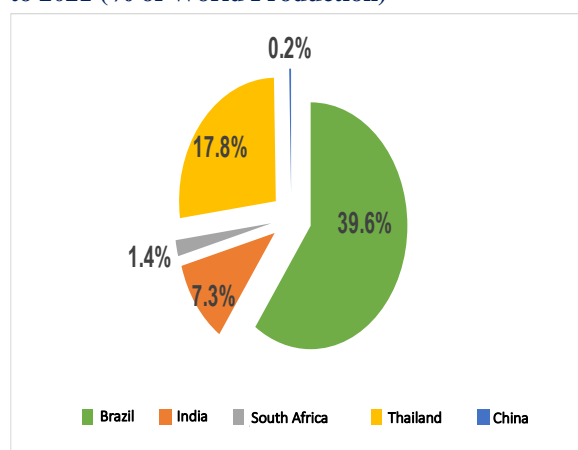
In terms of foreign trade, Brazil, the US and China are stand out. In terms of sugarcane-based sugar exports, Brazil ranks first, followed by Thailand and India (FAO, 2022) - Chart 3. In addition, according to the same source, on the imports side, the US, China and Indonesia are particularly highlighted.

Chart 2: Largest Producers and Consumers of Sugar (% of World Production)



Source: OECD (2022)

Chart 3: Largest Exporters of Sugar between 2016 to 2021 (% of World Production)



Source: OECD (2022)

The sugar industry makes a significant socio-economic contribution in several countries. For instance, in India, the industry accounts for 1.1% in GDP, employs over 7 million workers and generates about USD 2 billion in foreign currency - Table 2.

² Despite being the third largest producer of sugar, China is a net importer of this product, given the imbalance domestic supply and demand.

2.2. Main International References in Sugar Production

This section highlights the experiences of Brazil and India, which are the world's largest producers of sugarcane and also the main exporters of sugar. In the African continent, the cases South Africa and Mauritius particularly stand out. Eswatini's experience is also presented and is deemed a success story, especially with regard to the marketing model and the involvement of communities in sugarcane production.

2.2.1. Brazil

In the early 70s, sugarcane became one of the main crops in Brazil, driven by the economic policy targeting the sugar agro-industry, focused on exports. In 1971, Brazilian sugar exports grew to 1.2 million tons, approximately 66% of the total sugar circulating in the global market, making it the world's leading producer and the second largest exporter worldwide (Rodríguez and Ross, 2020).

In order to scale up production and exports, the Brazilian government implemented structural reforms. In the 70s, the Brazilian authorities embarked on a set of reforms to leverage the sugar industry and position it on the global scene as the largest producer and exporter worldwide. Table 3 summarizes the main measures adopted by the Brazilian government and their impact.

Table 3: Measures Implemented by the Brazilian Government to Boost the Sugarcane Sector in the 70s

Policy/ Program	Context/ Measures taken	Impact of measures taken
Subsidy measures	<ul style="list-style-type: none"> • Modernization of the sugar agro-industry. 	<ul style="list-style-type: none"> • It boosted Brazilian exports, accounting for 41% of foreign exchange earnings.
<i>Planalsucar</i> (National Sugarcane Improvement Program)	<ul style="list-style-type: none"> • Setting up research centers in sugarcane-producing states; • Assigning greater responsibility to State Universities regarding the component of genetic improvement of crops. 	<ul style="list-style-type: none"> • Introduction of biological pest control; • Calibration of macro and micronutrients in soils and recommendations on sugarcane liming and fertilization • Establishing parameters of payment for sugarcane by sucrose content; • Improvement of yields in the field and industry; • More incentives for producing sugar byproducts and ethyl alcohol.
<i>Proálcool</i> (National Alcohol Program) and launch of instruments of alcohol-sugar price parity instruments	<ul style="list-style-type: none"> • Promote the production of alcohol (fuel) by expanding raw material production, with emphasis on the increase of agricultural productivity, modernization, expansion and installation of new production units; • About 1 billion reais were invested, a quarter private and 	<ul style="list-style-type: none"> • Between 1975/76 and 1990/91, sugarcane production grew from 68.5 to 222.4 million tons (+225%), which made Brazil the world leader in sugar and ethanol production; • Production of alcohol-powered grew from 3,000 to 560,000 units per year; • Domestic gasoline production exceeded consumption.

	<p>three quarters public, with the Government responsible for the risk of investment.</p> <ul style="list-style-type: none"> • Setting up subsidized credit lines; • The Government promoted the production and sale of vehicles equipped with alcohol-powered engines, so as to eliminate dependency on imported fuels. 	
--	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Source: Santos (1993); Chatenay (2013)

With regard to the sugarcane price, the deregulation process that began in the 90s changed the method of payment to the producer. Since 1930, with the creation of the Sugar Institute, the sugarcane price began to be determined by the State, based on average production costs and a profitability margin. The deregulation of the sector in 1997 led to the creation of the Council of Sugarcane Producers, responsible for the development of a new payment system based on the total concentration of sugars ⁴(sucrose, glucose and fructose) contained in a ton of sugar cane and recoverable in the industrial process, called Total Recoverable Sugar (Sachs, 2007).

The deregulation process favoured technological breakthroughs and the diversification of the sector. With the beginning of the deregulation process, the sugar industry was induced to use new market strategies, focused on the diversification of sugarcane by-products (Carvalho, 2002). According to the same source, industries have started to intensify the use of machinery and improved inputs, in a context in which they began to adopt modern forms of management.

2.2.2. India

After Brazil, India is the second largest global producer of sugarcane and sugar benefitting from favourable agro-climatic conditions and growing domestic demand. India has a cultivated area spanning 4.8 million ha, with an average annual cane production equivalent to 371 million tons, which equates to a sugar production of 31 million tons (FAO, 2022). Sugar cane is produced by private individuals, with a large proportion of small growers producing on a subsistence basis (Indian Institute of Sugar Research, 2014 and FAO, 2022).

According to the Indian Institute of Sugar Research (2014), the success of the sugarcane industry is attributed to the factors listed in Table 4:

⁴ This council is made up of representatives of Organizations of Sugarcane and Alcohol Producers.

Table 4: Sugar Industry Performance Drivers in India

Policy/ Program	Context/ Measures taken	Impact of measures taken
Focus on research and development	<ul style="list-style-type: none"> • Creation of public and private institutes of basic and applied research on the production and processing of sugarcane (e.g. Indian Council of Agriculture Research). It should be noted that, in addition to providing technical assistance and training to growers, they are responsible for the development and dissemination of improved seeds. 	<ul style="list-style-type: none"> • 116 improved varieties of sugarcane developed, 60 of which are used commercially; • Sugar production increased from 18.2 million tons in 2000 to 33 million tons in 2019. In the same period, sugarcane productivity increased from 40.5 tons/ha to 71.1 tons/ha.
Regulation for the use of sugarcane byproducts	<ul style="list-style-type: none"> • Strengthening the sector in order to meet the growing domestic demand for sugar, energy and electricity. Among other measures: (i) regulation of prices by setting the minimum price of sugarcane; (ii) establishment of the Indian development agency for mass bioenergy production; and (iii) approval and implementation of the program for using ethanol as fuel (Ethanol Blending Program). 	<ul style="list-style-type: none"> • The minimum price for sugarcane is a substantial incentive for the growing of sugarcane by small farmers; • The national policy target of 20% of ethanol fuel blending achieved progressively (10% by 2021/2022). This measure is expected to contribute to the reduction of fuel imports.
Mechanization of sugarcane production	<ul style="list-style-type: none"> • Growing sugarcane is heavily reliant on the use of human capital (average 375 man-hours/ha); • Understanding that mechanization contributes to the reduction of manual labor, as it minimizes human error (precision farming), increases production and lowers costs. 	<ul style="list-style-type: none"> • About 40% of sugarcane production is mechanized; • Emergence of groups specialized in the production of machines suitable for sugarcane production in India (e.g. the Mahindra group, Shaktiman and Eicher); • It is estimated that if these machines are used extensively, they can result in saving over 60% of manual labor, coupled with a plunge in the growing cost by 50-60%.
Adoption of protectionist measures	<ul style="list-style-type: none"> • The sugar industry supports over 6 million farmers and about 1 million families of industrial workers, and generates substantial jobs in related activities; • Increase in the sugar import tax by 26 percentage points to 40% in 2014, as a way of protecting the national industry and boost exports; 	<ul style="list-style-type: none"> • Self-sufficiency in terms of production for domestic consumption and generating surplus for exports, to ensure sufficient stock to keep sugar supply at reasonable prices in the future. • India's share in the global sugar production soared by 5% to 15% in the last five decades.

Source: adapted from *Indian Institute of Sugar Research (2014) and Solomon & Swapna, M. (2022)*

2.2.3. Eswatini

The sugar industry plays a very important role in the Eswatini economy, as one of the main sources of employment and revenue for the country. Sugarcane production accounts for 50% of total agricultural production and the industry as a whole contributes 10% to GDP and a third of total private sector employment (*Research and Markets, 2022*). As per the same publication, sugar ranks third in the country’s total exports and in terms of sugarcane production. In Africa, Eswatini ranks fourth among and is classified twenty-fifth worldwide. Table 5 describes the highlights of the Eswatini sugar industry:

Table 5: Relevant Aspects of the Eswatini Sugar Industry

	Form of organization/operation	Impact/remarks
Production	<ul style="list-style-type: none"> Over half of the sugarcane is produced by the industry; 21% by small-scale farmers and 18% by large-scale farmers, and medium-sized farmers account for the remainder. 	The sugar industry and the government maintain a good relationship, especially as regards ensuring water availability for field irrigation.
	<ul style="list-style-type: none"> Three processing plants, where the government owns 50% in two of them and over 40% in the third. 	
Marketing	<ul style="list-style-type: none"> The Eswatini Sugar Association (ESA) is responsible for the marketing of all sugar and byproducts; ESA consists of sugarcane growers and mills. 	Expansion of the industry, resulting in higher yields for all value chain stakeholders.
	<ul style="list-style-type: none"> Price paid to farmers: takes into account the drivers of global market sugar prices, given that the Eswatini economy is rather small and most of its production is export-based. Retail price: agreed by sugar packers and retailers. 	The distribution of revenues between farmers and processors is done by an independent unit.
Regulation and policies for the promotion of industry.	<ul style="list-style-type: none"> Sugar Act, which together with ESA and the Sugar Industry Agreement regulates all aspects of the sector (from planting to marketing). ESA controls the system of collective payments, where it transfers the revenues from net sales to beneficiaries. 	Organization of associations and cooperatives.

Source: adapted from Research and Markets (2022)

2.2.4. Mauritius

The Mauritius sugar industry is considered a success story. The industry contributes about 1% to GDP, accounts for 25 thousand jobs (direct and indirect) and generates 59% of the power used in the island (CABRI, 2019). As per the same source, the basis for this success is underpinned by the continuous modernization and diversification of the sector, pursued by the government in partnership with the private sector, a fact that enabled the industry to operate competitively in the global market. Table 6 highlights the main drivers of the transformation of the Mauritian sugarcane industry.

Table 6: Main Drivers of the Mauritius Industry Transformation

Period	Change catalysts	Impact
Establishment of the sugar industry (1950-1975).	<ul style="list-style-type: none"> Favorable climatic conditions and soils for the planting of sugarcane. Promoting the economic and social development of the population. 	<ul style="list-style-type: none"> Expanding the sugarcane production, resulting in increased exports. Investment (public and private): improving the living conditions of farmers and workers. Improving food security. Investing in housing and education.
Industry modernization and diversification (1975-2005).	<ul style="list-style-type: none"> Expanding, diversifying and modernizing the industry, so as to ensure economic feasibility. 	<ul style="list-style-type: none"> Production and mill modernization. Bagasse-based electricity production, so as to improve energy security.
Making the industry more competitive and sustainable (2005–2018).	<ul style="list-style-type: none"> Ensuring new markets for exports other than the EU. 	<ul style="list-style-type: none"> Production of refined and other special sugars (with higher market value).
	<ul style="list-style-type: none"> Contributing to the country's energy security (energy and ethanol production). 	<ul style="list-style-type: none"> Transformation of the traditional sugar industry into a more diversified industry, centered on energy sources.

Source: CABRI (2019)

In light of the socioeconomic importance, the Mauritian authorities showed its commitment to the development of the sugarcane industry. As of 1985, the Government of Mauritius has been undertaking several policies and strategies in order to improve the performance of the sugar industry (CABRI, 2019). Similarly, with the measures, government authorities provide support to smallholder producers (Table 7).

Table 7: Policy Measures Implemented by the Government of Mauritius

Strategy/Program	Background/Rationale	Measures applied
Sugar Sector Action Plan (1985-1990).	<ul style="list-style-type: none"> Hardships in expanding production areas given farmable land restrictions Understanding that the rise in production and income per ha can only be achieved by the optimized use of production factors and bagasse-based power generation. 	<ul style="list-style-type: none"> Creation of the farmer service center. Producers now had technical assistance and used improved varieties of cane. Exemption from paying taxes on the transfer of property for power production and introduction of taxes on sugar exports in order to prioritize the domestic market. Negotiation of a power selling agreement between sugar mills and the public utility.
Strategic Action Plan for the Sugar Sector (2001 - 2005).	Reduction of production costs in order to compete with sugar producers in developing countries and with access to the European market.	<ul style="list-style-type: none"> Promotion of sugar in several markets other than the EU. Centralization of cane processing to 7 mills rather than the 14 active mills. Mechanization of sugarcane production, coupled with diversification. Establishment of an Advisory Board to make efforts towards sector reforms.

