



**Solidarity**

**Equality**

**Sustainability**

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# POTENTIAL FOR BIOECONOMY DEVELOPMENT IN AFRICA: LARGE SCALE AGRO-PROCESSING BIOREFINERIES

## SUGARCANE CASE STUDY

G20 Initiative on Bioeconomy

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Sugar Milling Research Institute NPC

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#G20South Africa | [www.g20.org.za](http://www.g20.org.za)

# Agroprocessing Biorefineries

Agroprocessing biorefineries in Africa and the Global South present multiple opportunities for the bioeconomy



Scale of impact



Wealth creation



Inclusive growth



Food security



Biodiversity conservation



Climate change mitigation

Sugarcane value chains

Agroprocessing Biorefineries

Bioeconomy Enablers



Sugar Milling Research Institute NPC est. 1949

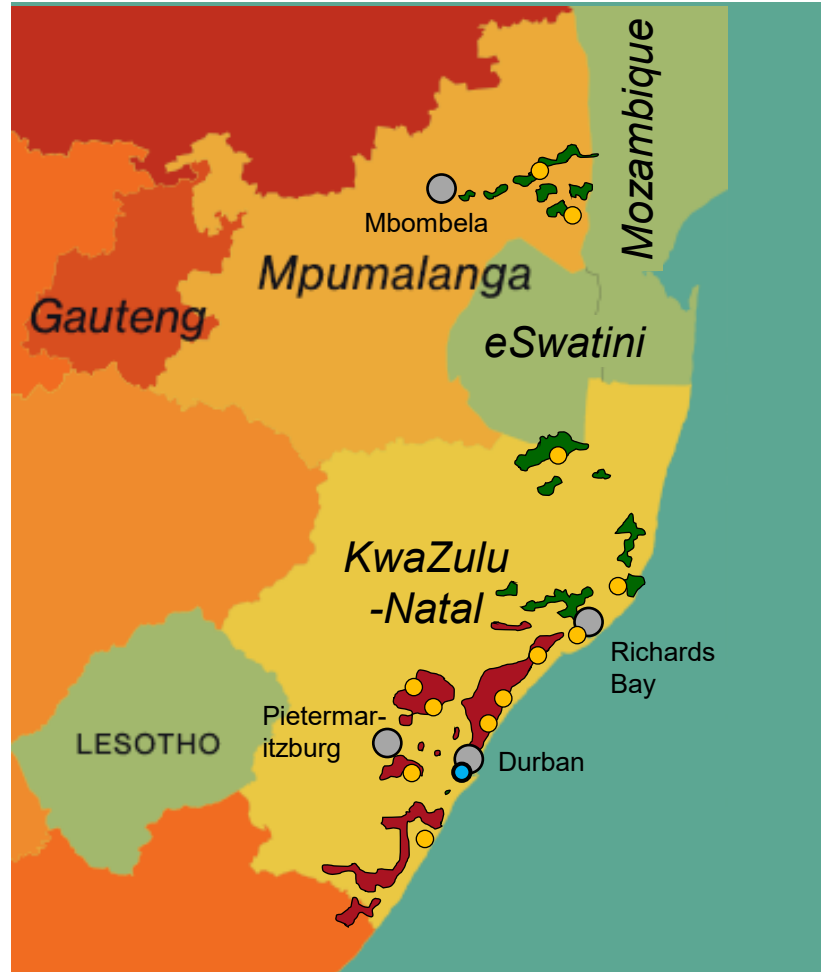




# SMRI Footprint

- Research, Analytical and Consulting services
- Member sugar mills in South African & southern Africa
  - 7 Sub-Saharan African countries
  - 25 Member sugar mills

# REGIONAL FOOTPRINT OF SOUTH AFRICAN SUGARCANE



- KwaZulu-Natal & Mpumulanga
- 12 sugar mills
- 1 white sugar refinery
- Annual turnover > US\$ 1.1 billion
- 65 000 direct jobs
- 270 000 indirect jobs
- ~1 million people dependent on the industry

