

# SA Canegrowers

*Andy Church*

*Manager: Technology & Innovation*

*Diversification – Alternative  
Products from Sugarcane*

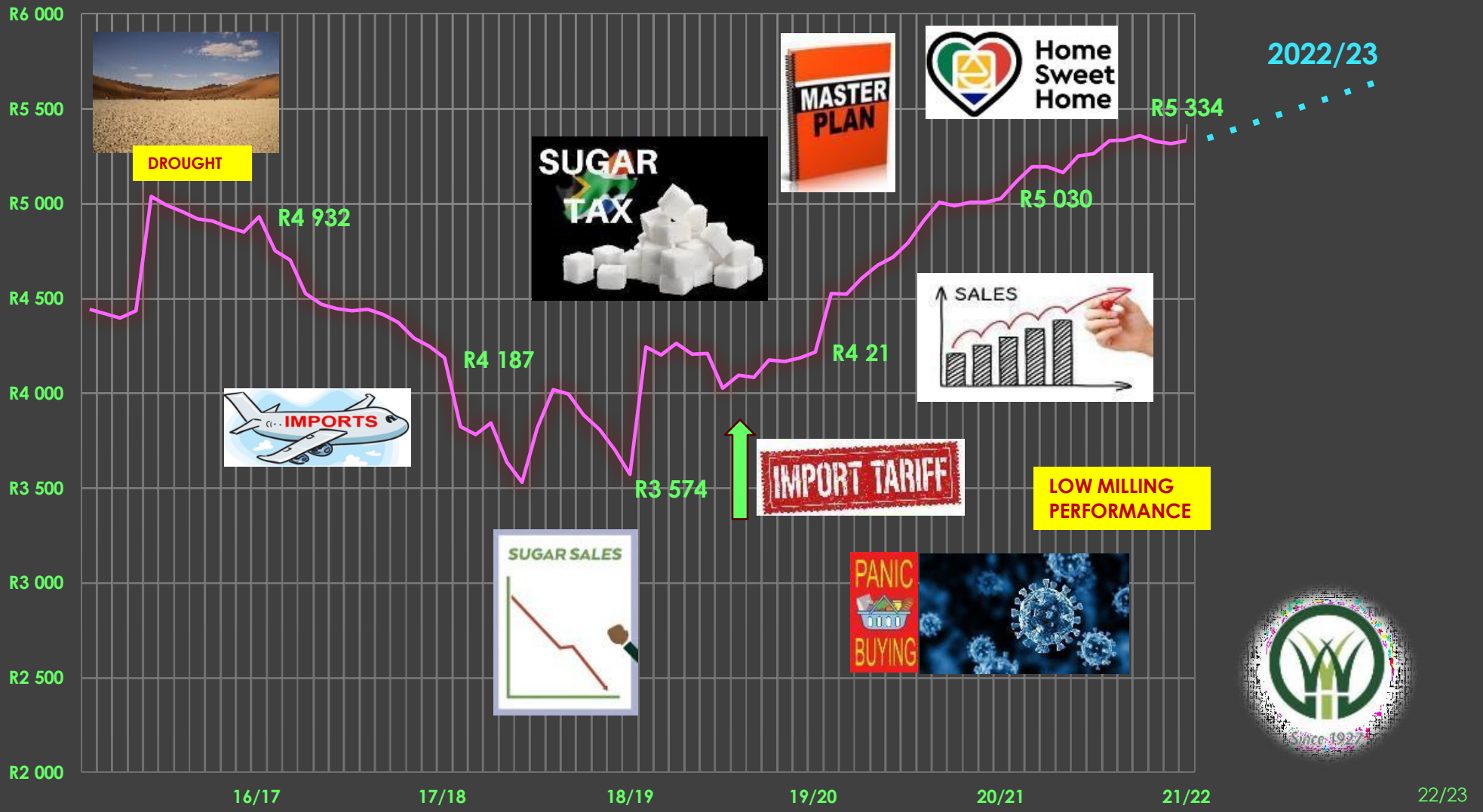


Since 1927

SA  
Canegrowers

# RV PRICE JOURNEY

## RV PRICE HISTORY - NOMINAL VALUES (ZAR)



# Background

- Export sugar tonnages (500,000 tons sugar)
  - Sold at below cost of production (15 c/lb world price vs 26 c/lb avg cost of production)
  - Want to find an alternative use for this sugar!
- Industry scenarios:
  1. Unmanaged decline (natural attrition)
  2. Shrink the industry
  3. Re-structure & diversification for growth
- Development of Industry Master Plan
- Task Team 6 - Sugarcane based value-chain diversification
  - Develop strategies and plans to build a globally competitive value-chain for cane based downstream products

