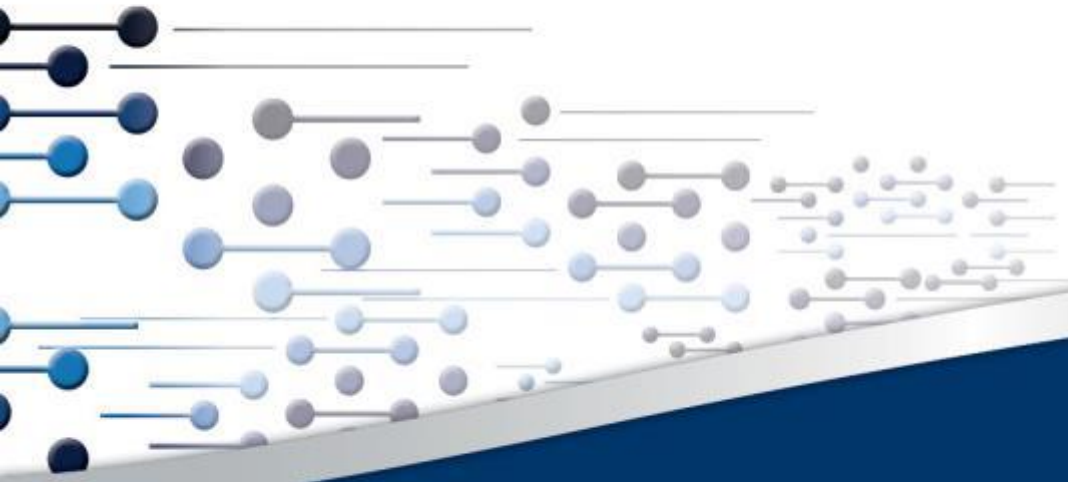
Agronomic potential for biofuel production in Southern Africa

Graham von Maltitz[1], Marna van der Merwe1

[1]CSIR (South Africa), Pretoria, South Africa



CSIR

our future through science

Southern Africa identified as one of the high biofuel potential areas

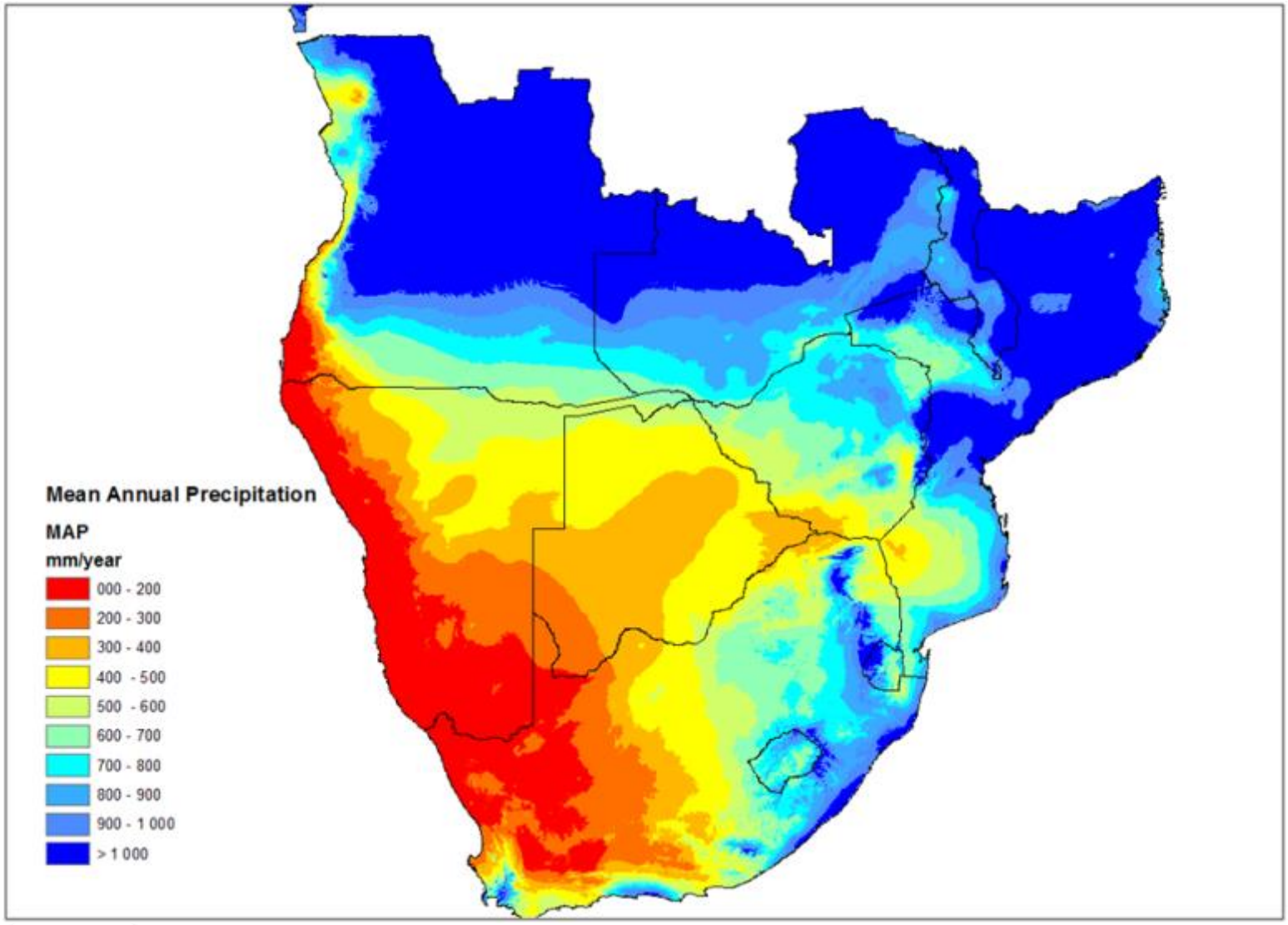
- High biophysical potential
- Low current level of crop production
- Perception of high amount of available land
- Huge need for rural development
- Climate change mitigation not the main driver