Strategically important industry  
for South Africa

# Sugarcane Value Chain

Market

Product transport

Bioprocessing

Cane transport

Biomass production

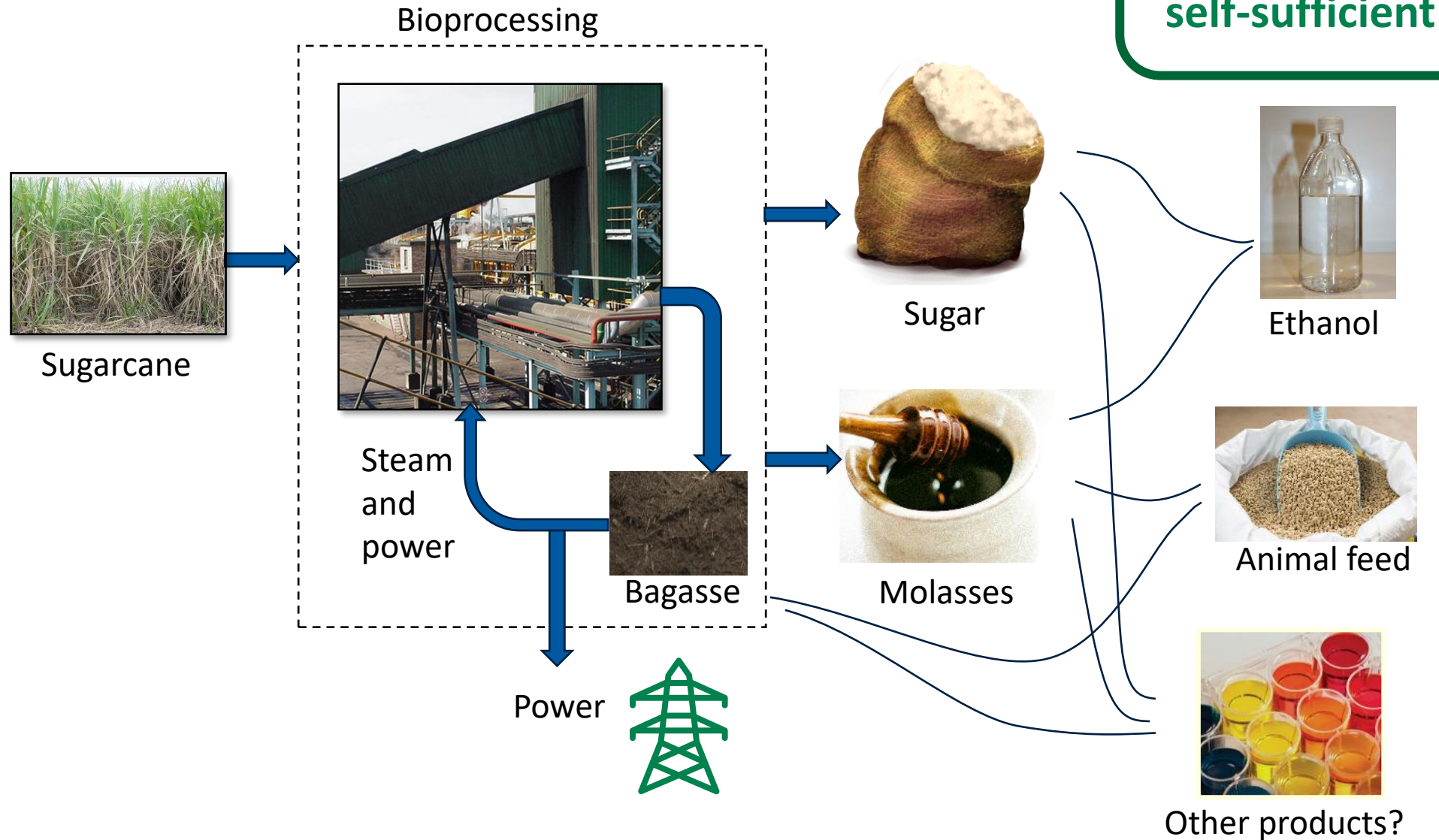
REVENUE

The diagram illustrates the sugarcane bioprocessing cycle. It begins with **Sugarcane**, which enters the **Bioprocessing** stage (indicated by a dashed box). Inside this stage, a photograph shows the industrial processing equipment. The process yields three main products: **Sugar** (represented by a bag of sugar), **Bagasse** (a pile of fibrous waste), and **Molasses** (a bowl of dark liquid). A feedback loop labeled **Steam and power** returns from the bagasse to the processing stage. Finally, the **Power** generated is shown as a green icon of a power line tower.

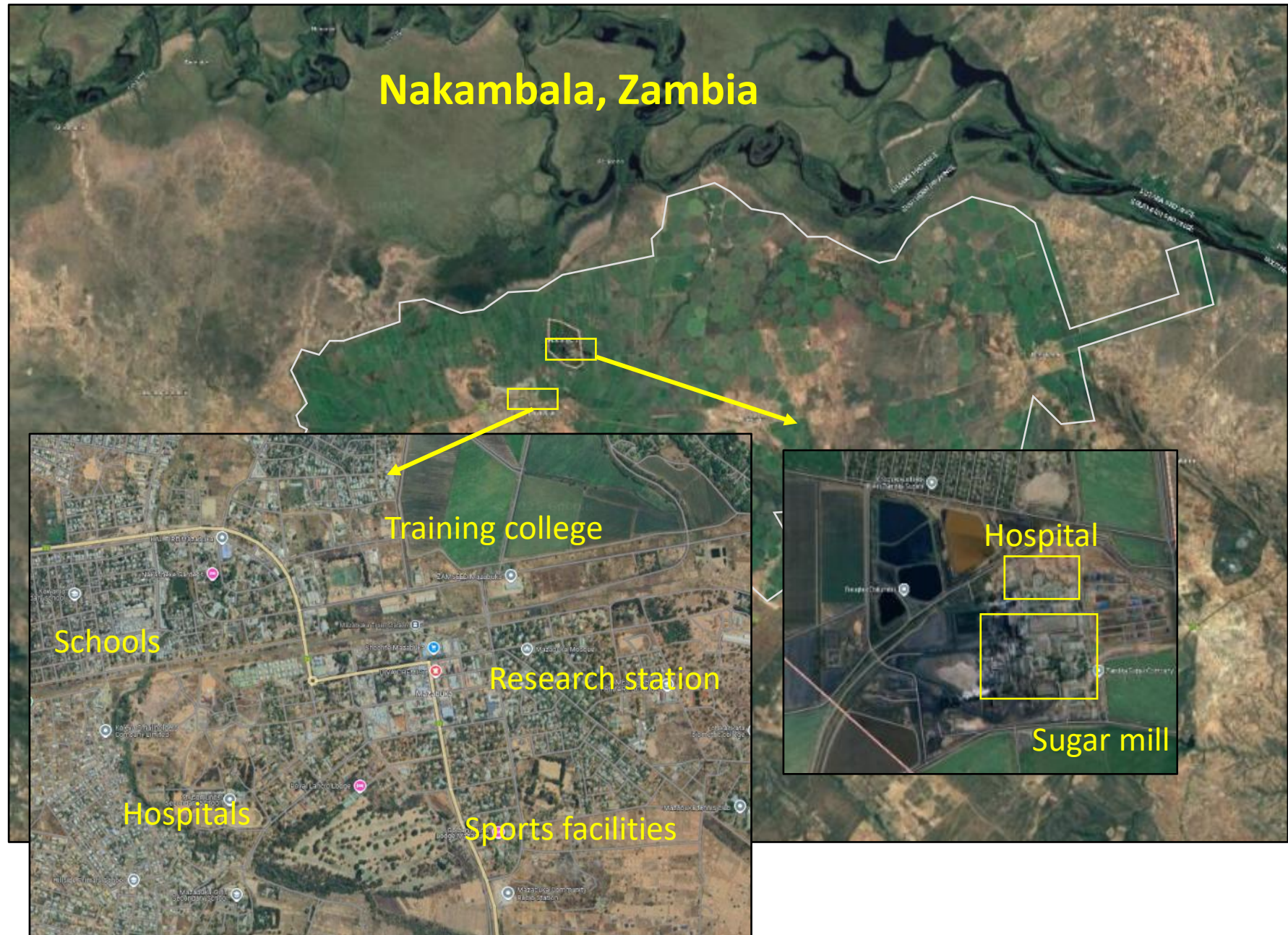
**Biorefinery**  
*“A facility that integrates biomass conversion processes and equipment to produce fuels, power, and chemicals from biomass” (NREL)*