Strategy/Program	Background/Rationale	Measures applied
Sugar Industry Efficiency Act (1988/2001 and 2011-2018).	With the end of the sugar protocol and the resulting plunge in industry revenues, the Mauritian government has set out strategies to promote the diversification of the sugar industry.	<ul style="list-style-type: none"> • Creation of two development funds in order to promote the production of cane, bagasse and renewable energy. • Mandatory use of molasses and ethanol as raw material for the production of products such as beverages and syrups. • Exemption from paying income tax for 60% of energy sales made by private companies to the public power utility.
Other	Encourage small and medium-scale sugarcane growers, given that they account for 40% of total production.	<ul style="list-style-type: none"> • Increase the sugar import tax to 80%. • Support growers in the collection of cane (including improving infrastructures within sugarcane areas). • Subsidizing small-scale growers in the procurement of fertilizers.

Source: CABRI (2019)

2.2.5. South Africa

The South African sugarcane industry is competitive in the global market and is an important catalyst for economic and social development. The sector is comprised of 6 industries and over 21 thousand sugarcane growers⁵, ranking among the top 15 of the 120 sugar-producing countries (SASA, 2022). It is also estimated that the industry impacts the lives of 2% of the population and contributes about 0.8% to GDP⁶.

The partnership between sugarcane growers and the sugar industry contributes towards the sector's strong performance. This alliance resulted in the creation of the South African Sugar Association (SASA), an entity created to ensure the efficiency and sustainability of the industry, through investments in several segments, as well as the rendering of technical assistance, and ensuring the active participation of all stakeholders at various stages, including in the price formation process (SASA, 2019/2020) - see Annex 2.

The current legislation of the South African government focuses on diversification. One of the most latest achievements was the implementation of the South African Sugar Master Plan, which is designed to fully exploit the sugarcane value chain. In addition, as per the same publication, the industry should boost its production, in order to supply 95% (equivalent to 300 thousand tons) of the needs of the South African market in the two coming years (Tongaat Hulett, 2021).

The price of sugarcane is agreed and implemented nationwide. SASA audits the mill revenues, and after deducting administrative charges (industrial taxes), a part is withdrawn in

⁵ With an average annual production of 2.3 million tons.

⁶ *South African Sugar Industry Directory – 2019/2020*

favor of producers nationwide (negotiated at 64.3%), which enables setting the Recoverable Value (RV)⁷ to be applied (International Sugar Journal, 2022). The same publication states that all mills pay the same price for the sugarcane and an estimated RV price is disclosed monthly.

2.2.6. Key lessons from international experiences

International experiences shows that the global sugar production and exports are dominated by countries that (i) adopt modern operation standards and (ii) benefit from protectionist policies. With the support of their respective Governments, the sugar industry has conceived and implemented plans and strategies aimed at domestic diversification and exploitation of sugarcane byproducts. Moreover, public and private investment in the development of infrastructure to support the industry, stronger commitment to research and development and modernization of the production system are emphasized.

Table 8 summarizes some of the key lessons from international experiences that were decisive for the success of the sugar industry in some countries.

Table 8: Key Lessons from International Experiences

Description	Measures	Main Results
Production Expansion	<ul style="list-style-type: none"> Government sector prioritization, through the implementation of clear and targeted policies for diversification; Government protection of the domestic market and incentives to maintain competitiveness; Participation of the government, cane growers and mills, in the process of sugarcane price fixing. 	<ul style="list-style-type: none"> Brazil: it has become the world's leading producer and exporter and a reference in the sustainable exploitation of renewable energy; South Africa: approval of the sugar plan to diversify the sugar industry; India: the government recommends the legal minimum price to be paid to producers; All dominant countries: construction of resilient infrastructure to support industry, including roads.
Marketing	<ul style="list-style-type: none"> Creation of an entity responsible for marketing. This entity includes sugarcane producers and mills; Promotion of the domestic market and surplus exports. 	<ul style="list-style-type: none"> Eswatini: ESA handles marketing, including all sugar and byproducts; Industry protected against non-appealing prices in the global market.
Social Responsibility	<ul style="list-style-type: none"> Allocation of a portion of the annual budget for social projects that benefit rural communities. 	<ul style="list-style-type: none"> South Africa and Eswatini: associations in these countries allocate part of their budgets for social projects.
Competitiveness	<ul style="list-style-type: none"> Commitment with research and development; Public and private investments in infrastructure to support industry. 	<ul style="list-style-type: none"> India, Mauritius, South Africa: creation of research institutes that (i) provide technical assistance at all production stages; (ii) research and disseminate seeds that have higher yields; and (iii) modernization of the production system;

⁷ Estimate of the amount of sucrose that can be extracted into sugar and molasses.

Description	Measures	Main Results
		<ul style="list-style-type: none"> • All dominant countries: construction of resilient infrastructure to support industry, including roads.

Source: adapted by the authors

III. PERFORMANCE AND CONTRIBUTION OF THE SUGARCANE INDUSTRY IN MOZAMBIQUE

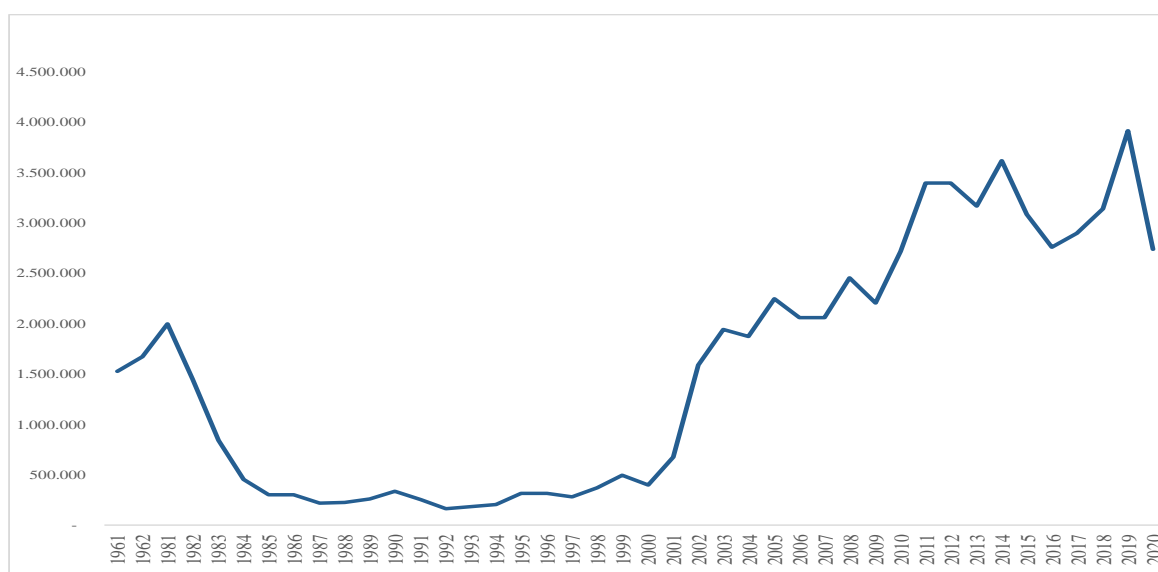
3.1.Sugarcane Production

Mozambique has favorable conditions for sugarcane production. The crop is grown in tropical areas, with fertile soils, and availability of water, factors that determined the location of processing plants for said production in the valleys of the Zambeze, Búzi and Incomáti rivers. In addition, port infrastructure gives the country an advantage in the distribution of domestic production, despite the limited and poor state of roads. Also noteworthy is the fact that the country has a total land area of 48 million hectares (ha), 36 million (75%) of which are arable, with a total area planted sugarcane of only 41,000 ha (0.1%) (USAID, 2015).

Sugarcane cultivation and processing of in Mozambique began before the country's independence. According to the IGC (2014), sugarcane production for the purpose of industrial processing started at the end of the XIX century in the Zambeze and Búzi river valleys, where four plants were set up (*Companhia de Búzi, Açucareira de Moçambique, Sena Sugar Estates from Marromeu and Sena Sugar Estates from Luabo*), and later expanded to the South with the setting-up of two production units along the Incomáti river (Xinavane and Maragra). As per the same publication, production peaked in 1972.

Meanwhile, in the post-independence period, it slumped drastically driven by, among factors, the civil war, a situation that was reversed following the Government's intervention with the privatization of mills and protectionist measures (Chart 4).

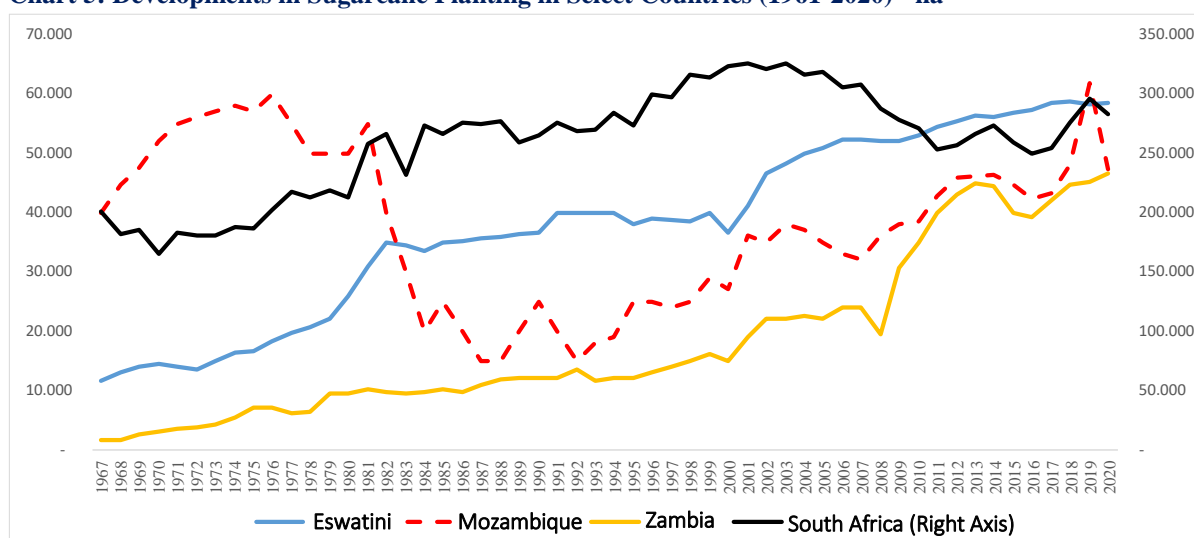
Chart 4: Domestic Sugarcane Production (1961 - 2020) - Tons



Source: FAO (2022)

Considering the country’s agricultural potential, the expansion of sugarcane production has been modest. Despite favorable land and climate conditions, current sugarcane production still remains, practically, at the same levels as in the colonial period (Chart 5). After achieving a cultivated area record (60,000 hectares) in 1976, the country recorded successive reductions in cultivated area, driven by nationalization and the impact of the civil war, having managed to recover and record the same performance in 2019 (43 years later). In addition, according to the Mozambique Sugar Producers Association (APAMO), the outbreak of strikes, coupled with climate change, has contributed negatively to the sector's expansion in recent times.

Chart 5: Developments in Sugarcane Planting in Select Countries (1961-2020) - ha



Source: FAO (2022)

The largest share of sugarcane is produced by sugar mills (75%), and the remainder by independent producers, who are unaware of the indicative sugarcane selling price at the beginning of the season, which does not stimulate production. Independent sugarcane

producers, some of whom benefit from the incentive system set-up by sugar mills, do not have the power to negotiate the sale price at the mill, nor do they understand the mechanism used by mills to determine said price (interviews with producers and USAID, 2015). This fact, coupled with the absence of a reference price for sugarcane and of a nationwide organization of producers, constitutes an obstacle to the formulation of a fair price, and is considered a disincentive for independent farmers to increase production.

3.2. Overview and Performance of the Sugar Industry in Mozambique

Mozambique has seven sugar mills, grouped into two categories. The first group aggregates four mills that produce conventional and refined sugar, located in the Maputo and Sofala provinces, which together have a production capacity of 530 thousand tons of raw sugar per year (MIC, 2022). The second group includes three mills devoted to the production of organic sugar for the external market. These are located in Maputo, Sofala and Cabo Delgado provinces which together have a combined processing capacity of 29.3 thousand tons/year - table 9. According to the MIC⁸ (2022) and APAMO (2022), in addition to their mills, the sugar sector involves (i) about four thousand sugarcane producers, (ii) an entity responsible for marketing the sugar and (iii) an association of sugar producers (box 1).

Table 9: Active Sugar Mills and Production Capacity in Mozambique

Licensed mills	Location (province)	Production capacity (tons)	Average production per campaign in the period 2017/2021
Conventional and Refined			
Maragra Açúcar, S.A.	Maputo	96,000 / year	70.701
Tongaat Hulett - Mafambisse Sugar Mill	Sofala	90,000 / year	38.399
Companhia de Sena, S.A.	Sofala	110,000 / year	36.382
Tongaat Hulett - Xinavane Sugar Mill, S.A.	Maputo	234,000 / year	169.935
SUB-TOTAL		530.000 / year	315.418
Organic			
Pure Diets Moçambique	Maputo	10.000	N/A
Eco Farm Moçambique	Sofala	30.000	10.000
Eco Energia de Moçambique	Cabo Delgado	9.300	N/A
SUB-TOTAL			

Source: APAMO (2022), MIC (2022) and interviews to companies

In contrast to the industry in other countries, Mozambican plants focus solely on sugar production. Given the large array of byproducts that can be extracted from sugarcane (see figure 1), the mills operating in the country mostly produce brown, refined and organic sugar. Byproducts such as bagasse and straw, which are commonly used for biodiesel and power generation, are not commercially exploited, as is the case with sugar.