BUT

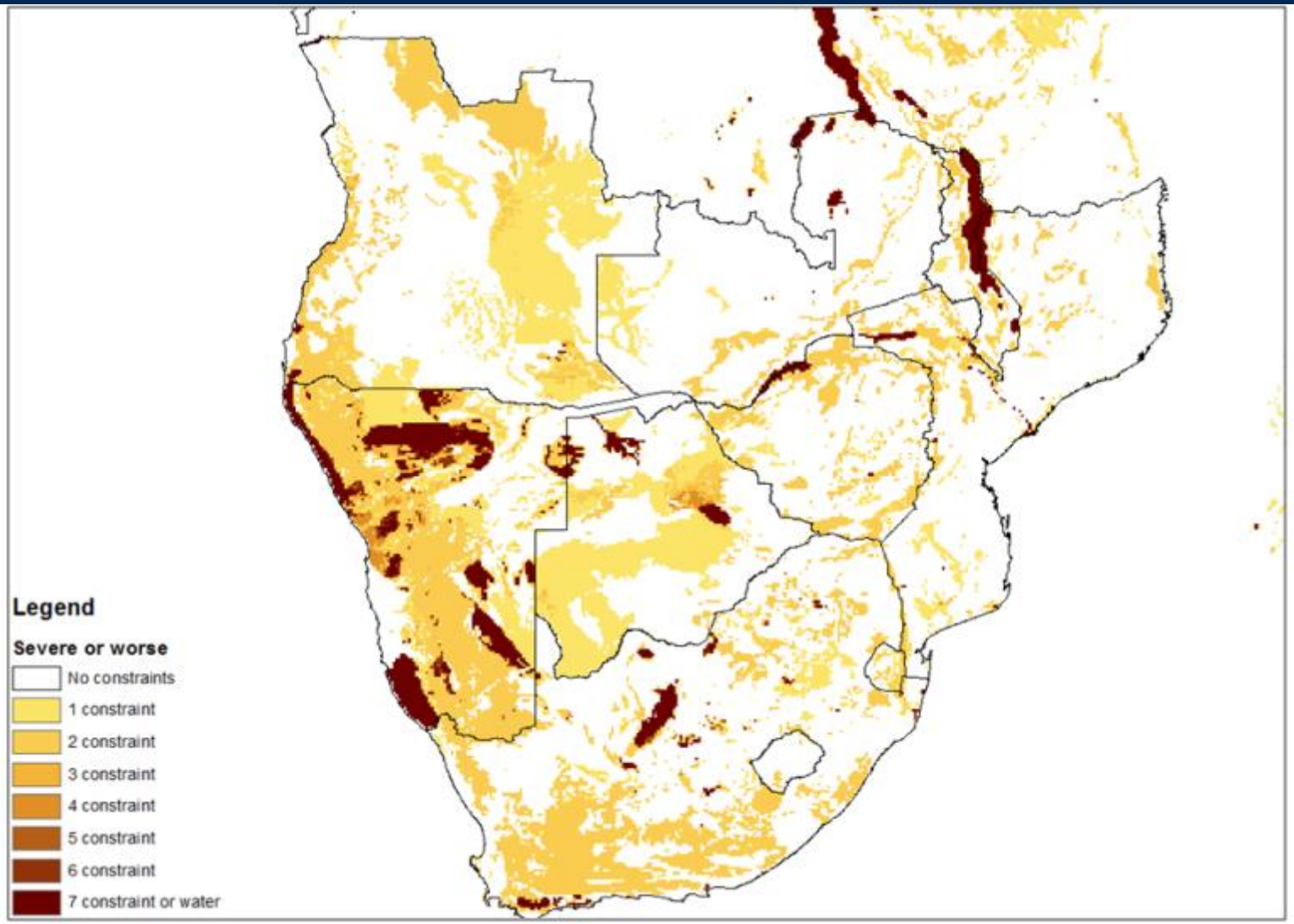
- Possible high impact on biodiversity
- Land is often being used by local people
- High political concern around food security