# Product diversification







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Climate change mitigation





Build the Maguga Dam 83 mill m<sup>3</sup> of water



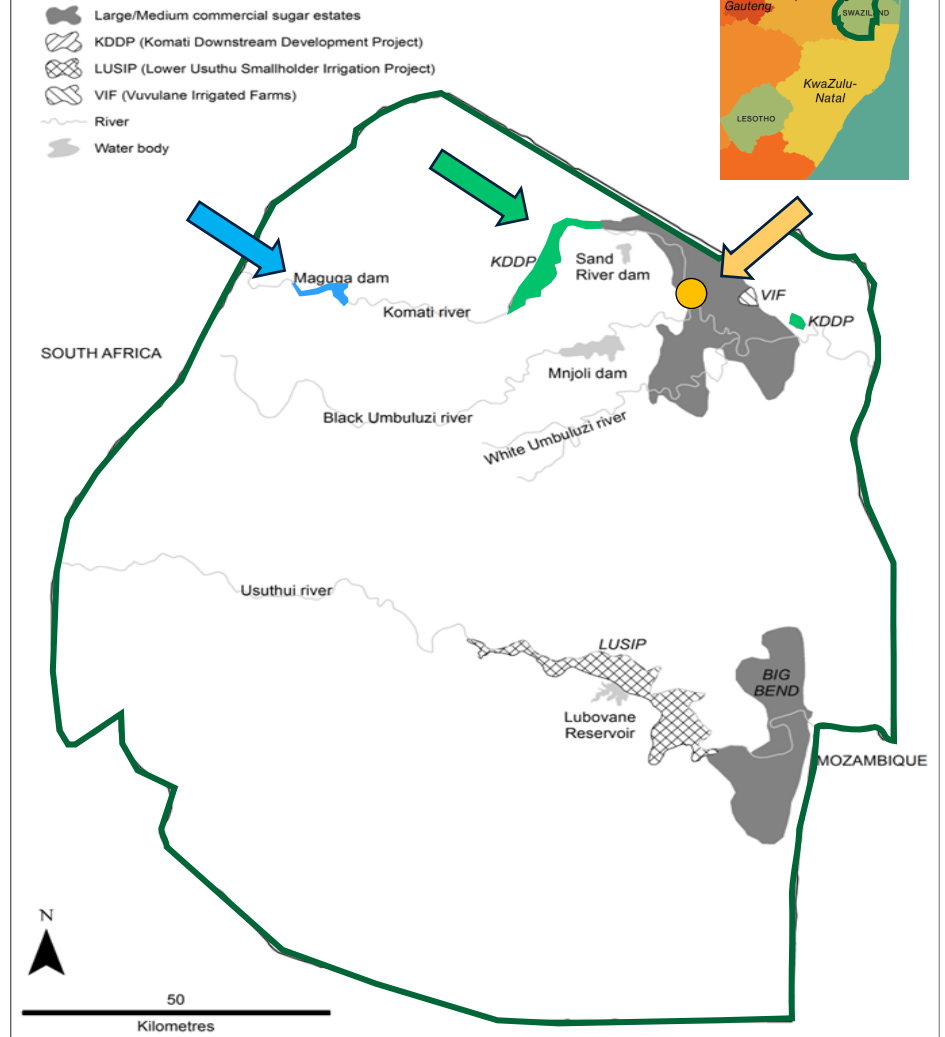
Expand the Mhlume Sugar Mill



Train communities in commercial irrigated  
sugarcane farming

6 500 ha of land impacting 25 000+ people

Figure 1:  
Swaziland the Sugar Industry: Main features  
(approximate locations)