The efficiency level of mills is relatively low compared to the region. Meanwhile, the price of domestic sugar is competitive. In order to measure the competitiveness of the national sugar, the sugarcane processing ratio per hectare, the cane to sugar processing ratio and retail

⁸ Ministry of Industry and Commerce.

sugar prices per kg were considered. As per 2021 data, comparing these ratios across some countries in the region shows that in terms of efficiency in both cane yield per hectare, as well as cane to sugarcane transformation, the country is less competitive - table 10.

However, in terms of prices, the domestic product has an advantage, compared to four SADC countries out of the seven considered in the sample - Table 10. The average price of brown sugar traded in Mozambique in June 2022 stood at USD 1.24/kg, a figure slightly below the global average of USD 1.25/kg - Table 11.

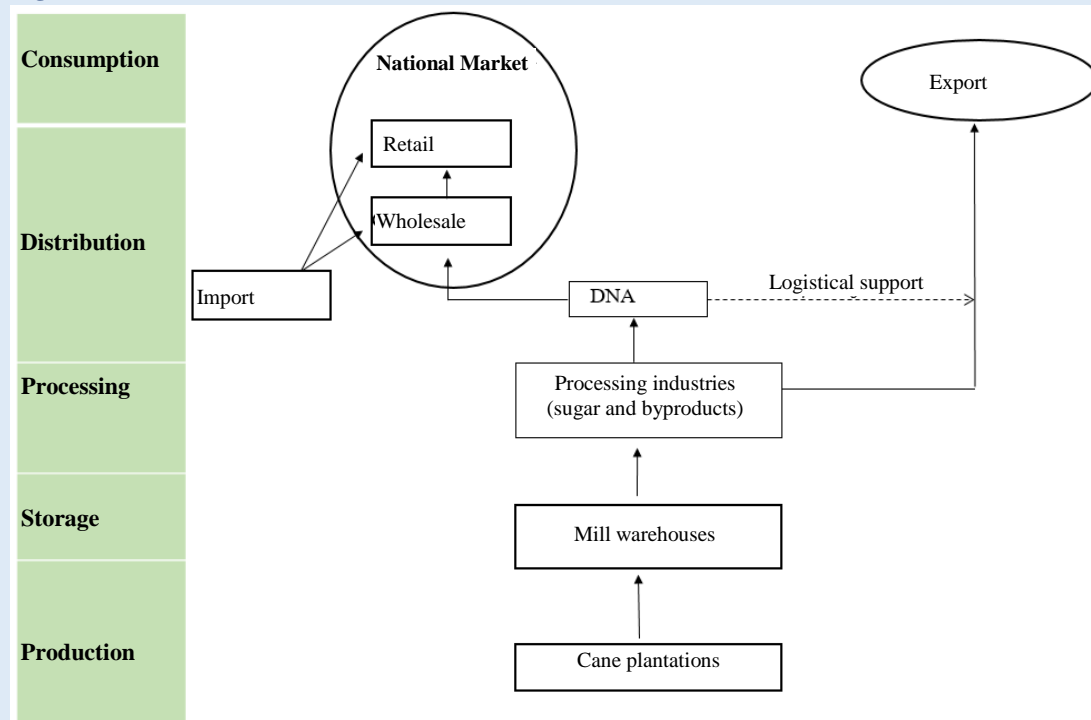
Despite the recognized quality by large consumers, they consider the cost of refined sugar high. Large industrial consumers consider that the quality of domestic refined sugar to be satisfactory and on a par with that of the region. Meanwhile, the cost of purchase from the DNA is considered high compared to the global market.

According to the beverage industry respondents in South Africa, large consumers in South Africa pay the equivalent of 32% more for refined sugar in the domestic market than large domestic consumers.

Box 1: Stakeholders in Mozambique’s Sugarcane Industry

The production of sugar in Mozambique comprises a capital intensive value chain. From production of the raw material (sugarcane) to the production of the final product (sugar) and other sugarcane byproducts (molasses and bagasse), significant financial, technological and human resources are required.

Figure2: Sugarcane Value Chain in Mozambique



Source; Adapted from Nova (2018)

From this value chain, sugarcane producers, sugar mills, the Mozambique Sugar Producers' Association and the National Sugar Distributor are the main stakeholders.

Sugarcane Producers

These comprise the peasants who operate in the initial phase of the chain, in the production of the main raw material. The sugarcane cultivation involves 4 thousand sugarcane growers, with 447 private farmers and 60 associations of private producers, which together supply 25% of the sugarcane processed by the industries. It should be noted that the sugar industry, besides producing its own raw material, sponsors some private producers.

Sugarcane producers are organized in small associations or cooperatives, which in turn are affiliated with the Federation of Agriculture, which aggregates several agricultural crops. Thus, they do not have an association at regional nor national association that protect their interests in a structured manner. In the specific case of Sofala province producers, the price formation mechanism for sugarcane is not considered transparent, since they are only informed of the amount to be received months after delivery of the product to the mills.

Sugar Mills

The country has seven active sugar mills, four of which produce conventional and refined sugar, and three organic sugar. In the production of conventional and refined sugar, processing is carried out independently by each mill, and the final product is sold to the national sugar distributor, which is responsible for placing it on the domestic market and subsequently channelling the proceeds to the sugar mills. Surplus production is exported, and each mill is responsible for securing the market, while the national sugar distributor provides logistical support.

This model means that sugar mills are limited to supplying sugar to the national sugar distributor. Likewise, this approach contrasts with some countries where mills have partial autonomy, not only with regards to price setting, but also customer relations management, as well as marketing and branding development.

With regards to organic sugar, companies have their own production and marketing channels, and are not associated with APAMO or the national sugar distributor.

APAMO –Associação dos Produtores de Açúcar de Moçambique

Established in 2001 on the recommendation of Government, it acts as an intermediary of the industry and ensures that it benefits from the sugar policy". The association whose membership comprises the *Açucareira de Moçambique, SARL, Açucareira de Xinavane, SARL, Companhia de Sena, SARL, and Maragra Açúcar, SARL*, is responsible for representing, supporting and coordinating the common interests of its members, such as promoting their image, contributing towards the growth, sustainability and recognition of the industry. To this end, it undertakes advocacy activities with a view to the improvement of the sector's business environment, networking and technical support.

DNA – Distribuidora Nacional de Açúcar

A limited liability company established in 1992, with the *Açucareira de Moçambique, SARL, Açucareira de Xinavane, SARL, Companhia de Sena, SARL and Maragra Açúcar, SARL* as its partners. DNA is an entity that was strategically created to secure a market for national production at a uniform price nationwide. This institution is responsible for marketing sugar in the domestic market, as well as logistical coordination of export of the surplus. To this end, it has three distribution centers in the domestic market and distributors in 46 cities and 41 districts, bound to a consignment model.

Despite the nationwide single price advantage, the DNA is challenged by other industry stakeholders, including independent sugarcane producers for, allegedly, influencing the price of sugarcane by setting the purchase price of sugar from the mills, in a context in which it enjoys monopolistic protection, for it simultaneously operates as (i) a monopsony, when it acquires sugar from mills, and (i) a monopoly, when selling to wholesalers and retailers.

It is worth noting that, unlike other countries, there is no active participation of other stakeholders in the value chain regarding the process of determining the price of sugar and sugarcane.

Source: APAMO (2022), MIC (2022), Sampaio et al (2021) and USAID (2015)

Table 10: Comparative Analysis of the Sugar Industry Efficiency - 2021 ⁹

Country	Processing ratio of tons of cane to the production of one ton of sugar ¹⁰	Average cane yield/hectare (ton)
Eswatini	8.3	98.0
South Africa	8.7	65.0
Mozambique	9.7	56.2

Source: FAO (2022), APAMO (2022), SASA (2022) and GAIN (2020)

Table 11: Average Brown Sugar Retail Price (1kg)

Country	Average Price of 1 kg of Sugar (USD)
Eswatini	0.51
Malawi	1.22
Mozambique	1.24
Tanzania	1.29
Zimbabwe	1.53
South Africa	1.64
Zambia	1.98
World Average	1.25

Source: *Global Product Prices* (2022), *Wamucii* (2022), *New Zimbabwe* (2022), *Malawi Voice* (2022) and INE (2022)

And the economic contribution of the industry is significant, despite the recent downward trend. On average, the contribution of sugar in the processing industry shrank from 8.2% (2011-2015) to 3.1% (2016-2021). Over the same period, the processing industry grew from an average of 3.6% to 1.6% - Table 12. The same pattern of decline trend was also observed in employment, tax revenue and foreign trade.

Table 12: Sugar Industry Weight in GDP (%)

Descrição	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Sugar weight in the processing industry	9,6%	10,6%	11,2%	3,1%	6,8%	3,6%	3,1%	3,6%	3,1%	2,8%	2,3%
Processing industry GDP developments	2,0%	0,7%	3,3%	4,6%	7,6%	3,6%	2,6%	1,8%	1,4%	-1,3%	1,5%
Sugar Weight in the Overall GDP	0,9%	0,9%	0,9%	0,2%	0,5%	0,3%	0,2%	0,3%	0,2%	0,2%	0,2%
Overall GDP Developments	7,4%	7,3%	7,0%	7,4%	6,7%	3,8%	3,7%	3,4%	2,3%	-1,2%	2,3%

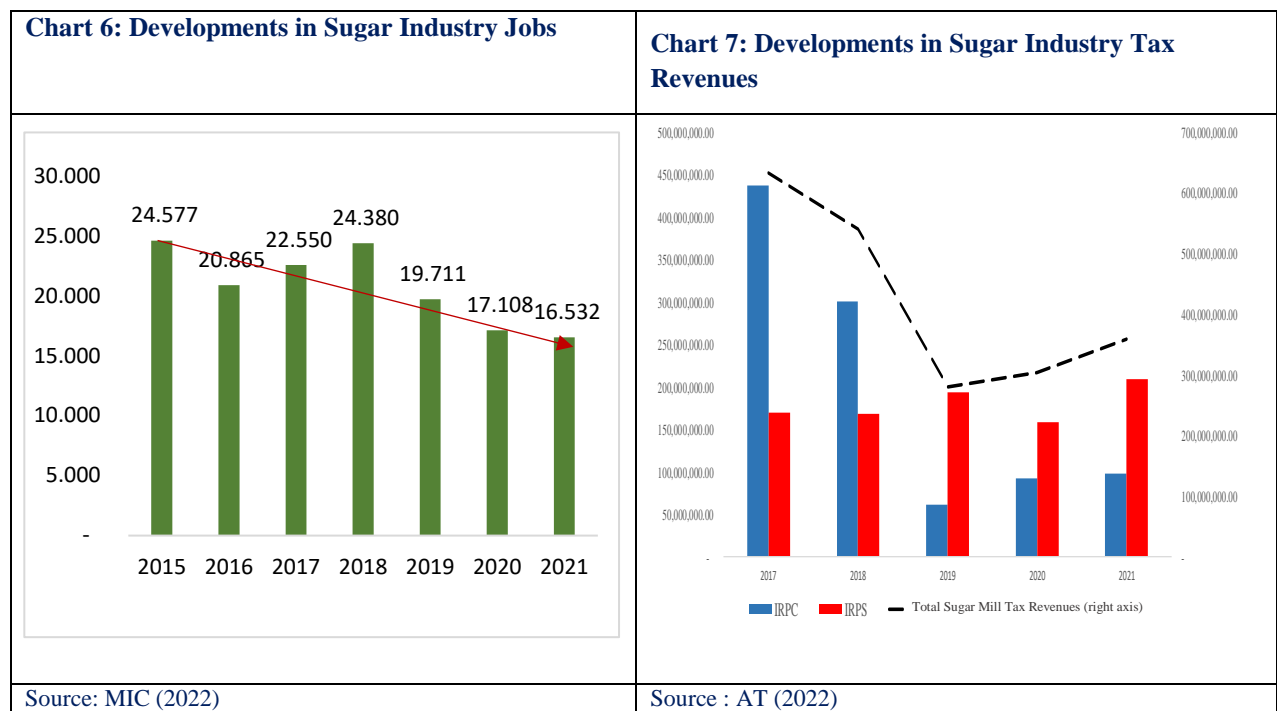
Source: INE (2022)

⁹ South Africa data concern 2019.

¹⁰ The lower the ratio of tons of cane to tons of sugar, the more efficient is the plant in the extraction of the sucrose content.

The sugar industry, besides the jobs in production units, also indirectly employs in the sugarcane value chain, a little over 31 thousand people during the peak season, including private producers, cane cutters and loaders, transporters, up to distribution. Meanwhile, in 2021, the number of workers assigned to the mill stood at 16,532, a 32.7% slump compared to 2015, the peak year in the sample - Chart 6. Natural disasters, low field yields and more recently, the outbreak of COVID-19 are among the causes, in a context in which the mills are gradually migrating to the mechanization of sugarcane cultivation..

