



The South African Sugar Industry Green Energy – The Game Changer?



SA
Canegrowers

Vision

To grow the long-term profitability and sustainability of the South African cane growing sector.

Mission

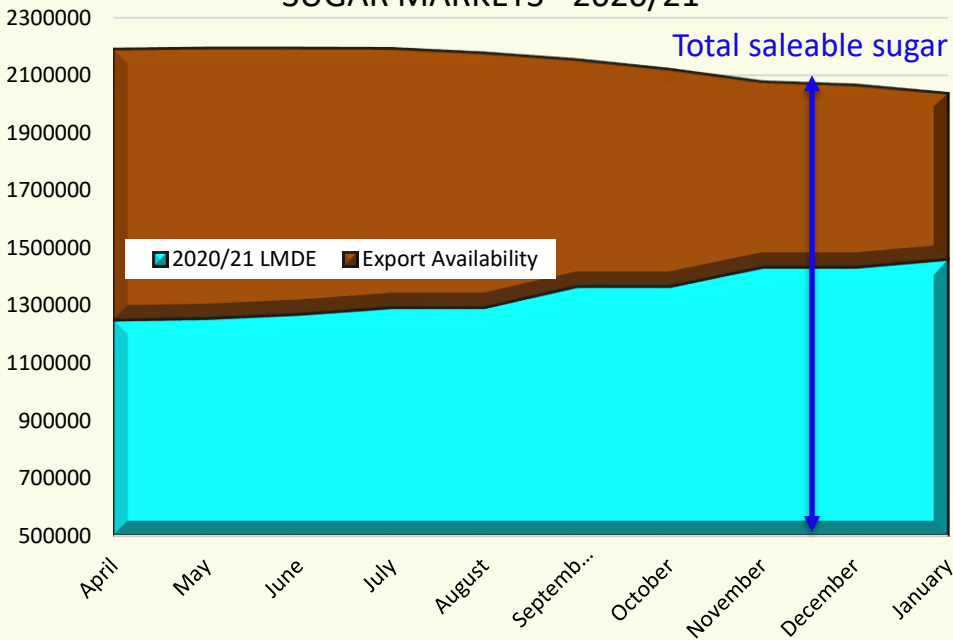
To play a leading role in growing sugarcane and other diversification opportunities for cane growers through innovation, research, specialized services and products.



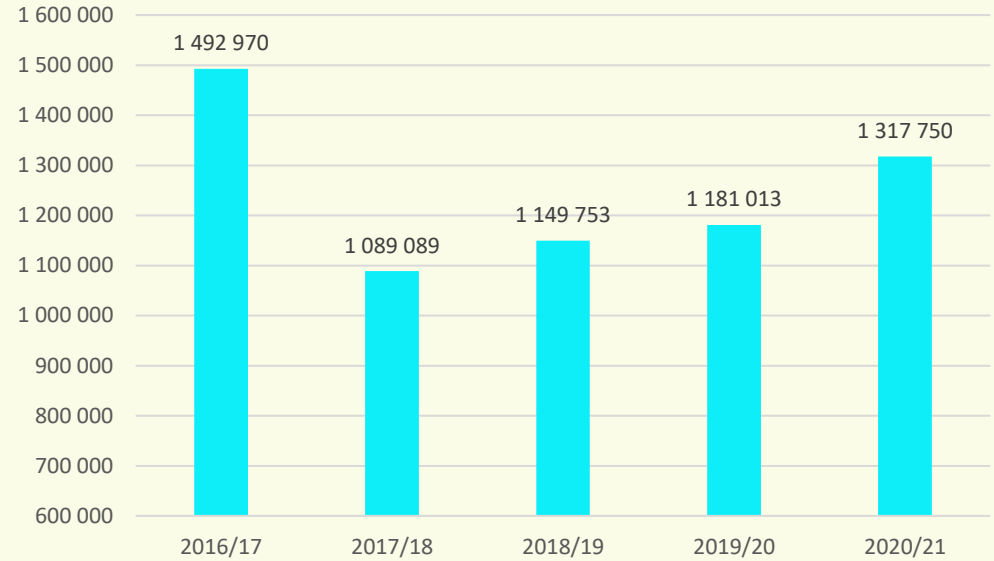
Contribution to the South African Economy

Dependent Rural Livelihoods	1 million
Direct Jobs	75 350
Indirect Employment	350 000
Gross Industry Revenue	R 14 billion
Annual Sugar Production	2.1 million tons
Annual Cane Production	19.8 million tons
Hectares under cane	362 000
Support to Domestic Value Chain	R 400 million p.a