## The Komati Downstream Development Project



# Impact on Livelihoods

- Food
- Income
- Housing
- Education
- Roads
- Bridges
- Jobs

**Environmental  
benefits**



Scale of impact



Wealth  
creation



Inclusive  
growth



Food security



Biodiversity  
conservation

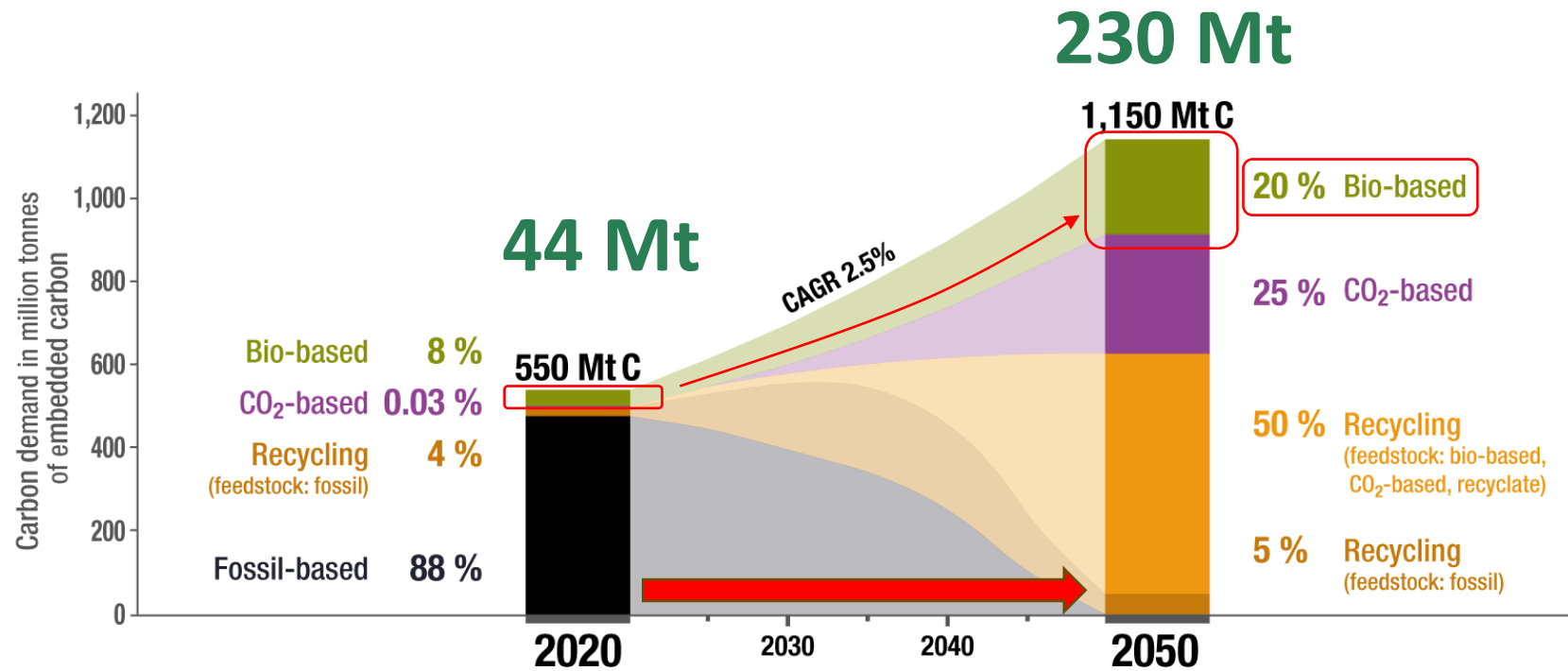


Climate change  
mitigation

Images and information: KDDP

# NetZero Ambitions

## Carbon Embedded in Chemicals and Derived Materials updated nova scenario for a global net-zero chemical industry in 2050