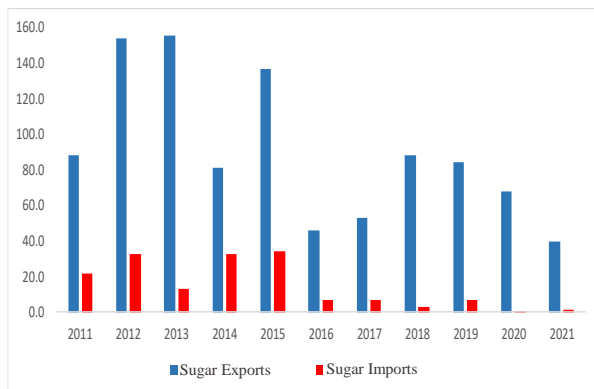
In terms of tax contributions, after attaining the highest level of contributions in 2017 (634 million meticais), a downwards trend was observed, reaching its lowest level in 2019 (281 million meticais), equivalent to a reduction by over 100% - Chart 7.



Sugar ranks third in total exports of agro-industrial products, and with a downward trend. As per APAMO (2022), the quota system Africa, Caribbean and the Pacific (ACP) countries provided a preferential price with premiums to the tune of USD 250 to USD 300, an amount above the world market price, a fact that contributed to the boost of exports, which in 2013 reached a peak of USD 156 million (Chart 8). However, with the agrarian reforms in the European Union, exports are now in common market prices, which contributed to the downward trajectory. The recent slump in exports also reflected the downward trend in sugar prices on the global market (Chart 9) between 2016 and 2018, as well as climate shocks¹¹, which affected the sugarcane production.

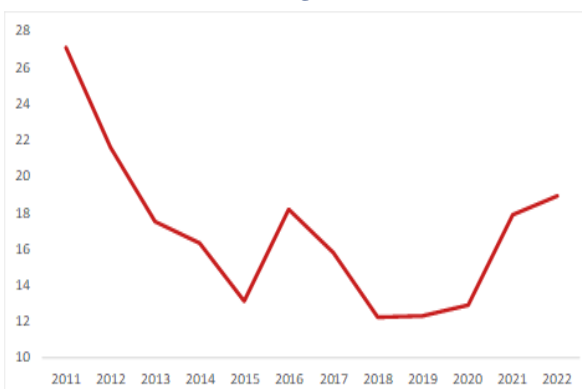
¹¹ Cyclones Idai and Eloise gravely hindered the Sofala province.

Chart 8: Sugar Exports and Imports (USD million)



Source: BM (2022)

Chart 9: Developments in the International Sugar Price (c/USD/Pound/Weight)



Source: Reuters (2022)

The social contribution of industry is also substantial, but tends to narrow. The sugar industry is one the Government's main partners in improving infrastructure in the rural communities where it operates. As per KPMG (2016), between 2011 and 2015, the sugar sector invested 600 million meticaís in basic services that benefitted the communities, with emphasis in the social area (education and health) - table 13. More recently, 2018-2020 the figure stood at 346 million meticaís in social projects, plus 484 million invested in the development of small-scale farmers in partnership with the European Union. The assessment of the communities that were interviewed is of a reduction in the social responsibility of the mills. For instance, they point to the weak intervention of mills in (i) the improvement of social infrastructure, (ii) minimizing environmental pollution caused by the circulation of heavy machinery and from aerial spraying of production fields, and (iii) unequal access to employment opportunities.

Table 13: Social Benefits of Communities for Sugar Industry

Investments made between 2011 and 2015	Total (MZN)
Health	
• Construction of health posts with equipment	119,888,200.00
• Provision of medicines and medical treatment	
Education	43,222,984.00
• School construction	
Socio-economic development	256,022,895.00
• Contract production systems	
• Technology transfer, with an impact on increased productivity	
Environmental Protection	181,622,687.00
• Energy and waste management	
• Protection of land and biodiversity	
Total	600,756,766.00

Source: KPMG (2016)

Recognizing the importance of the sector for socio-economic development, the Government retains incentives for the sugar industry. Considering that this is one of the industries with the highest employability in rural areas and with the potential to improve the socio-economic conditions of the communities surrounding the mills, the Government, as part

of the privatization process, has encouraged the revitalization of the industry and retains protectionist measures (IGC, 2014). The incentives granted are aimed at:

- The promotion of domestic industry and import substitution, in order to ensure a market for domestic production; and
- The promotion by beneficiary mills of infrastructural development in their areas of implementation for the benefit of communities.

Table 14 summarizes the range of government incentives granted to the sugar industry in Mozambique.

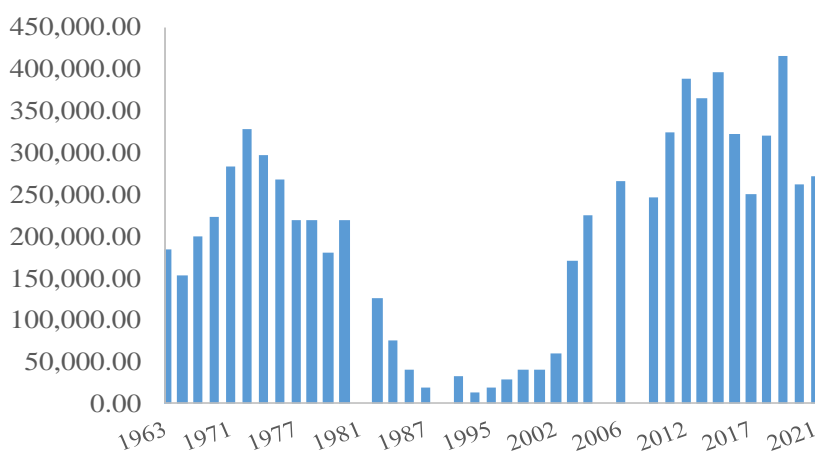
Table 14: Summary of Government Incentives to the Sugar Industry

Measures adopted	Expected impact	Status
Establishment of the Flexible Tax Surcharge System for Imports - Reference Sugar Price (Ministerial Order No. 100/2015, of November 19)	<ul style="list-style-type: none"> • Ensure a market for the national sugar. 	In effect
VAT exemption in the sugar value chain (Law No. 16/2020, of December 23)	<ul style="list-style-type: none"> • Reduce transmission costs for products required by the sugar value chain, in order to ensure the sustainability of a sector with substantial socioeconomic impact in their activity areas. 	In effect
Establishment of the sales system via the Single Distributor (Creation of the National Sugar Distributor - DNA)	<ul style="list-style-type: none"> • It aims to ensure equitable access for domestic producers to the national and global markets; • Creation of special sugar-related service counters at Customs 	In effect
Food Strengthening Regulation (Decree No. 9/2016, of April 18)	<ul style="list-style-type: none"> • It aims to strengthen sugar, as one of the products prioritized by the Government, in its strategy to combat malnutrition that plagues the country. 	In effect

Source: APAMO (2022)

Meanwhile, despite the protectionist measures in place and the existing processing capacity, sugar production has been decreasing in recent years. Despite a period of recovery in production, due to Government's intervention, sugar production fell by 35% in the last three years (APAMO, 2022).

Chart 10: Sugar Production in Mozambique (1961 and 2021) - Tons

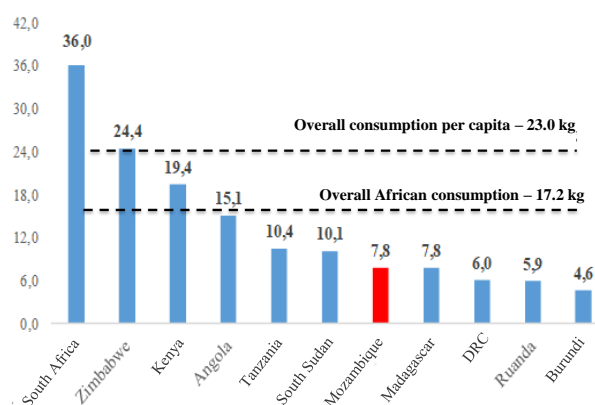


Source: APAMO (2022)

As per the MIC (2022) and APAMO (2022), this decline reflects the impact of climate shocks (drought and floods/cyclones), amidst the outbreak of COVID-19 - Chart 10.

In addition to the impact of climate shocks, low per capita sugar consumption is also a constraint to increasing effective capacity. Data from Tongaat Hulett (2021) reveals that Mozambique’s current per capita sugar consumption stands at 7.8 kg/year, compared to 36 kg/year in neighboring South Africa and a world average of 23.0 kg/year, which suggests that the country has room to expand its consumption (Chart 11). The low consumption is linked to low per capita yield and

Chart 11: Consumption Per Capita in Select Countries (kg)



Source: Tongaat Hulett (2021)

few industries using this product as raw material, as currently, only the beverage industry stands out. However, with the implementation of structural projects linked to the energy sector, the industry envisages a continuation of an upward trend in domestic consumption - Table 15.

Table 15: Developments in Sugar Consumption (Tons)

Description	2017	2018	2019	2020	2021
Annual Production	336.551	348.760	314.339	306.545	270.896
Domestic Consumption	163.702	152.942	177.131	184.796	202.200
Exports	108.090	185.237	244.215	77.600	80.820

Source: APAMO (2022)

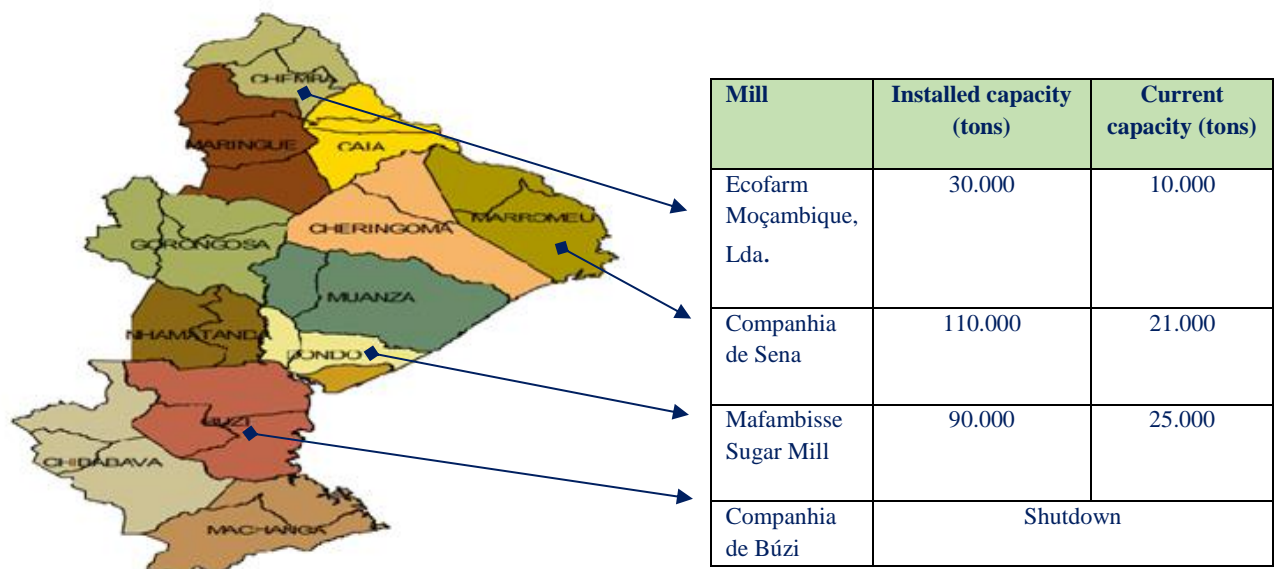
IV. CHALLENGES AND OPPORTUNITIES OF THE SUGARCANE INDUSTRY: THE CASE OF SOFALA PROVINCE

The previous chapters described the landscape of the sugar industry in the world and in Mozambique. This chapter examines the main constraints in Sofala Province in particular, and in Mozambique in general, in light of said overview, and semi-structured interviews conducted (see Annex 1 on the institutions and persons contacted).

4.1. Brief Description of the Sugar Industry in Sofala Province

Sofala province has favorable agro-ecological conditions and geographic location for sugar production. The province has fertile soils and availability of water, which are crucial for farming. These factors have influenced the location of the current four mills (50%¹² of the total mills nationwide) - figure 3. In addition, the current rail-port infrastructure in the province are another important outlet for production.

Figure 3: Map of the Sofala Province and the Capacity of Sugar Mills



Source: MIC (2022); Sofala Provincial Directorate of Agriculture (2022); mill interviews

In contrast to the mills installed in the South of the country, in Sofala Province, the sugarcane production system is dominated by the mills. Indeed, of the four mills, only the Mafambisse mill buys a portion of the raw material from private producers and associations, which together account for about 12% of the total sugarcane processed by the mill. This contrasts with Maputo Province, where independent producers have a more significant contribution.

¹² This includes the Búzi Sugar Mill which is not currently active.

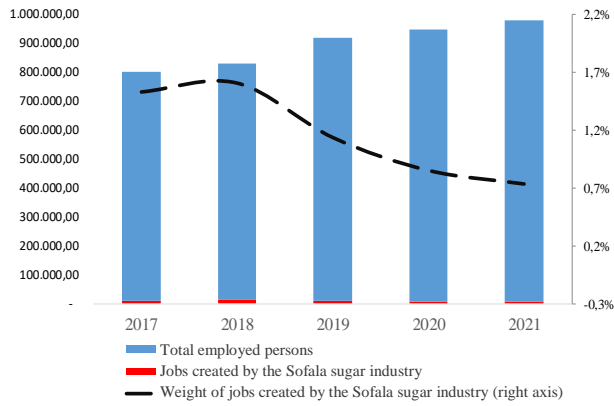
As in the south of the country, the industry located in Sofala Province has a significant contribution to the local economy, despite the declining trend. For instance, in 2021, the Sofala sugarcane industry directly employed about 7 thousand people, 60% of which were permanent employees and 40% seasonal. Compared to 2017, this equates to a 55% reduction - Charts 12 and 13. The same downward trend is observed in the trade balance, against a backdrop in which tax receipts remain practically unchanged (Charts 14 and 15). Sofala Province mills contributed slightly over a 1/3 in total industrial tax receipts over the last five years, a figure that is similar to the average over the last 10 years (31%). Net exports also shrunk from USD 10.4 million in 2019 to USD 8 million in 2021. As a result of this economic performance, the social contribution of sugar mills has been declining and social disturbances have emerged in the surrounding communities (e.g. crime and sugarcane theft in mill production areas and from independent producers).