CSIR
our future through science

Mean Annual Rainfall

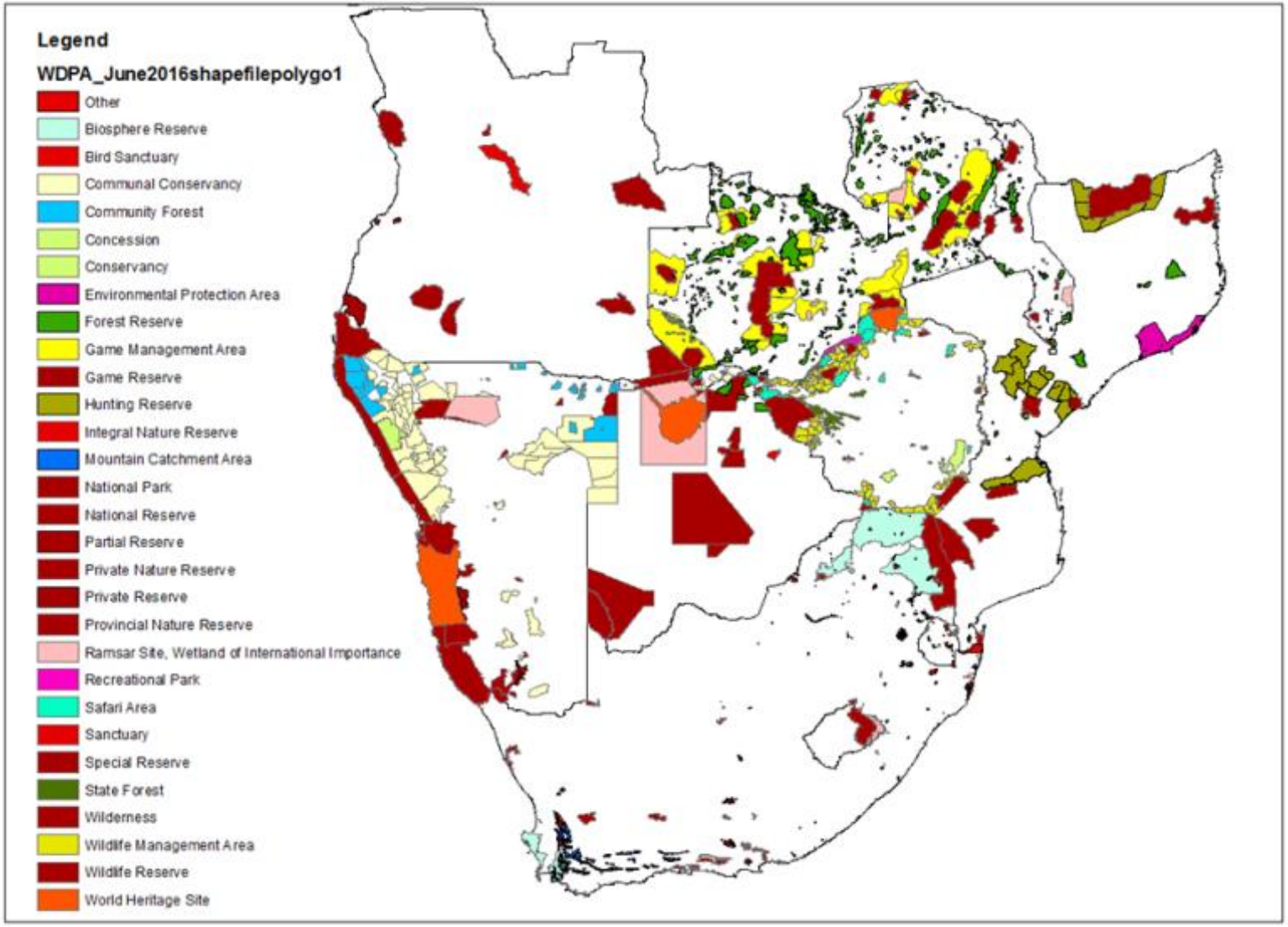


Number of soil constraints