# Current Value Chain

- Industry Participation ends with:
  - Sugar and Molasses
- Excluded are (limited production):
  - Cogeneration
  - Alcohols
  - Yeast
  - Animal feed
  - Furfural

# Processing Facility

- Stock Standard:
  - Sugar, Cogeneration & ethanol
- New additionalities:
  - CO<sub>2</sub>
  - Dry yeast
  - Hydrogen
  - Cement
- Closed loop economy

# Task Team 6 Considerations

- Bioethanol for fuel blending
- Bio jet fuel
- Potable, industrial & pharmaceutical-grade ethanol
- Biomass / co-generated electricity
- Biogas
- No- and low-calorie sweeteners
- Various platform & specialty chemicals and bio-based polymers for application in different sectors i.e., plastics, packaging, automotive, industrial textiles etc.

# Task Team 6 Recommendations

- Repeal, replacement/amendment to Sugar Act, SIA & SASA Constitution
- Other relevant & appropriate regulatory and licensing requirements
- Infrastructure requirements
- Funding

# Viability Consideration

- Cost of raw material inputs
- Technology: Access & cost
  - Proof of concept
- Policy: Appropriate & solid framework
- Finance: Sustainable & Green finance
- Market: Ease of access & volumes
  - Local & global markets
- Economics: local & international



# Opportunities

- Standard options:
  - Bioethanol
  - Cogeneration
- Other options:
  - Platform chemicals
  - BioPlastics
  - Food additives
- Waste products:
  - Biofertiliser
  - Biogas

# Co-Generation

- Renewables: improving technology -> costs are coming down
- Cogen tariff was linked to biomass but not competitive (2018 R1,40/kwh vs R2,84)
- Gap that cogen could compete with baseload, emergency generation such as diesel (R5,00/kwh)
- Mills require extensive recapitalisation of mills => energy efficient to maximise power export
  - Funding & balance sheets?