In order to minimize the employment crisis and provide the community with income, some of the mills have begun to cultivate and encourage the cultivation of rice in the production fields affected by saline intrusion. Thus, part of the employees who had been laid off formed associations, which benefitted from some areas (25 hectares on average) dedicated to rice cultivation, for subsequent sale to the sugar mill.

4.2. Main Challenges of the Sugar Industry

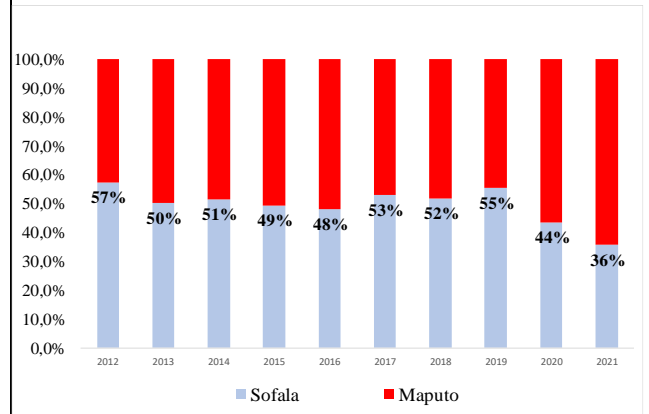
As in the other mills in the country, those in Sofala also operate below capacity and follow a traditional model of operation based on the exploitation of sugarcane only for sugar production. Indeed, of an overall sugar production capacity of 530 thousand tons in the country, the industry exploits 60%, and in Sofala Province exploits less than ¼ of the capacity is used - see Table 8 and Figure 3. The non-maximization of the production plant also reflects the focus solely on sugar production and the under-exploitation of sugarcane byproducts. This model contrasts with the current manner in which the industry operates in more competitive countries, where several sugarcane byproducts are exploited for commercial purposes, with strategic government support, with emphasis on biofuel and electricity production. As a consequence of the traditional model, there is no place for cross-subsidies, which reduces the industry's competitiveness.

Chart 12: Total Jobs in Sofala Province vs Jobs in the Sofala Province Sugar Industry (2017 - 2021)



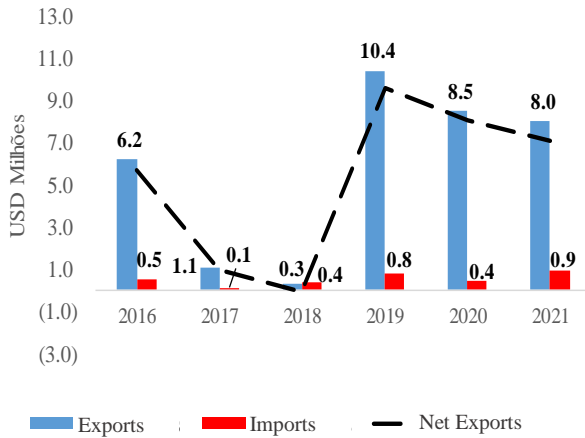
Source: MIC and INE (2022)

Chart 13: Weight of Jobs in Sofala Province in the Total Sugar Industry (%)



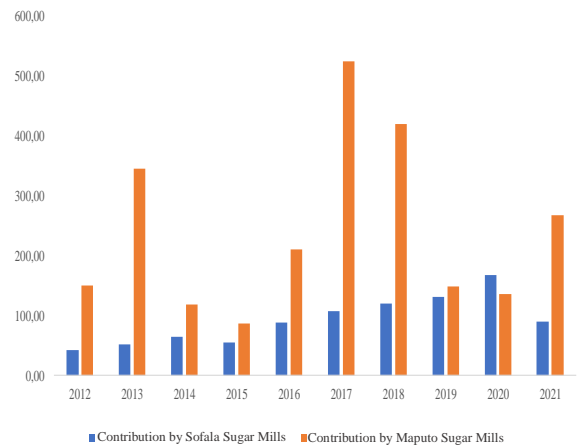
Source: APAMO (2022)

Chart 14: Developments in Sugar Exports and Imports and Sugar in Sofala Province



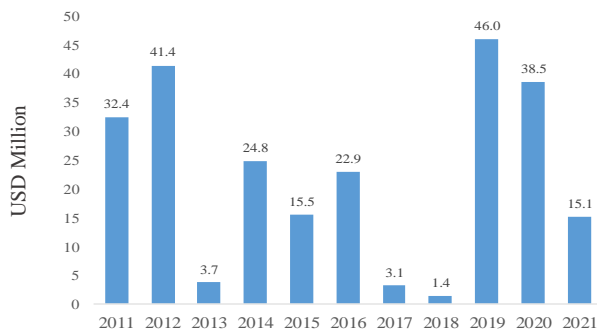
Source : AT (2022)

Chart 15: Developments in Sugar Industry Tax Revenues in Sofala Province in Total Industry



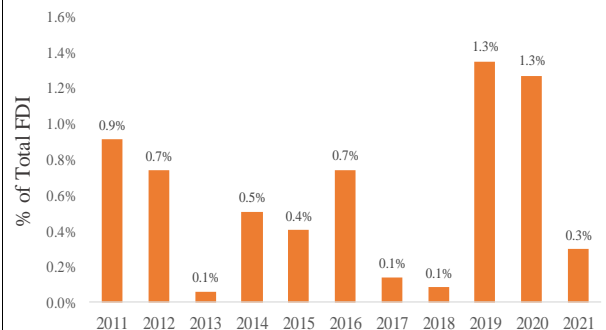
Source: INE (2022)

Chart 16: Developments in FDI in Sofala Province Sugar Industries



Source: BM (2022)

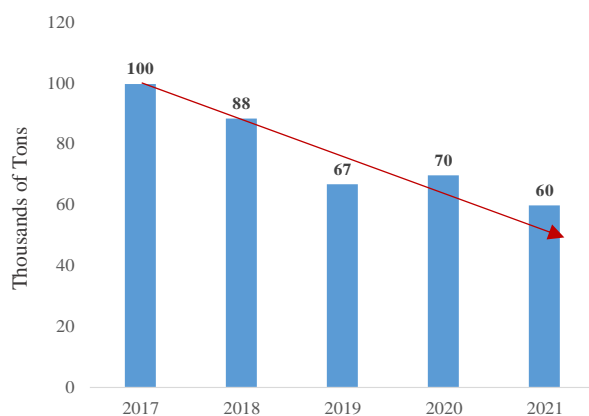
Chart 17: Weight of FDI in the Sugar Sector on Total FDI



Source: BM (2022)

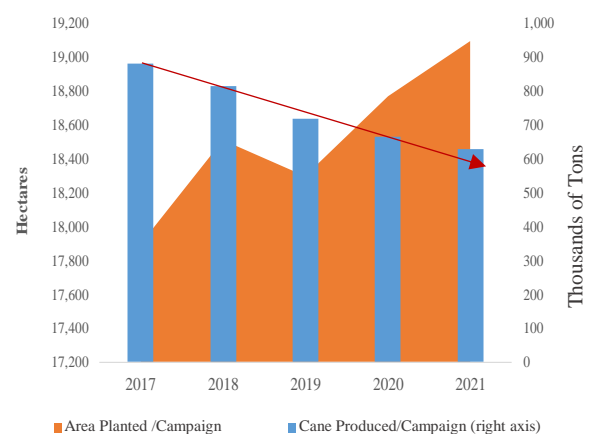
Climate change, insufficient modernization of the sugarcane production process and inadequate investment in supporting infrastructure contribute to the drop in sugarcane production and productivity and consequent underutilization of the mills and a loss in competitiveness. Based on interviews undertaken, the difficulty in transporting production (particularly from Marromeu and Chemba), due to the poor state of the roads and limited availability of wagons, recurring natural disasters and the saline intrusion (especially in Mafambisse, which is leading to the migration to other crops, particularly rice), are pointed out as the main drivers that contribute towards the under-exploitation of the existing capacity. Moreover, despite the investment made in acquiring irrigation pivots and using drones for spraying, precision farming is not being practiced in all farming fields. The MIC (2022) and the DNA (2022) also refer to the COVID-19 pandemic outbreak and the saturation of soils¹³ as determinants of low production¹⁴. Thus, after a production of about 100 thousand tons of sugar in 2017, it dropped to 60 thousand tons in 2021, in a context in which the cultivated area increased with the setting-up of an organic sugar production mill (Charts 18 and 19).

Chart 18: Sugar Production per Season in Sofala Province¹⁵



Source: APAMO (2022)

Chart 19: Cultivated Area and Production Sugarcane in Sofala Province



Source: APAMO (2022)

In addition to the weak exploitation of sugarcane byproducts and limited support infrastructure, the sector is confronted with information asymmetries between mills and sugarcane producers with regards to the setting the sugarcane selling price. As indicated, the DNA is responsible for the marketing of sugar in the domestic market, and sets the sole selling price in the country.

Sugarcane producers also complain of (i) unpunctual payments; (ii) not understanding the drivers of the price paid to them after transport and input cost deductions; and (iii) not being informed of the reference sugarcane price prior to the beginning of the season. Such asymmetry

¹³ It should be noted that, in order to cope with saline intrusion and soil saturation, one of the sugar mills decided to expand their production areas to fields afar, which contributes to the increase in production costs.

¹⁴ For independent sugarcane producers, the high costs of access to credit are also a bottleneck to production.

¹⁵ They refer to the output of traditional plants

does not favor timely planning and negatively impacts the quality of the sugarcane produced. In some mills in the south of the country, the asymmetry of information on price setting and the social role of the mills are contributing towards protests by producers and surrounding communities. It should be noted that said protests can also be explained by the beginning of the process of gradual adjustment of the industry to streamline production costs and improve competitiveness, for instance, through mechanization, which is leading to the reduction of the labor force plunge in the sector.

4.3. Main Opportunities in the Sugar Industry

The sugar industry has a huge potential for expansion, especially in light of the transition to renewable energy. Given climate change and the need to transition to renewable energy, the sugarcane industry is an alternative that many countries have been adopting, given the multitude of environmentally friendly byproducts that can be produced from sugarcane. Figure 4 summarizes the strengths, weaknesses, opportunities and threats in the Mozambican sugar industry.

Figure 4: Analysis of Strengths, Weaknesses, Opportunities and Threats in the Sugar Industry



V. PROPOSED MEASURES TO MAXIMIZE GAINS IN THE SUGARCANE INDUSTRY IN MOZAMBIQUE

In order to tackle the main structural sector challenges, the study identifies the need for the formulation and implementation of a strategy for the promotion of the sugar sector – see the summary in Table 16. The strategy should contain guidelines on:

- (i) The exploitation of endogenized sugarcane byproducts in the country's development strategy.** The absence of a clear strategy guiding agribusiness development around the sugar value chain in accordance with the Government's strategic priorities limits the exploitation of sugarcane to sugar production. For instance, countries such as India and Brazil, which use sugarcane for the commercial production of biofuel and energy have implemented a regulatory ecosystem and an enabling market for the safe and efficient use of gasoline blended with ethanol. They also designed roadmaps for the phased implementation of the programs, with specific targets at each stage, which involve all key stakeholders to this end.
- (ii) Measures to mitigate the impact of climate change.** Given that the country has been cyclically struck by extreme climate shocks, which greatly affect agriculture and agribusiness alike, the strategy should identify and delimit the responsibilities in the implementation of measures to prevent and mitigate their impact (e.g. water retention and use systems to cope with floods, cyclones and/or droughts).
- (iii) Investment in Research and development.** The experience of successful countries underlines the importance of continuous research in identifying sugarcane varieties that are more suitable to the reality of each country, measures to control/combat pests, as well as the necessary investment in production technologies, among others. It is in this context that the strategy to promote the sector must also cover these elements to improve productivity, profitability and sustainability. Mozambique already has a similar institution - the Mozambique Agrarian Research Institute (IIAM), however it does not include sugarcane which is addressed by the sugar mills. The inclusion of this crop in IIAM researches may enable gains to be made for a wider range of sugarcane growers, especially in the adoption and application of appropriate techniques, provision of training and technical assistance to the producer, considering different climate zones and development of research geared towards diversification and adding value to sugarcane byproducts.
- (iv) Social responsibility and government protection measures.** The strategy should also delimit the scope of social responsibility of the sugarcane industry and the incentives or protective measures.

In order to minimize conflicts and foster production, it is proposed to establish a forum that caters to the main stakeholders of the sector to discuss relevant issues, such as the

formulation of the reference price of sugarcane. The forum would also enable the protection of the interests of all parties, including cane producers, and greater transparency in the process of setting the price of sugarcane and sugar. Other countries with a centralized marketing system have an entity that brings together sugarcane producers, the industries and government, where all relevant aspects of the sector, including prices, are discussed .