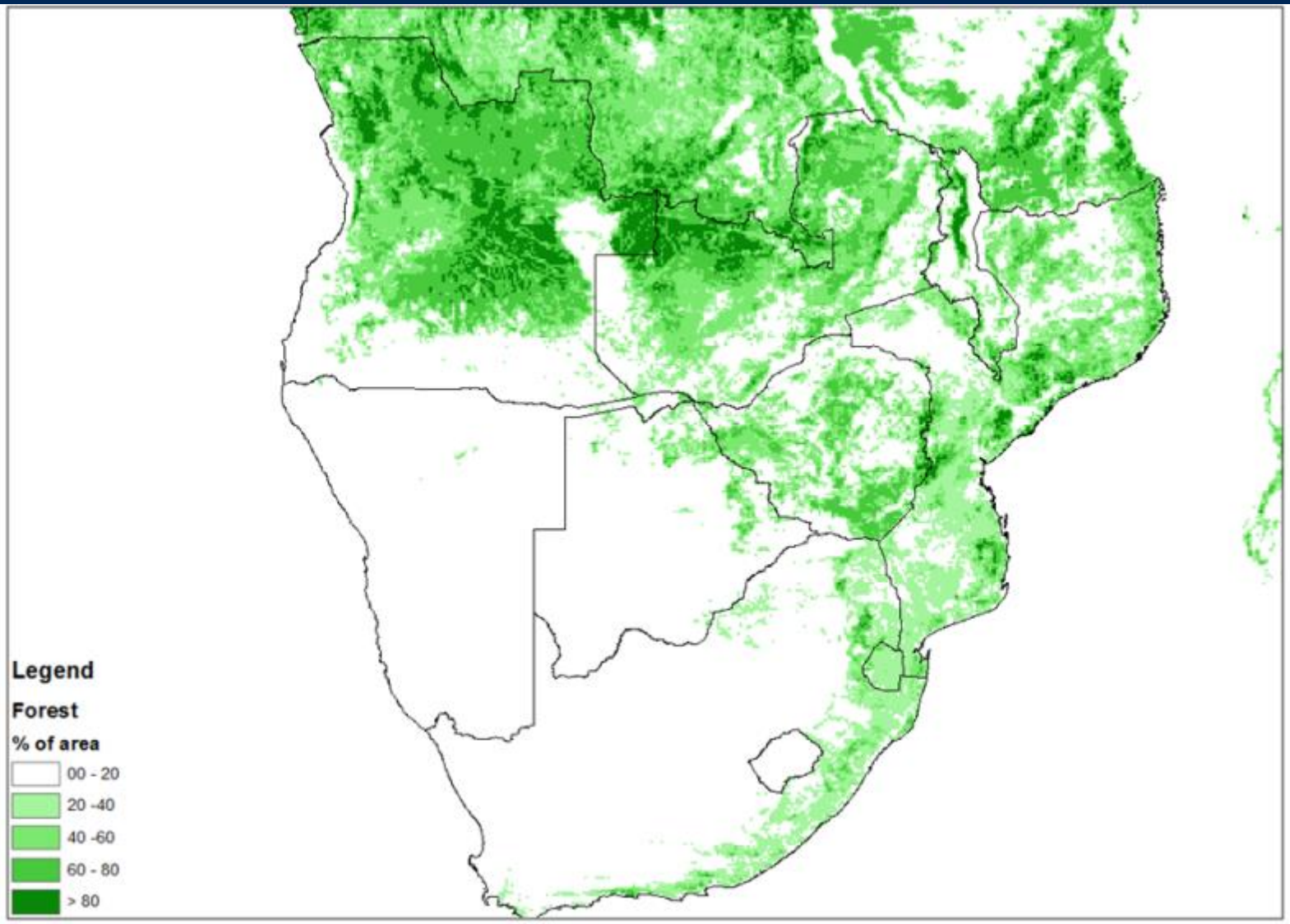
CSIR
our future through science

Protected areas

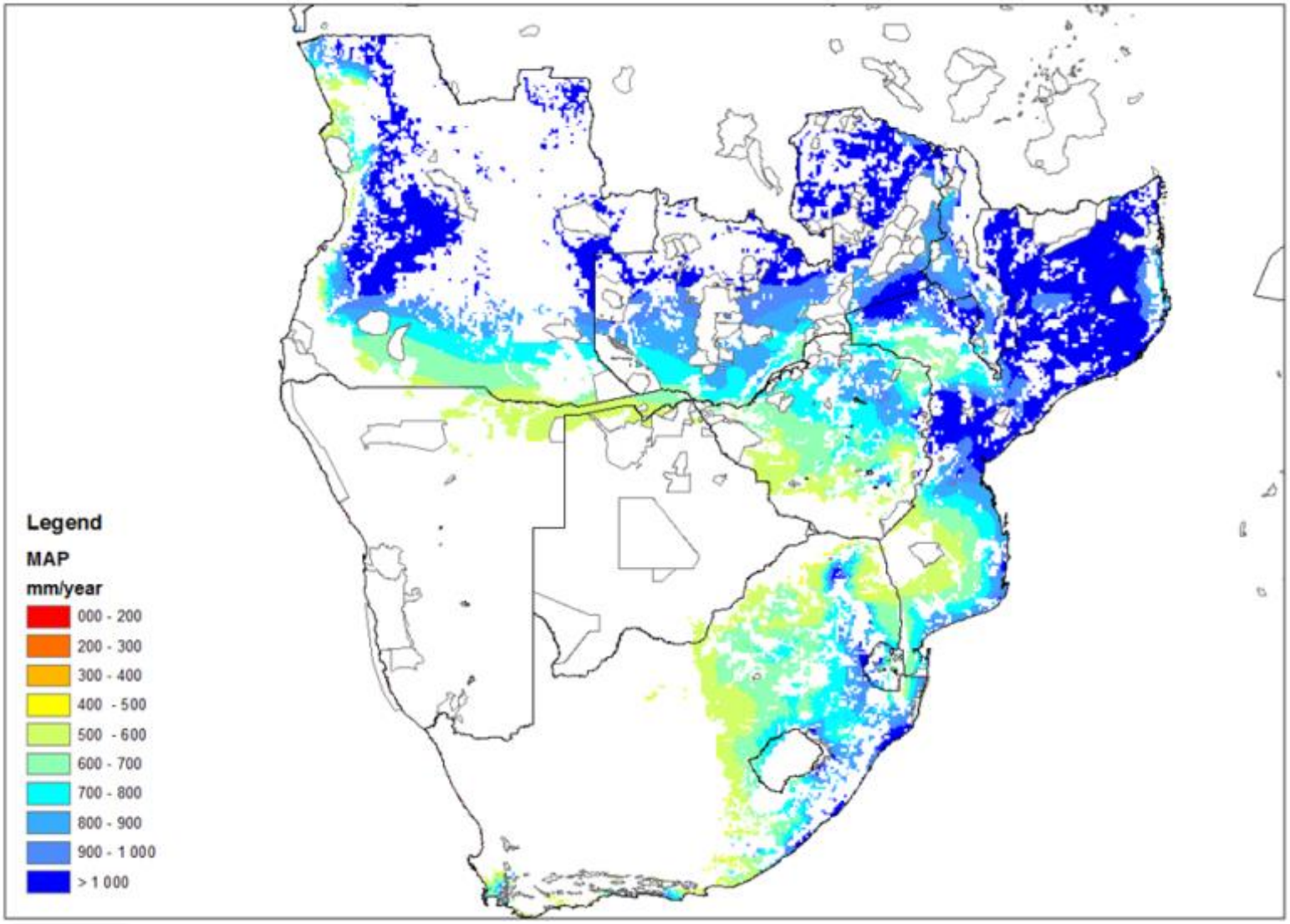


CSIR
our future through science

Forests (data from FAO)



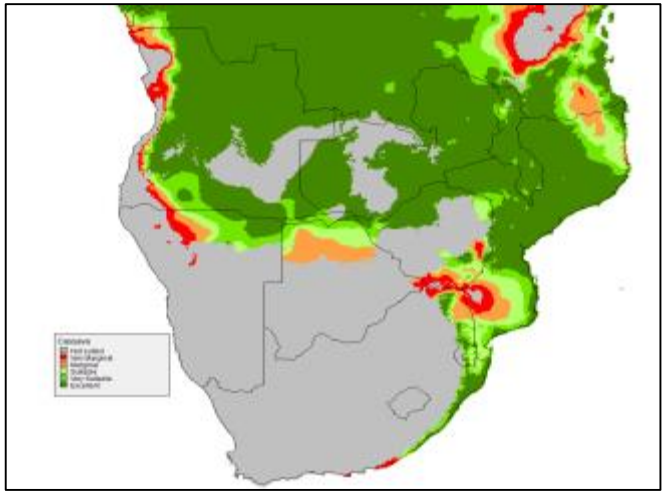
Areas with high potential for dryland crop expansion