SUGAR MARKETS - 2020/21



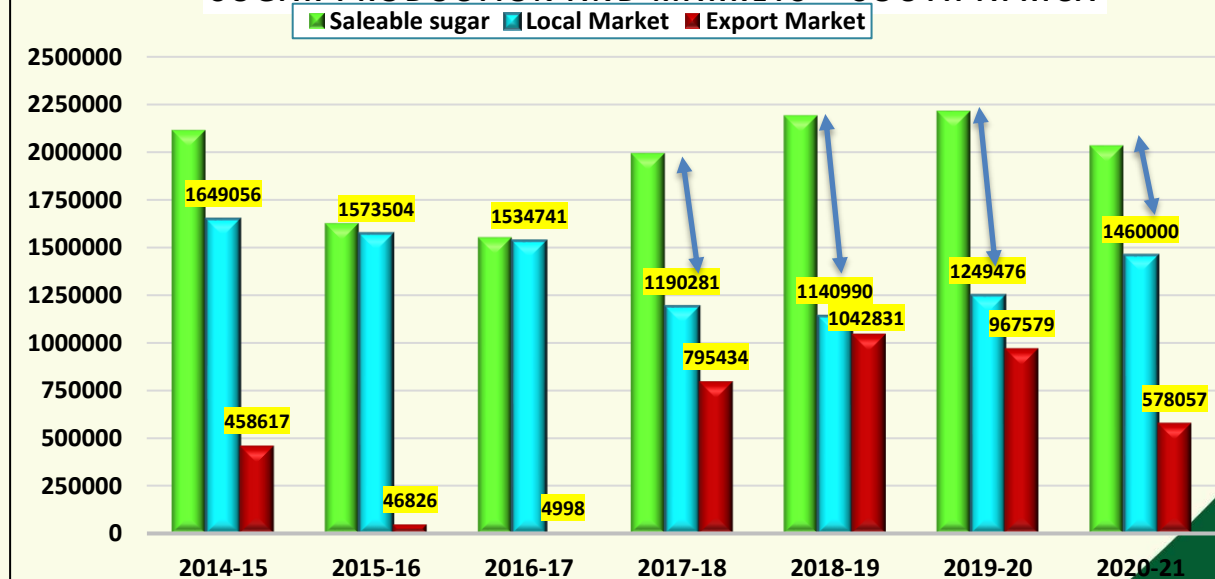
Local (SACU) Sugar Sales - April to January



The sugar production dilemma



SUGAR PRODUCTION AND MARKETS – SOUTH AFRICA



Master Plan Structure & Task Teams

EXECUTIVE OVERSIGHT COMMITTEE – Chaired by Ministers Patel & Didiza

Project Management Office – housed by DTIC

Task Teams



SACU
HARMONISATION



JOB RETENTION &
MITIGATION



SSG MASTER PLAN



TRANSFORMATION



CROP
DIVERSIFICATION



SUGARCANE-BASED
VALUE CHAIN
DIVERSIFICATION
STRATEGY



PRODUCT TAX
POLICY

Competition Commission Exemption

Sugar Industry Master Plan

- **TASK TEAM 6: Sugarcane-based value chain diversification strategy**
- **Develop strategies and plans for feasible opportunities to build globally competitive value chains.**
 - Bioethanol for fuel blending (subject to viable economic model)
 - Bio Jet Fuel
 - Portable, industrial and pharmaceutical-grade bioethanol
 - Biomass/co-generated electricity
 - Biogas
 - No- and low-calorie sweeteners
 - Various platform and specialty chemicals and bio-based polymers
- Task Team compiled of 15 industry stakeholders from government, sugar industry, labour and academia.

Bio Jet Fuel – Opportunity waiting in the wings

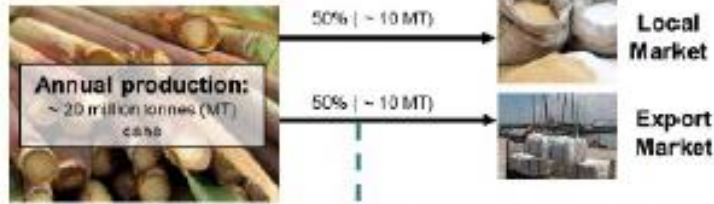
Sustainable Aviation Fuels (SAF) are low-carbon fuel alternatives for the aviation industry. These non-petroleum-based drop-in aviation fuels are generally produced from **bio-based feedstocks** including waste, residues and end-of-life products.

New technologies are being developed to produce SAF from non-biogenic resources such as **renewable carbon** (e.g. CO recovered from industrial gases, carbon capture) and **hydrogen** (e.g. green hydrogen derived from electrolysis powered by renewable energy)

SAF drivers Airline demand



Bio Jet Fuel – Opportunity waiting in the wings



Diversion of excess cane



Ethanol production

- 1 MT cane yields ~ 70l ethanol
- Estimated production: ~ 700 million l ethanol

Aviation



- OR Tambo consumes 4.2 billion LT jet fuel annually.
- It takes ~ 1,815 LT of ethanol to make 1 LT of ATJ jet fuel (61.9% conversion ratio)
- Assume 50% conversion (with remaining 10% going to green diesel and naphtha)
- Demand – 1,8 billion LT of ethanol*

Road Transport



- Fuel blending mandate: 2% blending ratio
- Demand: ~ 600 million litres ethanol

*Required to produce ~ 1bn LT of ATJ fuel that is blended at 50% ratio with conventional jet.

Potential demand for ethanol from SA fuel sector:
2.4 billion litres ethanol per annum

Key messages

- Virtually the entire production of SA ethanol could be used for SAF production locally
- Unlike biofuels for SA road transport, SAF is a premium, international market driven by demand and incentives
- Currently, SAF demand **far outstrips** supply

Biogas – Opportunities

The biogas option provides the best value proposition for the diversification of the sugar industry adding value to waste (both sugar and ethanol)

- Biogas potentially offers a flexible green power generation source which would have better value for grid – complementing solar and wind, which should fetch higher value, which could justify efficiency improvement to plant to increase feedstock with bagasse.
- Biogas can provide a source of local gas for the IRP 2019, thus reducing dependency of imported gas with its associated price volatility (CSIR & UCT, 2019)
- On-farm Biogas solutions also exist with proof of concept on the North Coast.



Conclusions

- Jet Bio Fuel or Sustainable Aviation Fuels (SAF) – a viable option the industry can get involved in at the moment.
- Ethanol for fuel – needs subsidy to develop the industry
- Co-generation of electricity – The increased cap to 100MW presents opportunities but cash constraints exist
- Biogas great value proposition both on-farm and at mill level.

Thank you



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