Table 16: Proposed Actions to Boost the Sugar Industry

Challenge	Description	Proposed action	Entity in charge
Traditional industry operation, grounded on sugar production and non-exploitation of other sugarcane byproducts	<ul style="list-style-type: none"> • Sugar is covered by the Industrial Policy, which leaves out specific and important sector issues; • Not all sugarcane byproducts are being exploited at this time; • Insufficient modernization of sugarcane production; and • Insufficient investment in research and development (e.g. higher yielding varieties); • Insufficient investment in support infrastructure. 	<ul style="list-style-type: none"> • Establishing and implementing a sugar policy that promotes the exploitation of cane byproduct, mitigation of climate change impacts, research and development, as well as social responsibility. • Assessment of the level of protectionism and incentives granted to the industry compared to other countries in the region, so as to maximize the current potential. 	MADER, MIREME, MIC, DNA, producers, cooperation partners and other relevant stakeholders.
Information asymmetry	<ul style="list-style-type: none"> • The marketing system is provided for by the national sugar distributor, which is held by traditional sugar mills and is not inclusive. • The grower only learns the price to be paid for the sugar cane after the end of the campaign, only accepting the price; • Growers have no understanding of the sugarcane price drivers; • Payment to cane suppliers is not timely, hindering the process of planning by independent growers; • Slowing sugarcane production 	<ul style="list-style-type: none"> • Establishment of a forum with the main sector stakeholders to discuss structural and framework issues, such as setting the reference price of sugarcane. 	MADER, MIC, DNA, independent grower associations and APMO.

Source: Prepared by the Authors

VI. FINAL REMARKS

The sugarcane industry is a source of income for many rural communities in which it operates, employing up to 31 thousand people at the peak of the season. However, despite government incentives that it enjoys, the industry is failing to exploit the existing sugar production and sugarcane production tends to decline. Moreover, in some mills, protests emerge from surrounding communities have been arising. Consequently, socioeconomic gains of the sector are declining.

Semi-structured interviews, literature review and international experiences underline that the main challenge of the industry stems from the prevalence of a traditional model of operation in the industry, based on the exploitation of sugarcane solely for the production of sugar. Whilst the most competitive and dominant countries in the sector, such as Brazil and India, with government support, exploit several sugarcane byproducts, particularly for the production of biofuel and energy generation, the Mozambican industry does not exploit the byproducts of the sugarcane value chain. Meanwhile, protests from surrounding communities stem from the beginning of the sector's adjustment process to streamline production costs, for instance, through the mechanization of certain production processes.

The study proposes the formulation and implementation of a strategy for the promotion of the sugarcane sector, addresses (i) diversification to take advantage of the by-products of sugarcane and sugar itself;; (ii) mitigation of the impact of climate change; and (iii) coordination of social responsibility, of investment in research and development, as well as government incentives tailored to the sector's reality. In order to minimize conflicts, the research suggests the creation of a forum involving the main stakeholders of the sugarcane sector, namely independent sugarcane growers, the Government and sugar mills, with a view to discuss relevant issues, including the formulation of the sugarcane reference price.

VII. DISCUSSION POINTS

- Can the sugarcane industry continue to survive under the current operating model?
- What should be the role of government and business in promoting the sugarcane sector in Mozambique?
- What would be a fitting sugarcane pricing model for Mozambique?

REFERENCES

- APAMO. (2022). *Dinâmicas da Indústria Açucareira em Moçambique*. Maputo.
- CABRI. (2019). *The Role of governments in developing agriculture value chains*. Centurion, South Africa: African Development Bank.
- Camelini, J., & Castillo, R. (2012). *Etanol e Uso Corporativo do Território (ethanol and corporative use of territory)*. Fortaleza: Universidade Federal do Ceará.
- Chatenay, P. (2013). *Government Support and the Brazilian Sugar Industry*.
- CROPLIFE. (2022). *Croplifebrasil*. Obtido de CROPLIFE: <https://croplifebrasil.org/>
- Direcção Provincial de Agricultura de Sofala. (2020). *Guia Prático de Agricultura de Conservação Promoção Económica de Camponeses - Sofala*. Viena: Cooperação Austríaca.
- Distribuidora Nacional de Açúcar. (2022). *Informação sobre Açúcar*. Maputo.
- FAO. (2022). *FAOSTAT*. Obtido em 22 de Jun de 2022, de FAO: <https://www.fao.org/faostat/en/#data/QCL/visualize>
- Gangwar, L., Solomon, S., Singh, P., Hasan, S., & Sah, K. (2014). *Socio-economic Impact of Sugarcane Production and Diversification in India*. Índia : Indian Institute of Sugarcane Research.
- Global Product Prices. (2022). *South Africa Sugar price*. Obtido em 1 de Agosto de 2022, de Global Product Prices: https://www.globalproductprices.com/South-Africa/sugar_prices/
- Intechopen. (2022). *Intechopen*. Obtido de Intechopen: <https://www.intechopen.com/>
- Joaquim, J., Mosca, J., & Sampaio, A. (2021). *(Des)Continuidades da Indústria Açucareira em Moçambique e os seus Efeitos na Integração dos Pequenos Produtores Agrícolas*. Lisboa: SOCIUS.
- KPMG. (2016). *Relatório da Contribuição Positiva da Indústria do Açúcar em Moçambique*. Maputo.
- Malawi Voice. (2022). *Illovo Hikes Sugar Prices on Market*. Obtido em 1 de Agosto de 2022, de <https://www.malawivoice.com/2022/05/30/illovo-hikes-sugar-prices-on-market/>
- MIC. (2022). *Informação sobre Açúcar*. Maputo.
- Moura, T. (2007). *Uma Análise do Mercado Internacional de Açúcar Bruto com Ênfase no Programa Americano para o Setor*. Recife: Universidade Federal de Pernambuco.
- New Zimbabwe. (2022). *Sugar prices go up with immediate effect*. Obtido em 1 de Agosto de 2022, de <https://www.newzimbabwe.com/sugar-prices-go-up-with-immediate-effect/>
- Novacana. (2022). *A produção de cana-de-açúcar no Brasil (e no mundo)*. Obtido em 1 de Julho de 2022, de <https://www.novacana.com/cana/producao-cana-de-acucar-brasil-e-mundo>
- O’Laughlin, B., & Ibraimo, Y. (Aug de 2022). *A Expansão da Produção de Açúcar e o Bem-Estar dos Trabalhadores Agrícolas e Comunidades Rurais em Xinavane e Magude*. Maputo.
- Oec world. (2022). *Oec world*. Obtido de Oec world: <https://oec.world/>
- P., C. (2013). *Government Support and the Brazilian Sugar Industry*.
- Research and Markets. (2022). *The Sugar Industry in Eswatini 2022*. Obtido em 1 de Agosto de 2022, de <https://www.researchandmarkets.com/reports/5552834/the-sugar-industry-in-eswatini-2022>
- Rodrigues, G., & Ross, J. (2020). *A trajetória da cana-de-açúcar no Brasil: perspectivas geográfica, histórica e ambiental*. Uberlândia: EDUFU.
- Sachs, I. (2007). *Da civilização do petróleo a uma nova civilização verde*. São Paulo: ESTUDOS AVANÇADOS.

- Sandrey, R., & Vink, N. (2007). *Future prospects for African sugar: sweet or sour?* South Africa: Tralac.
- Santos, M. H. (1993). *Política e políticas de uma energia: o caso do proálcool*. Rio de Janeiro: Notrya.
- SASA. (2021). *South African Sugar Industry Directory 2019/2020*. KwaZulu-Natal - South Africa: SASRI.
- SASA. (2022). *Market Competitiveness*. Obtido em 12 de August de 2022, de <https://sasa.org.za/market-competitiveness/>
- Selina Wamucii. (2022). *Selina Wamucii*. Obtido em 01 de August de 2022, de <https://www.selinawamucii.com/>
- Simelane, X. (2021). *Analysing the competitive performance of the Eswatini sugar industry*. South Africa.
- Solomon, S. (2011). The Indian Sugar Industry: An Overview. *Sugar Tech*, p. 11.
- Solomon, S., & Swapna, M. (2022). *Indian Sugar Industry: Towards Self-reliance for Sustainability*. Sugar Research & Promotion.
- Statista. (2022). *Statista*. Obtido de Statista: <https://www.statista.com/>
- Sutton, J. (2014). *Mapa Empresarial de Moçambique*. London: International Growth Center.
- Tongaat Hulett. (2021). *Integrated Annual Report*. South Africa: Tongaat Hulett.
- Unica. (2022). *Unica*. Obtido de Unica: <https://unica.com.br/>
- USAID. (2015). *Açúcar em Moçambique: Equilibrar Competitividade com Protecção*. Agência dos Estados Unidos para o Desenvolvimento Internacional .

Entities Contacted / Interviewed

- Tongaat Hulett -Xinavane Sugar Mill. Virtual interview held on April 22, 2022.
- Mozambique Sugar Producers' Association (APAMO). Interview held on April 28, 2022, in Maputo.
- National Sugar Distributor (DNA). Interview held on April 28, 2022, in Maputo.
- Ministry of Industry and Commerce. Interview held on May 27, 2022 in Maputo.
- Sofala Provincial Bureau of Economic Activities. Interview held on May 30, 2022, in Beira city.
- Sofala Provincial Directorate of Industry and Commerce. Interview held on May 30, 2022, in Beira city.
- Tongaat Hulett - Mafambisse Sugar Mill. Interview held on May 31, 2022, in Mafambisse.
- EcoFarm Moçambique. Virtual interview held on June 1, 2022.
- Muda Macequesse Association. Interview held on June 1, 2022, in Lamego.
- Companhia de Sena. Virtual interview held on June 2, 2022.
- Mozambique Revenue Authority (AT) - Provincial Delegation of Sofala. Interview held on June 2, 2022, in Beira city.
- Nhansato Cane Growers Association (ACNA). Interview held on June 3, 2022, in Beira city.
- Nhamatanda Commercial and Industrial Agricultural Company (SPCIN). Interview held on June 3, 2022, in Nhamatanda.

Sofala Provincial Directorate of Agriculture and Fisheries. Interview held on June 3, 2022, in Beira city.

United Nations Industrial Development Organization (UNIDO). Interview held on June 8, 2022, in Maputo

Ministry of Agriculture and Rural Development (MADER). Interview held on June 17, 2022, in Maputo.

Mozambique Revenue Authority (AT). Interview held on June 17, 2022 in Maputo.

Competition Regulator (ARC). Interview held on June 21, 2022, in Maputo.

South Africa Sugarcane Growers' Association. Virtual interview held on July 21, 2022.

Maragra Sugar Mill. Interview held on July 25, 2022, in Manhiça

CDM - Marracuene Brewery. Interview held on August 4, 2022, in Marracuene.

Manhiça District Bureau of Economic Activity. Interview held on August 22, 2022, in Manhiça.

Independent Sugarcane Growers of Xinavane. Interview held on August 22, 2022, in Xinavane.

Administrative Post of Mafambisse. Interview held on August 29, 2022, in Mafambisse.

Tongaat Hulett - Mafambisse Sugar Mill. Interview held on August 29, 2022, in Mafambisse.

Chiverano Women's Association. Interview held on August 29, 2022, in Mafambisse

Vale do Púngue Producers' Association. Interview held on August 29, 2022, in Mafambisse.

AJUCASI. Interview held on August 29, 2022, in Mafambisse.

Dondo District Administration. Courtesy meeting with the Honorable Administrator of the Dondo District held on August 30, in Dondo.

Mbawiri Nzero Association. Interview held on August 30, 2022 in Mafambisse

Women's Association for Development. Interview held on August 30, 2022, in Mafambisse.

Women of the Future Association. Interview held on August 30, 2022, in Mafambisse

Mozambique Sugar Producers' Association (APAMO). Virtual interview held on September 9, 2022.

Companhia de Sena. Virtual interview held on September 22, 2022.

National Sugar Distributor (DNA). Interview held on September 27, 2022 in Maputo.

Legislation Consulted

Government of the Republic of Mozambique (2013). Mozambique Competition Law (Law No. 10/2013). Maputo.

Competition Regulator (2014). Competition Law Regulation. Maputo.

Ministry of Industry and Commerce (2016). Industrial Policy and Strategy 2016-2025. Maputo.

Mozambique Revenue Authority (2018). Sugar Imports Surcharge (Service Order No. 04 / DGA411.1/2018). Maputo.