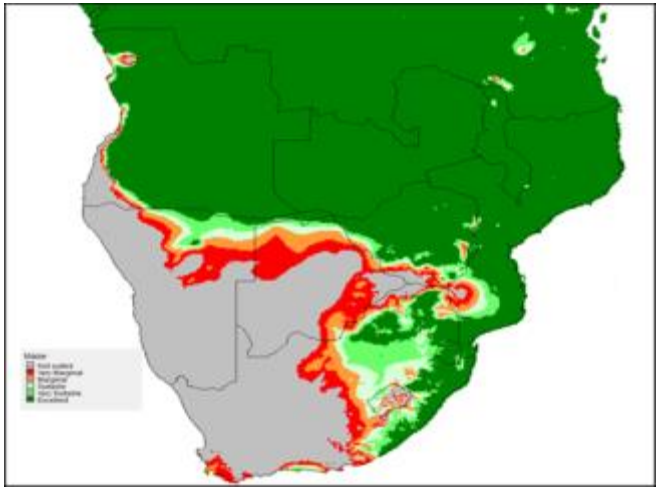
CSIR
our future through science

Crop suitabilty

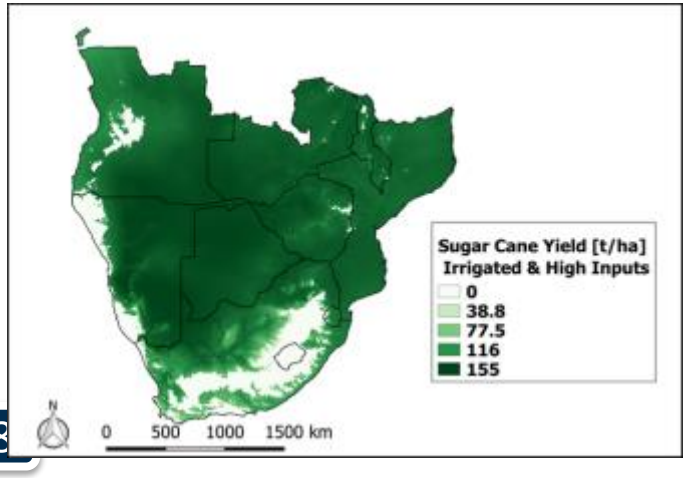
Dryland cassava