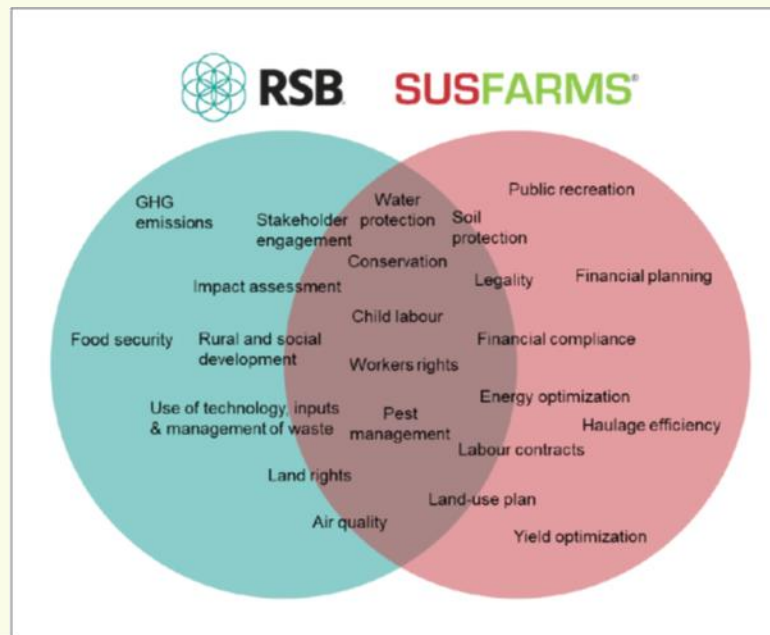
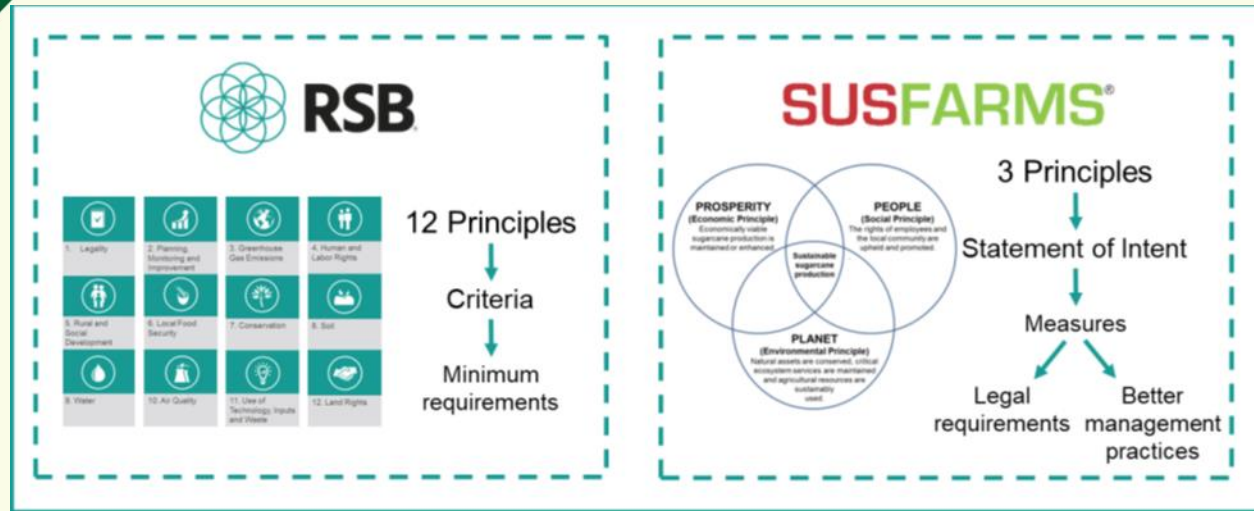
# Ethanol

- Present prices: ethanol is competitive (@ R650 per ton cane -> ethanol price equates R11.16/litre)
  - BFP (Central Energy Fund) for October is R12.24 per litre
- Risk is the exchange rate and world price.
- Possible support mechanisms - capital or price?