ANNEX 1: Methodology and Institutions Contacted

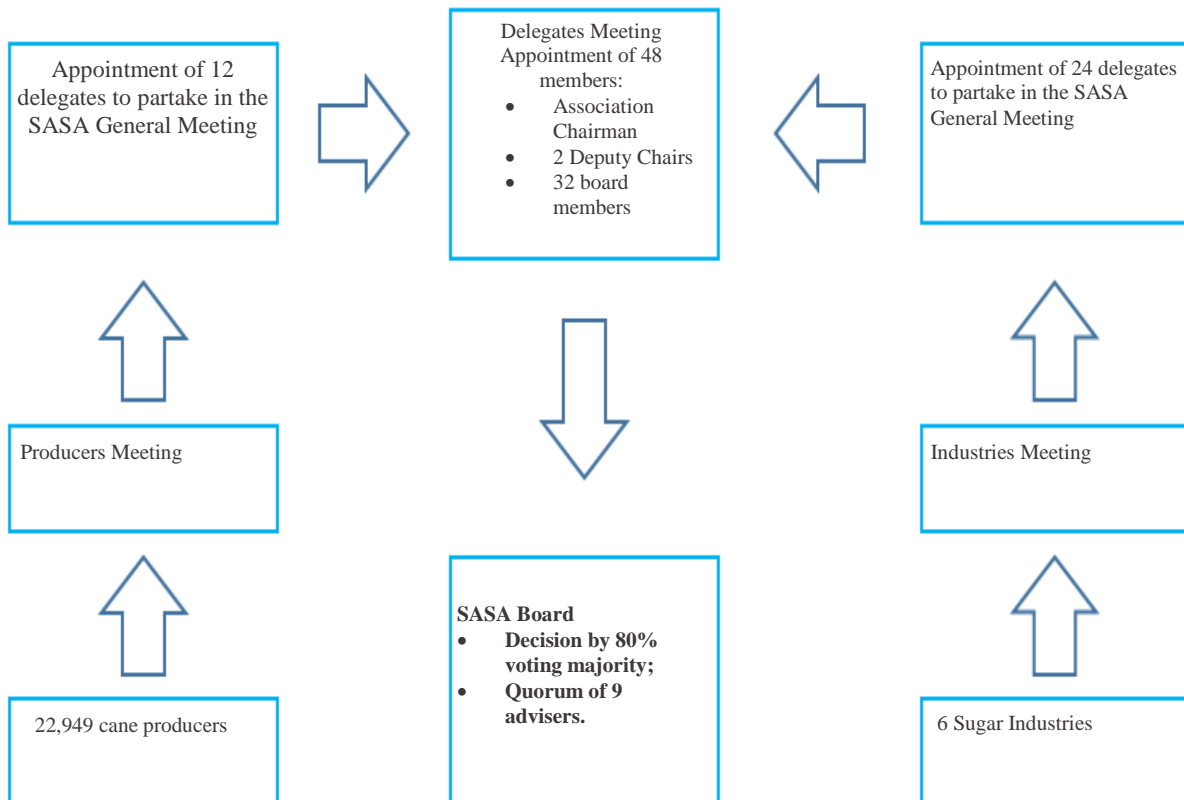
The study combines literature review, field survey and data analysis. Semi-structured interviews were conducted with key industry stakeholders, namely central and provincial government authorities, sugarcane grower associations, sugar mills and large consumers. In Sofala province, interviews covered 100% of the mills and a part of the independent sugarcane growers. Previous studies centered on Mozambique and international experiences of major producing countries, including some from SADC, were also used. This information enabled the analysis of the industry's strengths, weakness, opportunities and threats (SWOT).

The field study was conducted in May and July 2022. Semi-structured interviews were conducted with the institutions listed below, with emphasis on sugar production and marketing in Maputo and Sofala provinces. The field study also included interviews with associations and producers of sugarcane and rice – in Nhamatanda district and Mutua locality (in Mafambisse administrative post), – for they are key players. Table 17 presents, in detail, the institutions contacted during the course of this study.

Table 17: Institutions Contacted

a) Institutions	b) Associations
<ul style="list-style-type: none"> • Mozambique Sugar Producers' Association; • Mozambique Revenue Authority; • Competition Regulator (ARC) • CDM - Marracuene Brewery • Delegation of Mozambique Revenue Authority – Sofala Province; • Provincial Delegation of Agriculture of Sofala Province; • National Directorate of Industry and Commerce; • National Directorate for Promoting Commercial Agriculture • Sofala Provincial Directorate of Industry and Commerce; • Sofala Provincial Directorate of Agriculture and Fisheries • National Sugar Distributor; • Dondo District Government; • IESE - Institute of Social and Economic Studies. • Administrative Post of Mafambisse; • Sofala Provincial Bureau of Economic Activities; • Manhica District Bureau of Economic Activities; • United Nations Industrial Development Organization (UNIDO). 	<ul style="list-style-type: none"> • Muda Macequesse Association; • Nhansato Cane Growers Association; • South Africa Sugarcane Growers Association - virtual meeting; • AJUCASI • Mafambisse Green Fields Association; • Mbiri Ndzero Association; • Women of the Future Association; • Association of Women Against Poverty; • Women's Association for Development; • Púnguè River Valley Association; • Chiverano Association; • United Youth Association To Fight AIDS; • Individual producers of Xivavane, Mafambisse and Lamego; • Agricultural Company of Nhamatanda.
c) Visited/Contacted Mills	
<ul style="list-style-type: none"> • Maragra Sugar Mill, SA; • Mafambisse Sugar Mill; • Xinavane Sugar Mill - virtual meeting; • Companhia de Sena; • EcoFarm Mozambique, Ltd. – virtual meeting. 	

ANNEX 2: Organization Chart of the South African Sugar Association



Source: Adapted from SASA (2021)

ANNEX 3: Summary of the Audience's Remarks at the Public Presentation of the Study

REMARKS BY MR. RODRIGUES SEBASTIÃO

INTER BEIRA REPRESENTATIVE

- “Regarding pricing, the issue lies on the oversight of DNA, that is, the banks have the Bank of Mozambique to supervise their activities, but who supervises DNA?. The producers receive about 65% of the amount that Tongatt receives from the DNA for the sale of the sugar. So, does any entity regulate the DNA?”
- “Regarding the question on how the Government and the BM could help producers, Mr. Amorim (in the video clip) has already adequately addressed it: banks only lend money to those who have money, and in this regard, we have certain assets, such as movable property and land, which the banks do not consider as collateral. I know that the Land Law is being revised, but as long as the Law remains unchanged, and our Land Use and Exploitation Rights (DUATs) and properties do not qualify as collateral for banks, and we are somewhat limited in terms of our leverage with these entities. If my farm has an average life expectancy of 8 years and an average harvest of 48 tons per ha in the previous season, and we know that for another 7 to 8 years we will harvest approximately the same, why not use production as collateral especially if the production will be bought by a reputable company like Tongaatt, which is present in several countries (Zimbabwe, South Africa, Mozambique) and is one of the main stakeholders. So, why isn't there a structure or a mechanism for Tongaatt to intervene in the financing process with the banks?”
- “There are several forms of assistance and projects that are currently ongoing nationwide for the promotion of agriculture, such as SUSTENTA and *Vale do Zambeze*. When one looks at SUSTENTA, we see that there is a focus on small-scale farmers, but why not give medium and large-scale farmers an opportunity as well?”
- “The *Vale do Zambeze* provided a line of credit and technical assistance to vegetable growers in Sofala province, yet sugarcane growers were not eligible. Why was sugarcane left out, knowing that the province has at least 3 sugarcane mills? Why can't the *Vale do Zambeze* support sugarcane production? They will say that they have already provided funding in Chemba, but it is only one in a million. There are other projects that could also be funded and they are not receiving funding.”

REMARKS BY MR. AURÉLIO CHIZIANE

COCA-COLA REPRESENTATIVE

- “We heard here of the issue regarding price formation, with the growers complaining about the price of sugarcane. What incentive do they have and how can they have a grasp of it? It seems to me that the incentives that Government provides to the sugar industry are in the middle ground . Cane growers are complaining, just as consumers are complaining. I appeal for Government’s common sense when laying down incentive policies for the sugar

industry, for it also has to consider the industry that consumes sugar as a raw material. Our products have a high tax burden compared to others that also contain sugar in their composition".

- “Sugar producers have huge incentives: they do not pay VAT, and there is a surcharge and a reference price that is around USD 932 per ton, almost twice as much as the global price. By setting this reference price by law, it obviously creates a “battleground” - sugar consumers can hardly negotiate a reasonable price that is consistent with the conditions of production. Obviously, it becomes difficult to transfer this cost to the end consumer. In addition, in 2018, Government introduced a consumption tax that is only applicable for soft drinks”.
- “If Coca-Cola reformulates its products to reduce sugar, the volume of sugar sales will decrease. Therefore, Government has to be fair in setting policy – It should not protect one industry to the detriment of other.”

REMARKS BY MR. EMERSON DE OLIVEIRA

ECOFARM REPRESENTATIVE

- “EcoFarm produces organic sugar for the international market. The outbreak of COVID-19 led the company to market organic sugar in the domestic market. Meanwhile, the government requires vitamin A to be added to domestically marketed sugar. Considering the specificity of organic sugar, we believe that this requirement should not apply to companies producing this type of sugar. In addition, in order to facilitate trading nationwide, we also suggest that Government draft and implement a specific regulation for organic sugar. ”
- “The company has been facing constraints in the delivery of its production due to infrastructure issues. In this regard, EcoFarm requests the intervention of the Honorable Governor of the Sofala Province to expedite the resolution of these constraints”.

REMARKS BY MR. ANTÓNIO AMORIM

REPRESENTATIVE OF THE COMMERCIAL AND INDUSTRIAL

AGRICULTURAL COMPANY OF NHAMATANDA

- He stressed the need to support farmers.

REMARKS BY MR. PAULO BENE
REPRESENTATIVE OF THE RESEARCH AND CONSULTING
CENTER

- “Given that the research focused on sugar byproducts, we would like to know from the representatives of the *Açucareira de Búzi*, ethanol's contribution to total production costs when the mill was operational. To what extent has this byproduct contributed to the development of the sugarcane business?”
- “How is the business viable if the producer is not timely made aware of how much he will earn for the sale of his product? As is the case with the promotion grain and cotton production areas, among others, it is necessary to set the reference price of sugarcane pfor investors to decide on the viability of the business. It is necessary to indicate the cost of sugarcane, so that the investor has information to aid him to make an informed decision whether to invest in the business”.
- “In a context in which access roads remain in a substandard state, *Açucareira de Marromeu* continues to favour the transport of its products by road (trucks), despite the rehabilitation of the Sena railway line. Considering the state of the overland route and the high cost of transportation, the question that arises is why the mill continues to use trucks to the detriment of the railway line?”

REMARKS BY MR. ALEXANDRE MUNGUAMBE REPRESENTATIVE
OF THE NATIONAL UNION OF SUGAR INDUSTRY WORKERS
(SINTIA)

- “I believe that the Government provides incentives to the sugarcane industry, and the industry in turn renders socio-economic support to surrounding communities, with an emphasis on health, education and environment protection programs. However, when the companies stop providing assistance, the population reacts, just as the study states”.
- “In our view, the sugar industry cannot develop without diversifying its production, it should make use of the sugarcane by-products. The adoption of the *Programa de Medidas de Aceleração Económica (PAE)* is an opportunity to stimulate diversification, as the PAE provides for the introduction of mandatory blending of imported fuels with biofuels. One can take advantage of this window to improve the utilization of molasses by building distilleries for ethanol production”.
- “Regarding the complaint by sugarcane growers, the report states that there are more than 4 thousand sugarcane growers. We are of the opinion that the sugarcane growers should

form a national association, which would have the responsibility of articulating/negotiating with APAMO and the Government to define the reference price for selling sugar to processing companies. This would enable us to extract ourselves from the predicament that we find ourselves in, in which the producers do not know the price of sugarcane. It is not possible for the Government and APAMO to negotiate with over 4 thousand people. These people should organize themselves to negotiate”.

- “Mozambique has good soils for sugarcane production, and we should invest in increasing the average yield per hectare (ha). With a yield of 56 tons per ha, we will not get far, because sugar is made in the field and not in the mill, which only processes it. It is necessary to increase production per ha in our fields, and this necessarily involves investment in research and support to the private sector”.
- “With regards to Government, I think it should improve the access roads and provide efficient rail services to transport the mills' products for, at times, the *Portos e Caminhos de Ferro de Moçambique* company does not have sufficient wagons and machinery to handle the production”.
- “The study is invaluable, and Government, should, discuss behind closed doors as to the best way forward to boost sugarcane production”.

REMARKS BY MR. FILIPE RAPOSO

CEO OF THE NATIONAL SUGAR DISTRIBUTOR AND GENERAL MANAGER OF THE MARAGRA SUGAR MILL

- “The report was splendid and raises key questions and that are of a priority for the industry and all its stakeholders including the Government (central, provincial and district)”.
- “One of the report's omissions is critical, and it is important that everyone realizes that over the last 25 years, the global market price of sugar has been 50% below the average cost of production, which reflects the effect of Government subsidies. There are very few countries in the world that do not produce sugar. In other words, there are few sugar importers. The sugar traded and exported sugar is the surplus produced in most countries and reflects the fact that there are no production costs through the fundamentals of supply and demand, but rather, it is a reflection of subsidies to major producers, such as Brazil and India, which provide subsidies of around USD 200 for sugar exports. At this moment in time, the country cannot fiscally afford to run a sugarcane sector that operates along these lines, which translates into a limitation on expansion because the industry depends on the domestic market”.
- “The reference price defines import parity, that is, the Government of Mozambique considers the production cost of sugar within the country. That parity and mechanism is not only there to support the sugar industry, but also to protect the consumer, because it sets

the ceiling. Therefore, if we did not have a reference price, we would be importing sugar from the global market at prices subsidized by Brazil, Thailand, India, among others, and consequently, we would actually have unemployment”.

- “When we talk about the reference price and the cost of sugarcane in the model used in Mozambique - the shared net revenue model - the price of sugarcane relies on the net revenue that the industry obtains from the sale of sugar, which reflects the existence of a reference price of sugarcane. However, if the model requires some adjustments these would have to be made”.
- “What is noticeable is a bit of a lack of communication and organization on the part of the sugarcane growers. There has to be an organizational structure on the part of producers to facilitate communication. But, I think this is achievable and these are one-off issues that can easily be resolved.”
- “To conclude, ethanol was mentioned. The industry has huge potential for diversification. The government in the late 90s decided to rehabilitate and create or rebuild the domestic sugar market. It created the enabling environment, the reference price and other initiatives. It is quite straightforward, if the objective is (enticing) to create an internal market for local ethanol consumption, be it a blend of 10%, 15% or 20%, it is up to the Government to play its role as the enabler, create the necessary conditions, the mechanisms and the legal instruments, and the industry, for sure, will proceed in the same vein it proceeds in production of sugar”.