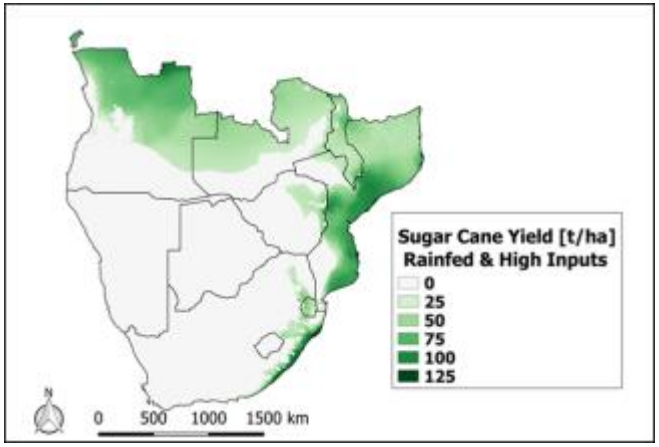
Dryland maize



Irrigated sugarcane

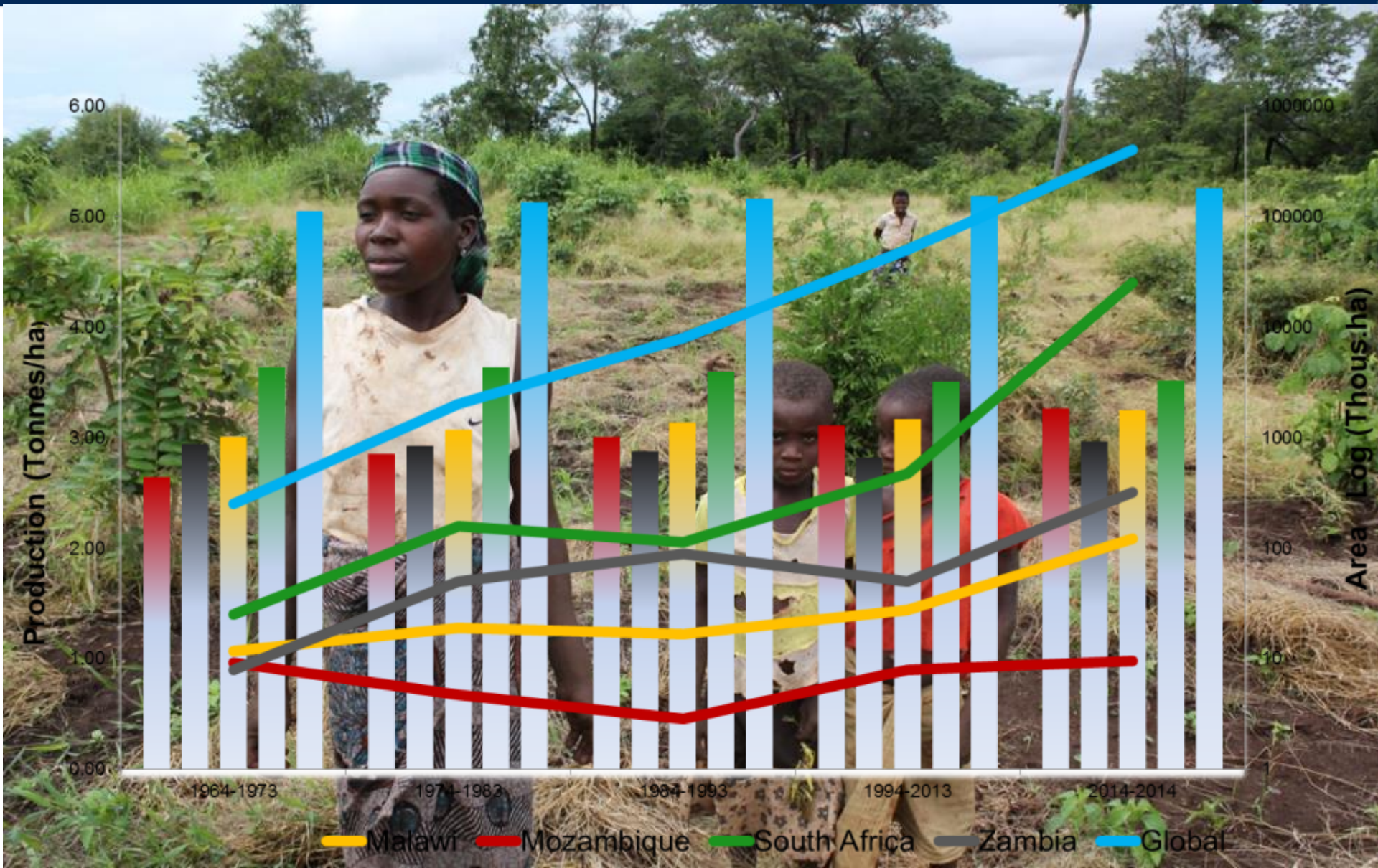


Dryland sugarcane

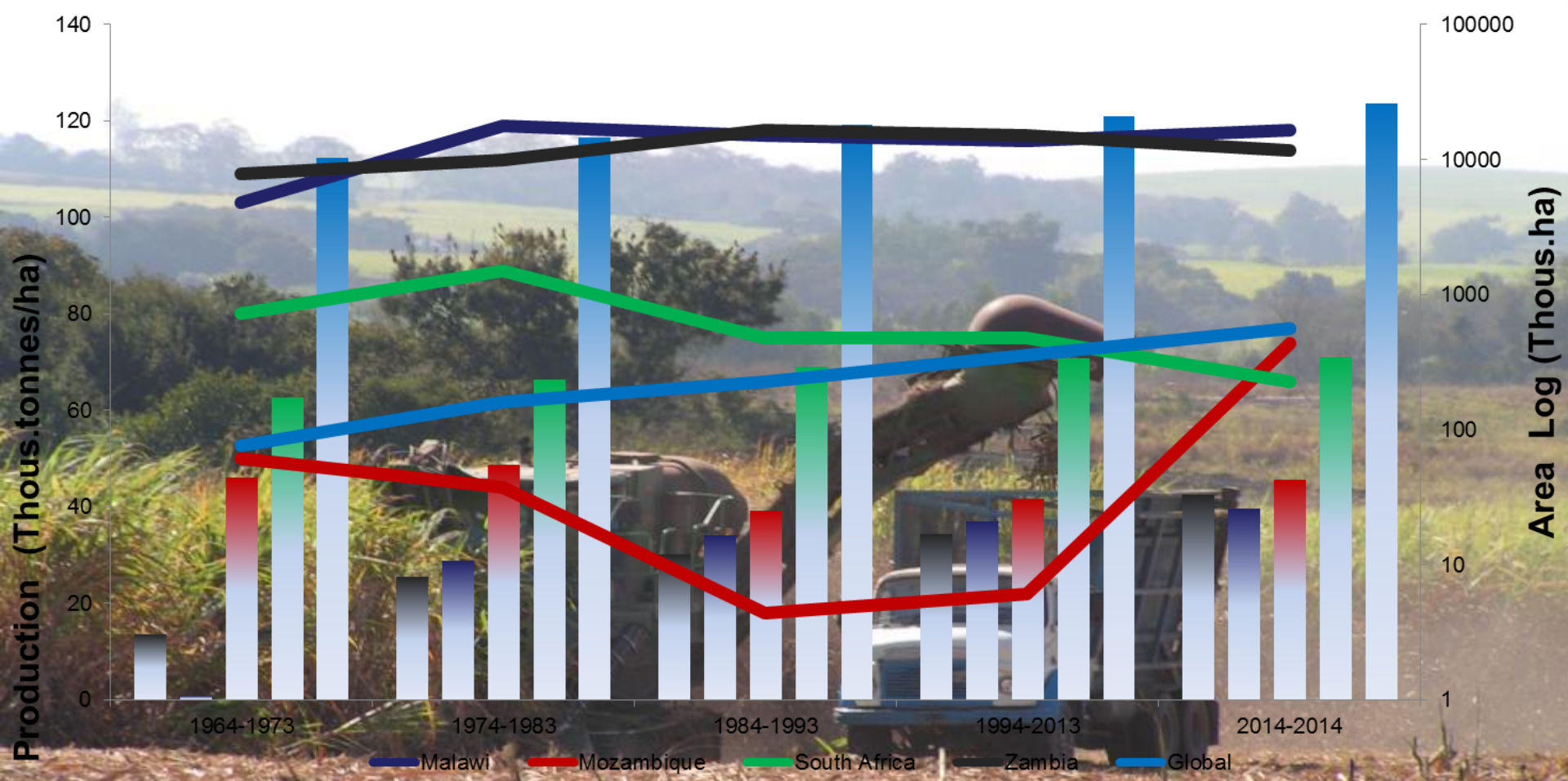