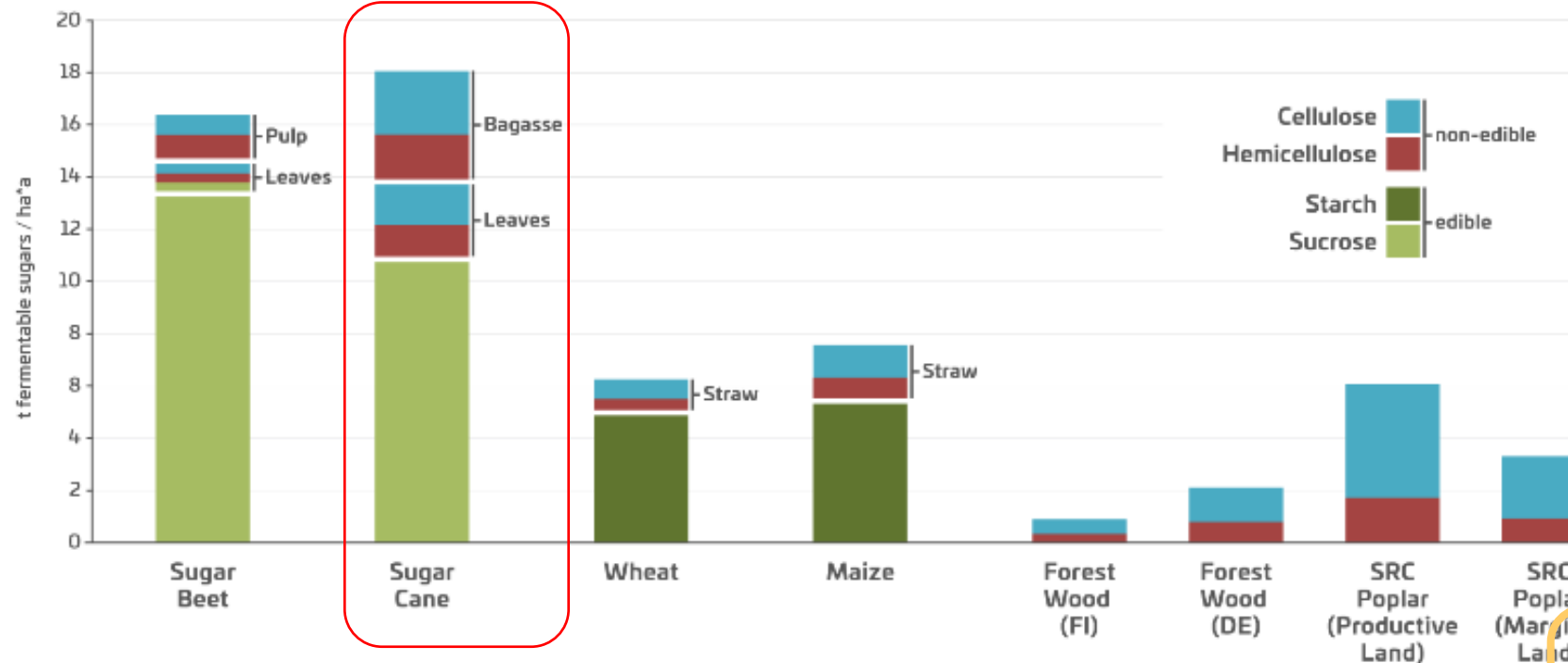






## From where?

**Yield of Fermentable Sugars in t/ha\*a  
(By Types of Feedstock)**



available at [www.renewable-carbon.eu/graphics](http://www.renewable-carbon.eu/graphics)