REMARKS BY MR. ADOLFO MUHOLOVE

GAPI - INVESTMENT COMPANY - REPRESENTATIVE

- “GAPI - investment company - is a financial institution with 20 years of experience of interventions in the sugar industry, particularly towards promoting small-scale producers by financing, but essentially via technical assistance and financial literacy”.
- “GAPI has vast experience and has nationwide representation. In Sofala Province, it works in partnership with Tongaat Mozambique and with Muda Macequesse - a sugarcane producer association”.
- “GAPI’s best experience is in Maputo province, where funded an association in the Xinavane sugar mill - the Makuvulane association. It should be noted that GAPI does not limit itself to sugarcane production, but also includes the cultivation of crops that can improve the diet of the population. Moreover, for example, in the scope of financial literacy, we were able to support the Makuvulane association, which today operates its own savings and loan institution, and GAPI only refinances it”.

- “And within the scope of diversifying its production, this association has a small supermarket, a small health center, and a small poultry enterprise, all as a result of GAPI's interventions in that sugarcane company . I think that this is an experience that can also be extrapolated to other sugar mills and producers. GAPI is open to sharing this experience and establish other partnerships.”

REMARKS BY MR. ERNESTO GOVE

FORMER GOVERNOR OF THE BANCO DE MOÇAMBIQUE

- “First, allow me to commend the Banco de Moçambique, in the person of the Governor for holding this 47th Advisory Board meeting. I am convinced that the recommendations that will arise from this meeting will aid the Board of Directors in defining policies in its sphere of jurisdiction, for the sake of macroeconomic and financial stability”.
- “As per tradition, we have arrived at this point of debate that is very important because it is impactful in the economic and social spheres, for the level of employment that the sugar sector generates in the country, and also for the potential it represents for the diversification of production. So, I would also like to congratulate the Banco de Moçambique for this work. I will stick to the study presented, for I am not from the sugarcane sector, that is, I will focus on the issues that the study presents as concerns”.
- “When I look at the shareholder structure of the companies operating in the country, I see that they are companies with international exposure and with cumulative experience that can be put to good use for the country. I see, for example, that the sugar companies Mafambisse, Xinavane and Maragra are companies whose shareholders are mostly South African, and Tongaat Hulett and Illovo which are companies that are cited as having some success in their home countries. My question and doubt is why when operating in Mozambique does that experience not come to the fore?”
- “When we look at the statistics that are presented to us, the sugarcane production per ha in Mozambique is 56 tons, but in South Africa it is above 90 tons per ha. What is the issue, when a priori study states that our soils, our water and labor are readily available? Therefore, the basic conditions to ensure productivity different from what we have seem to be in place, yet we remain at 56 tons per ha. Is it due to investment? Weak investment in technology? Here, I would also like to agree with some comments made that perhaps we lack some study centers, research and development centers, because we need to ensure that the quality and productivity of the seed we use are the same as those used in neighboring countries, or in the experiences presented from Brazil, China, India, etc.”.
- “So, nowadays research and development plays an important role because it is not sufficient that the soil is good, or that we have water for all 360 days of the year, or manpower - we

need knowledge and take into account to what is mentioned in the study - People are afraid because they are already seeing machines coming. It is necessary to explain that the uptake of new technologies, including modernization and innovation is pivotal for the industry's development”.

- “With regards to incentives and protectionism, the authorities can prioritize the sugar sector, and this has implications. These implications include knowing what are the appropriate incentives for the industry to be competitive – considering that in most developed countries, there is subsidies and protectionism. In the past, thought was given as to how to protect the industry through surcharges without harming the consumer, and it was concluded that there needs to be a commitment to increase production and productivity in order to dismantle protectionism until adequate levels are reached”.
- “The document refers to the existence of the South African Sugar Association that brings together and structures negotiations and solutions for the sector. It’s an experience that can be applied in the country”.

REMARKS BY MR. ABÍLIO PILICA

FORMER BM BOARD MEMBER

- "Firstly, I would like to congratulate the author of the study that indeed enabled us to compare the various models, productive and organizational models of other countries, including the Kingdom of Eswatine, which, despite being small, is very advanced in sugarcane production compared to Mozambique”.
- “One of the aspects that I feel and have found that perhaps may be contributing to the reduction in sugarcane production has to do with the high production costs. For example, in the Nhamatanda – Lamego area: a tractor costs around MZN 4000 per ha for ploughing, in addition to the high-energy cost. A producer in the same area who cultivated 50 ha had to pay EDM 1 million meticaís in electricity bills, and those who cultivated 30 hectares had to pay EDM 500 thousand meticaís. These are excessively high costs”.
- “I would like to propose that State protectionism should not be limited only to the elimination of VAT, but it should also apply to other sectors. Why is it that during the sugarcane production season the government does not provide support with industrial machinery, as it does in relation to other agricultural sectors, such as SUSTENTA?”
- “Production should be increased or massified at the level of small-scale producers, by supporting them through the introduction of more subsidized electricity tariffs, for instance. At the rate that we are going, no small-scale private farmer will be able to continue in this field of activity.”

REMARKS BY MR. TEOTÓNIO COMICHE
MOZAMBICAN BANKING ASSOCIATION

- “The study could consider in its conclusions, an array of measures taken by the relevant countries in sugarcane production, which would enable a comparative reading with our reality and point out implementation priorities aligned with development and creation of jobs.”
- “On production (slides 7 and 4 of the presentation), my question is: what measures could be considered to increase the level of participation of private sugarcane growers?”
- “Would it be possible to build dams and dykes as a barrier against river water overflowing to support small-scale farmers? A mapping of infrastructure could help in understanding the State’s difficulties in providing public works to support production”.
- “It would be beneficial to rethink the sugarcane price calculation model and payment schedule to facilitate the cash-flow predictability for private sugarcane growers. We have ascertained throughout the various interventions that this is a serious problem, so we think that it is crucial to give some thought to this”.

REMARKS BY MR. ACUBAR BAPTISTA
NATIONAL DIRECTOR FOR PROMOTION OF COMMERCIAL
AGRICULTURE (MINISTRY OF AGRICULTURE AND RURAL
DEVELOPMENT)

- “I would like to bring to light some points to clarify aspects mainly concerning legislation, but first, I would preface my statement by saying to Mr. Filipe Raposo that it seems that what we were discussing beforehand ended up materializing in this event, a sign that we are aligned on issues related to strategy. And, it is something that the study covers quite well when it points to the lack of a strategy - but this is a topic already under discussion”.
- “I would like to touch upon the issue related to the reference price which has already been well addressed here. So, I am not going to be repetitive, but there is an element that has to be taken into consideration, which is the inefficiency in the production of sugarcane itself, and the inefficiency or efficiency of the industry. It has not been discussed here, but I believe that this is a key point”.
- “With regards to incentives, I would also like to say that the Government, in the various spheres in which it has been working with the private sector, has restructured the Ministry of Agriculture and created a Directorate where I am currently posted that specifically

handles private sector issues, and one of the areas that we are focusing on directly is the sugar sector ”.

- “The way producers are organized was also touched upon. Its an element that we are dealing with, and you will find that we have dealt with several issues of confrontation or lack of harmony between the companies – producers and even sometimes with employers. This is a very sensitive issue in the social domain.”
- “There is already a Law in force that envisages that all medium voltage lines that are connected to irrigation for food production, are granted a tax benefit of 10%, discounted on payment. The issue lies on the diesel tax that is already in in force by Law, due to the lack of formalization and tax organization, which makes it difficult to implement this incentive.”
- “Mozambique has stopped importing refined sugar, and this is a tremendous gain, as sugar is being refined in the country. At the time of entering this market segment, we engaged with the sugarcane industry and one of the points discussed was diversification, that is, not only sugar production. If we look at it, part of the molasses that we produce is exported and is not being used for the various purposes that we could exploit”.
- “The issue of legislation in terms of the percentage that should be used for biofuels has already been taken care of by MIREME and has already been approved. So, we as MADER advocated at the time to define a plan, to work together and nurture this vision.. I would like to agree with those who have preceded me, in proposing the creation of a matrix with clear-cut actions. I think we have all the grounds to proceed”.
- "SUSTENTA has limited resources, otherwise we would have fulfilled all the requests. What we do is based on a production plan. We are not saying that we are going to channel resources to sugar or rice, but if the sector comes up with a well laid out production plan, we submit it to the Board that undertakes its assessment, approval and deployment of financing. It is emphasized that what is delivered is not hard cash, but equipment and inputs”.

REMARKS BY MR. XADREQUE MUHANZA

VALE DO ZAMBEZE DEVELOPMENT AGENCY

- “In response to the question raised the agency's intervention in the sugar sector – the *Agência de Desenvolvimento do Vale do Zambeze* considers sugar as one of the priority areas in the socio-economic development chains of the Zambezi Valley. The intervention that we made in the organic sugar mill in the Chemba is quite visible, where we encouraged the involvement of small-scale farmers and their set-up as organic sugarcane cooperatives”.

- “It was through the catalytic fund for innovation and demonstration that a funding of USD 1,500 thousand was made available to the private sector for intervention in the sugar production process for supplying the Ecofarm mill. There are about 535 producers involved that are organized as cooperatives, and there were also interventions to provide these producers with the means of production for their integration in the organic sugar value chain”.
- "Probably the information Mr. Rodrigo, who raised the question had may have been regarding other lines or other financial instruments that are being implemented in partnership, for instance with GAPI, focused specifically on the rice value chain. We are implementing the Rice Value Chain Financing Line (LIFINCA), and the other line or financial instruments that are being implemented in partnership with the *Banco Nacional de Inversión*, which also has its focuses on the horticultural value chain. Probably it was through these avenues that you tried to find financing for the sugar value chain, and the response that you got unfavorable. However, if you could approach our delegation, you can get better clarification regarding the interventions that are made in the sugar value chain.”
- “Apart from this funding or this direct support to the cooperatives in Chemba, through the agrarian mechanization program, we are also working towards the establishment of a machinery park that are also providing support to the sugarcane sector in places where there is sugar production. Here, I am speaking of Marromeu, Chemba and Mafambisse”.

**REMARKS BY MR. ELDRIDGE BATISTA -MANAGING DIRECTOR
OF MAFAMBISSE SUGAR MILL -TONGAAT HULETT**

- “I note with great interest that there is need for the sector to diversify its industry”.
- “Tongaats experience of intervention with the surrounding communities was evident at the outbreak of Cyclone IDAI, where they lost most of the nearly three-year sugarcane production that they had planted. Tongaat got involved with the surrounding households, donating a portion of the land that belonged to the mill, involving about 300 families, and creating employment for about 1000 people. Not long ago, the mill made once again made a donation of land devoted for sugarcane production and the contribution to employment in the mill’s area of operation is visible”.
- “It's important to share this information, because when industry stakeholders work together towards a common goal, there is development and it leads to good outcomes.”

REMARKS BY MR. JOÃO PAULINHO -REPRESENTATIVE OF UNIZAMBEZE

- “In relation to the points raised that have been raised regarding the modernization or the low productivity of sugarcane, we are probably discussing the production of sugarcane. I do not know if the gentlemen from the *Instituto de Investigação Agrária* are in attendance, because, in truth, the modernization of agriculture in Mozambique is low, and the figure does not exceed 10%. This is a fundamental issue that has to be analyzed, in order to be incorporated to increase sugarcane production.”
- “From what I've seen, there are many programs. SUSTENTA, even including the sugar mills that integrate small-scale producers, does not accompany us throughout the full production cycle. For instance, when they give production tools, they do not render assistance, and when they don't provide assistance at the end of the cycle, it can ultimately lead to implications in production and productivity.”
- “Regarding the matter of cost that has also been addressed here, the small-scale producers that are integrated in the production of sugarcane often do not get the necessary support in the accounting component, and the cost they effectively incur remains unknown. On several occasions, I have asked the producers how much 1 ton of sugarcane costs, and they have a very hard time to indicate how much it costs. I don't know if it is possible, without knowing the production cost of sugarcane, to specify which cost element equates to that and this quantity. This can also contribute to low production.’
- “And in closing, I wish to hear feedback, as there is someone here from Agriculture, specifically Commercial Agriculture. Past plans of the agrarian development program did not make a distinction between the household productive sector and the commercial production sector, so there was no differentiation in the same assistance rendered. As such, this may contribute to the low levels of production mentioned here”.
- “To conclude, I would like to suggest that the intervention made towards producers should also be complemented by a research component, for it seems to me that there is not much research to induce the adoption of new modern technologies that can enable increased production and productivity”.

ANNEX 4: Closing Remarks of the Discussions

Overall, the inputs from the participants suggest the need for:

- **The sugarcane producers being set-up as associations.** Sugarcane producers must form regional and national associations similar to APAMO. This will allow them to discuss sector problems in an organized manner, including the negotiation of the reference price of sugarcane, promotion of financial education, technology transfer, efficiency and production costs, among others.
- **Establishment of a forum for discussing the relevant issues of the sector.** This forum should involve all industry stakeholders in key processes, such as defining the price of sugarcane, research and development, appropriate technology for the industry, as well as designing specific and relevant legislation for the sector.
- **Diversification of the industry based on a strategy for the sector.** For the industry to prosper, it must diversify and commercially exploit sugarcane by-products for liquid fuels and power generation. In this regard, representatives of the national industry have shown interest, provided that all conditions are created, including the establishment of a master plan for the sector, with the State acting as the main enabler.