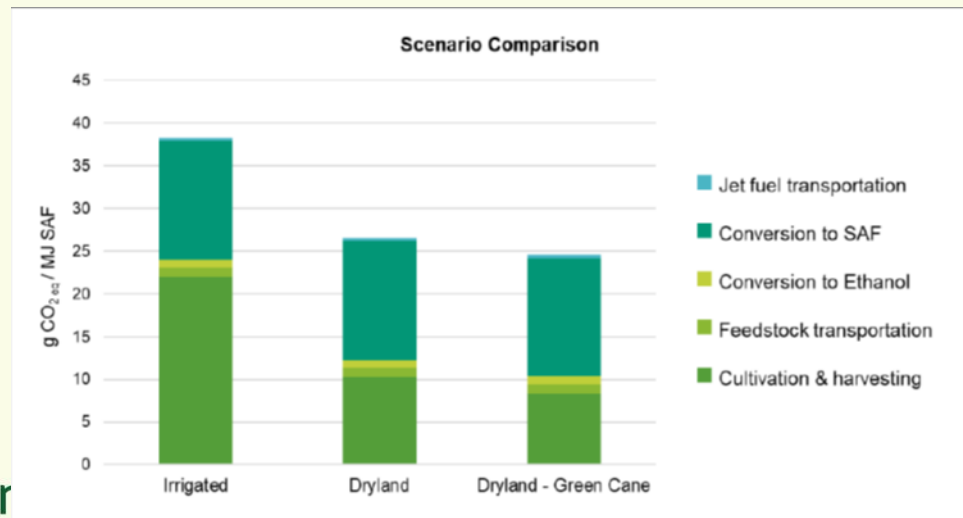
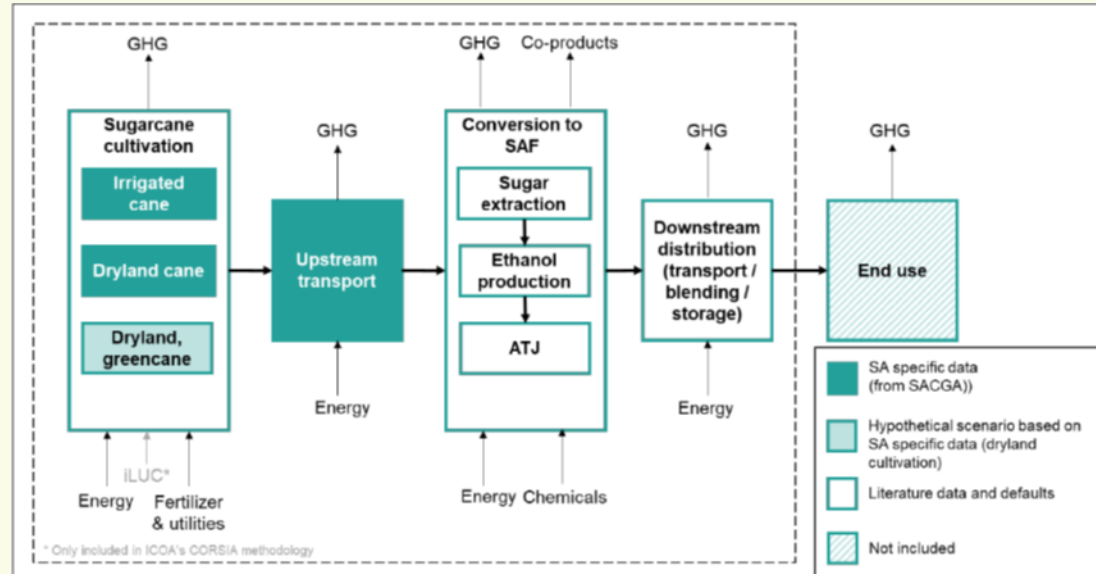
# Sustainable Aviation Fuel (SAF)

- Viability Study with RSB/WWF/Boeing
- GHG emissions must be lower than fossil fuels
- Diverting sugarcane to SAF Alcohol to Jet Synthetic Paraffinic Kerosene (ATJ - SPK)
- Regulatory aspects are particularly important for mandated markets
  - SAF selling prices: strongly linked to incentives created by regulations

# Viability Study (RSB,WWF,Boeing)



# Viability Study (RSB,WWF,Boeing)



# Availability of Feedstock for SAF

Scenario	Emission Saving Potential	
	EU RED II (Baseline = 94 g CO <sub>2</sub> / MJ)	CORSIA (Lifecycle emissions + iLUC emissions) (Baseline = 89 g CO <sub>2</sub> / MJ)
Irrigated cane	59%	57% (LCA only) 47% (LCA + iLUC)
Dryland cane	72%	60%
Dryland with green cane harvesting	74%	63%

- Irrigated sugarcane will not qualify under EU RED
- Dryland – green & burnt cane qualify

# Availability of Feedstock for SAF

- Potential to produce – 700 million litres of ethanol ~ 434 million litres of SAF
- Estimated OR Tambo demand – 2 Billion litres of jet fuel per annum (pre-covid)
- Most likely be export focused



# SMRI Projects

- Food additive:
  - Small volumes
  - Mainly local market, with export opportunities
  - Moderate capex
- BioPlastic:
  - Large export market but niche local market
  - High capex
  - Sustainability: Certification required
    - Competing with cheaper petro-chemical based products

# Industry Conclusion

- SAF is the only real contender at present
- The Sugar Cane Value Chain Masterplan has been a catalyst to highlight SAF as an option
- Funding opportunity received from IDC/SASA to conduct PFS work
- Certification process of cane growers needs to be actioned
- Green cane harvesting is a priority in the production debate

# One for the Agronomists

- Diversification & Sustainability (certification) will go hand in hand
- Chain of Custody requirements
- Climate change & our response to this will be important
- In time, there will be more pressure on compliance
- SusFarms is a very good start

# Thank You