Scale of impact



Wealth creation



Inclusive growth



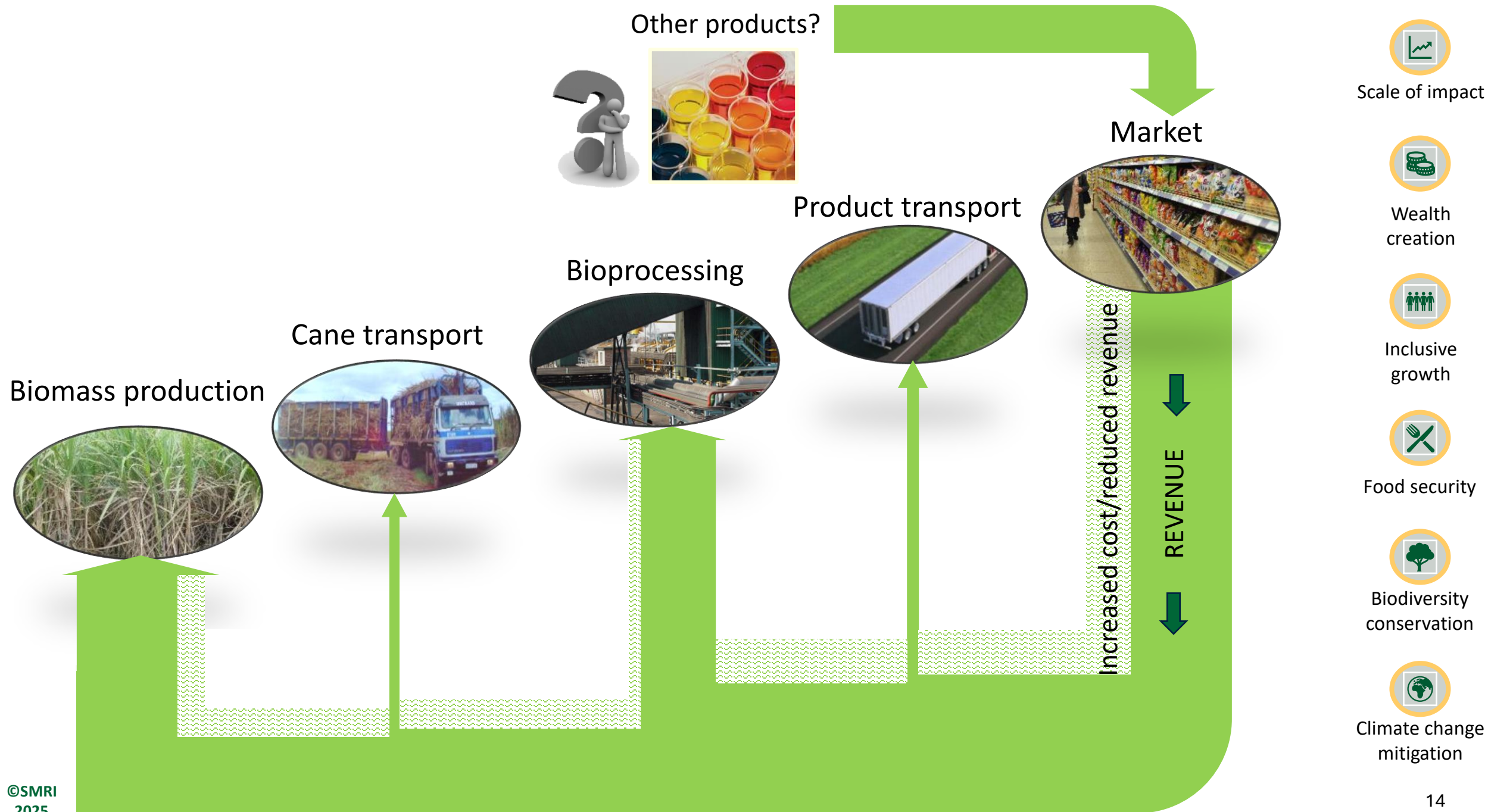
Food security

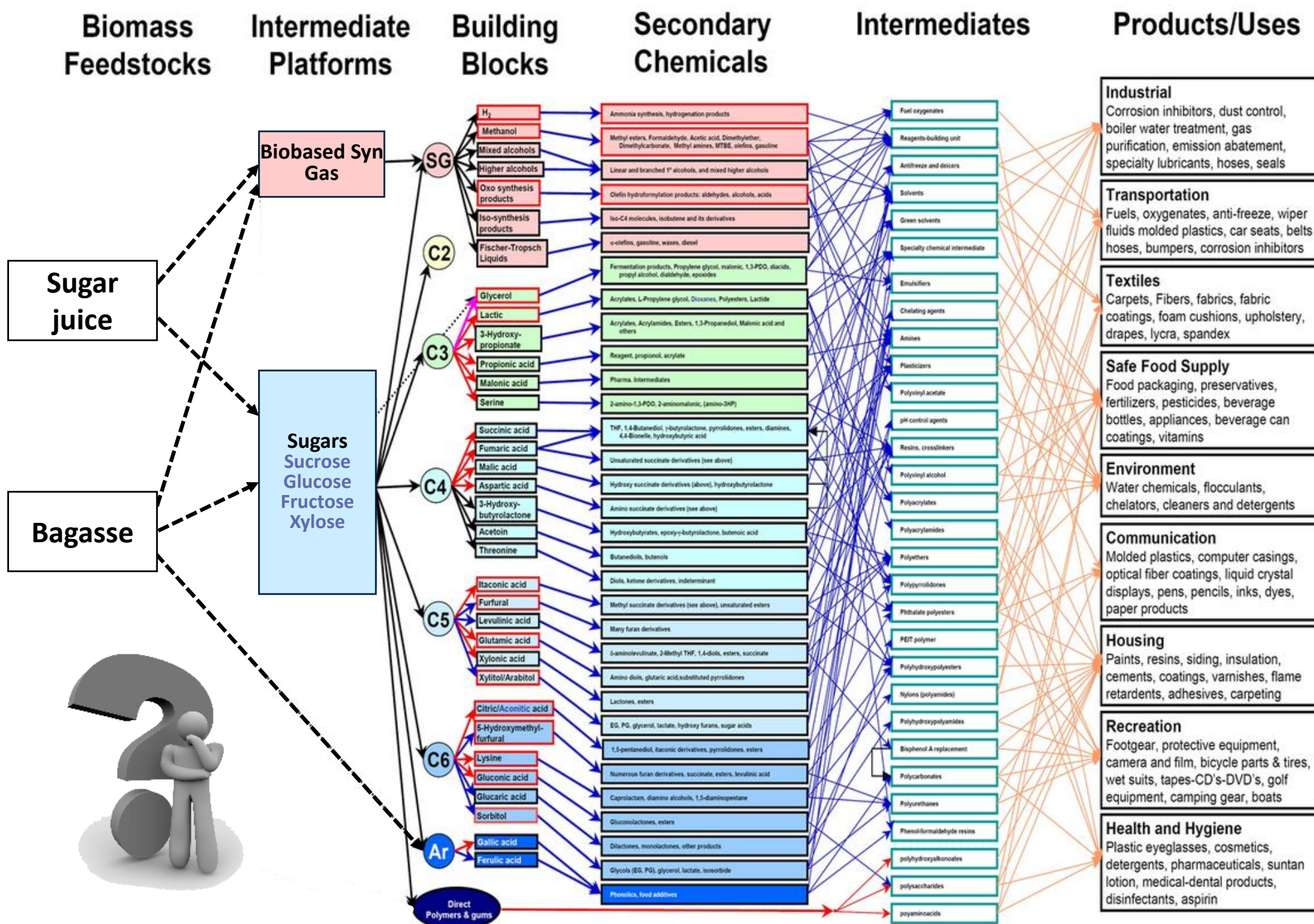


Biodiversity conservation



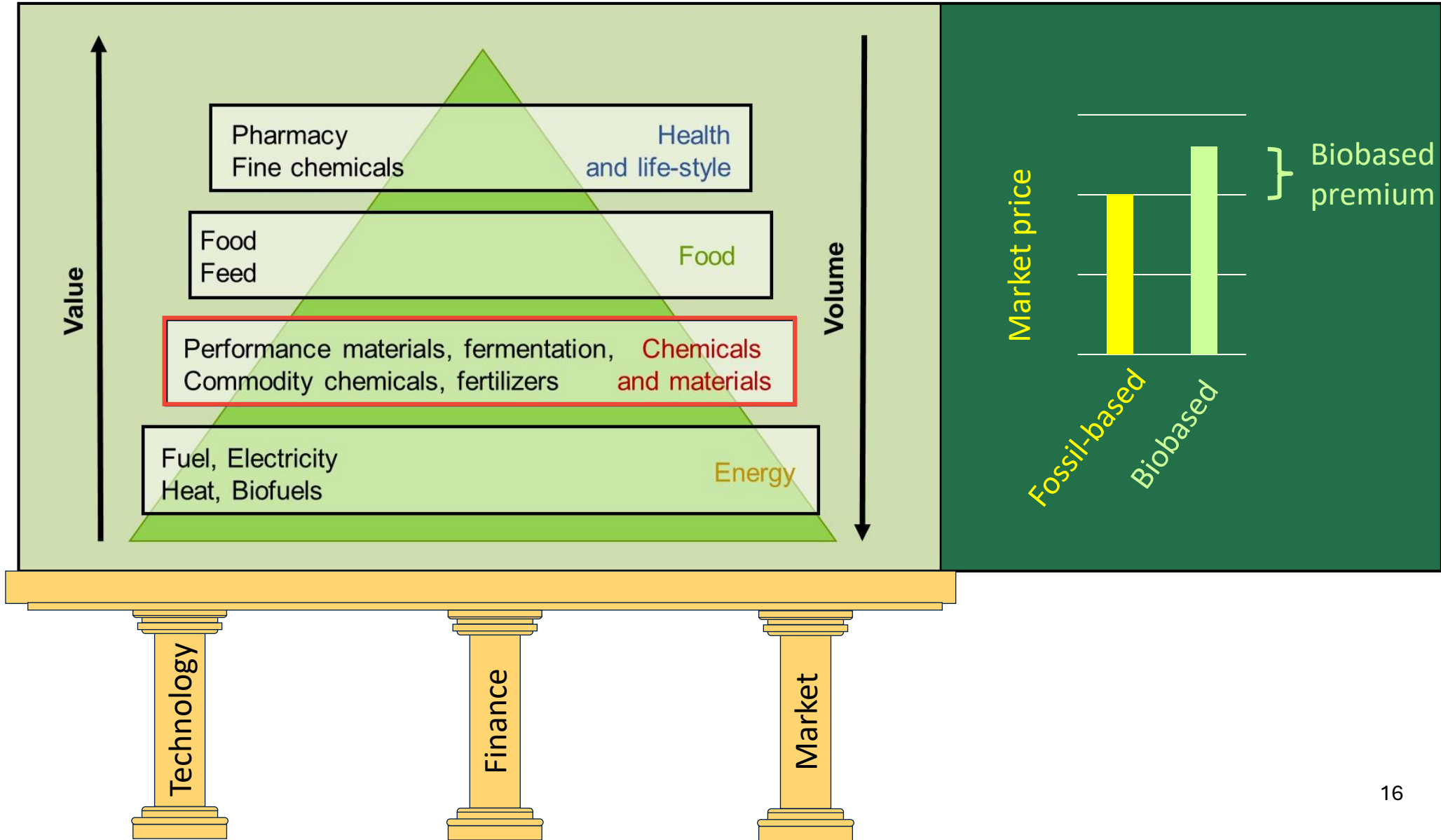
Climate change mitigation







# Which products?





# Value proposition

## Consumer

- Ethical choice

## Industrial consumer

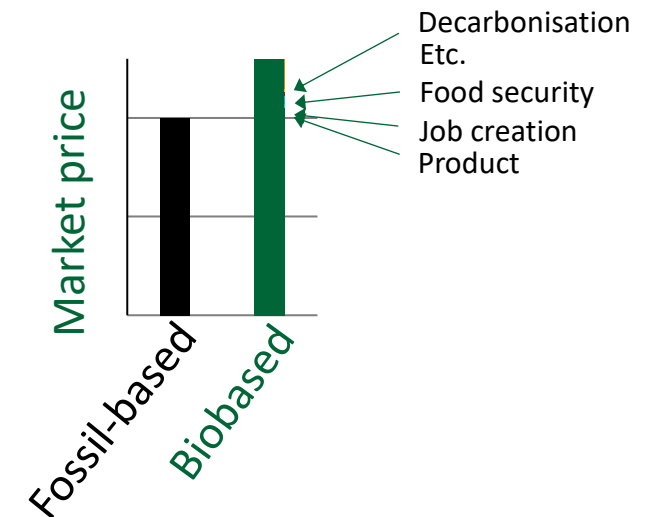
- Decarbonisation

## Global Community

- Climate change mitigation

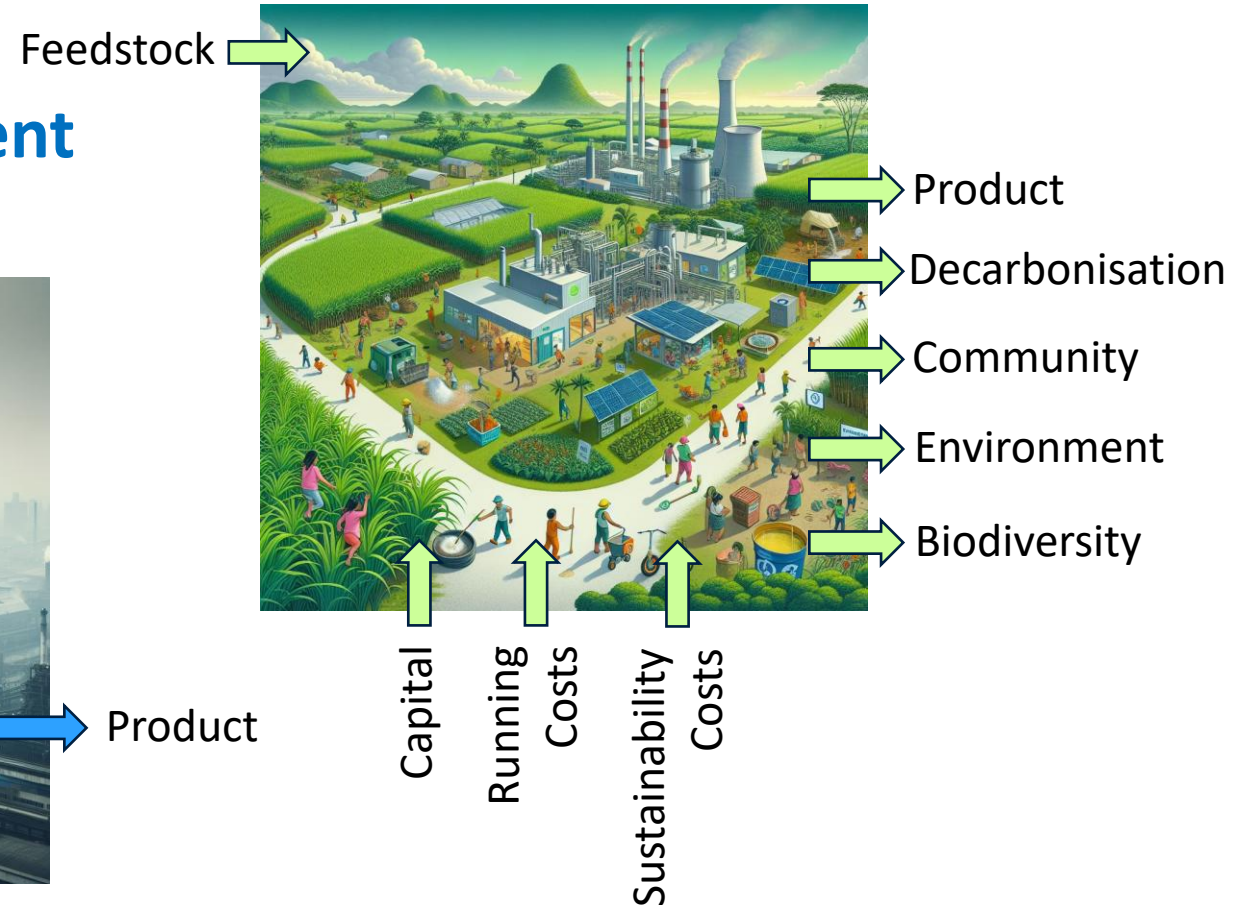
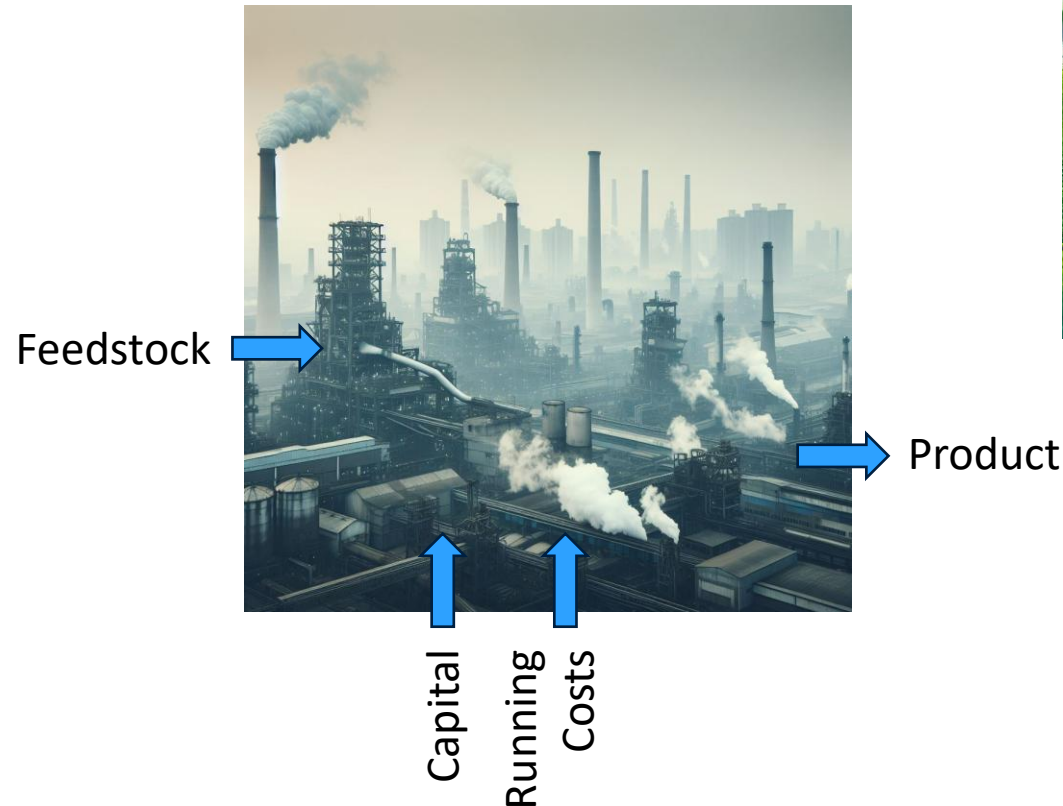
## National Priorities

- Economic growth
- Balance of trade
- Job creation
- Quality of life
- Food security



# A new investment philosophy is required

Return on investment  
> hurdle rate



Return on investment  
> hurdle rate  
Sustainability targets met

# Enabling framework for biorefineries

## Monetise all benefits

- What?
- How much?
- Who?

## Metrics and standards

- Targets
- Reporting
- Validation

## Investment mechanisms

- Green finance
- (concessionary loans, grant funding)

## Market Access

- Bio-based C demand mapping
- Preferential market access
- Tariff support
- Incentives and penalties



**Solidarity**

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# Key takeaway

Agro-processing biorefineries are bioeconomy drivers



Multiple economic, social and environmental benefits



Value and reward non-financial outcomes through new market and investment rules





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SOUTH AFRICA 2025



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**Thank you**