CSIR
our future through science

Agricultural efficiency: Maize

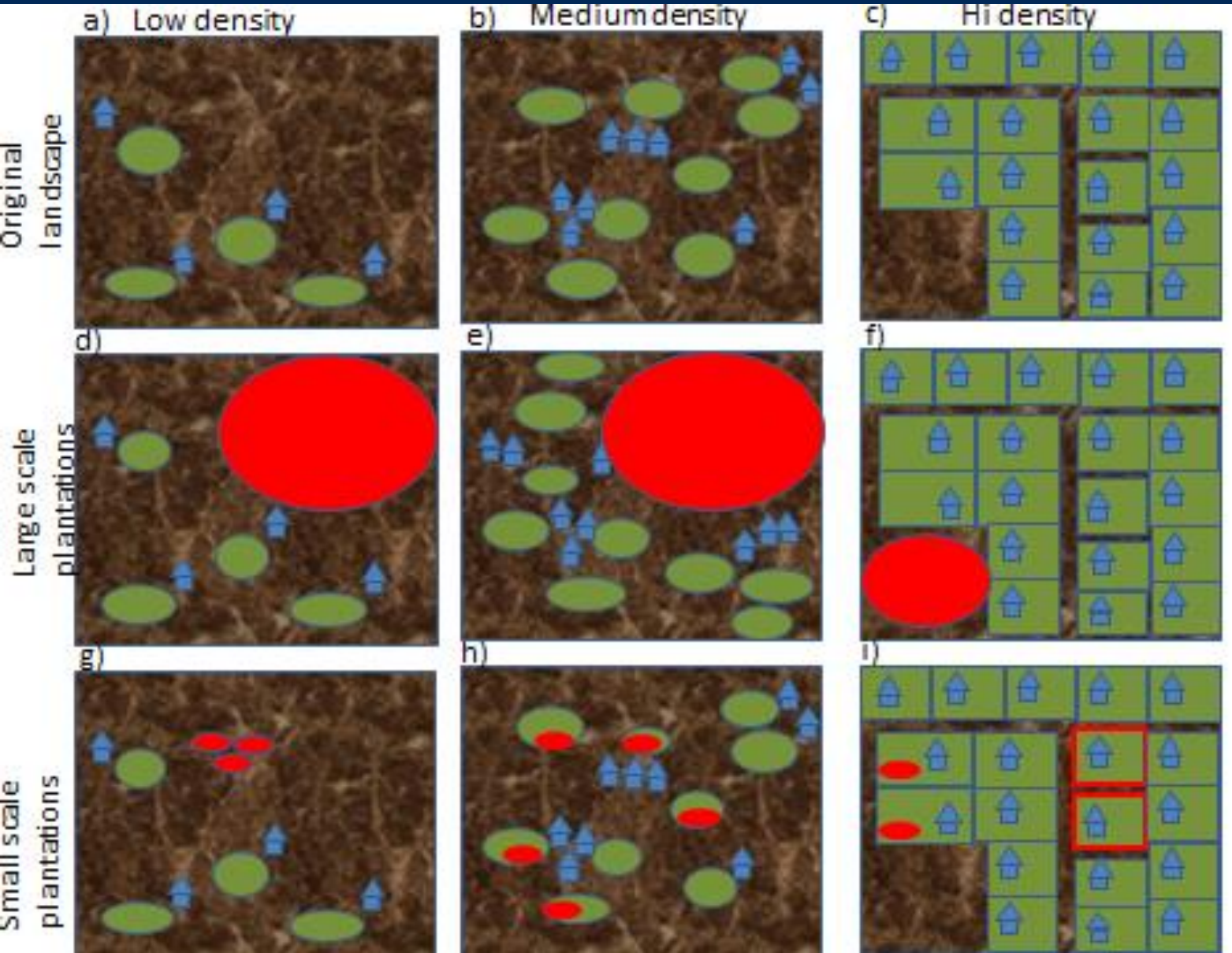


Agricultural efficiency: Sugar



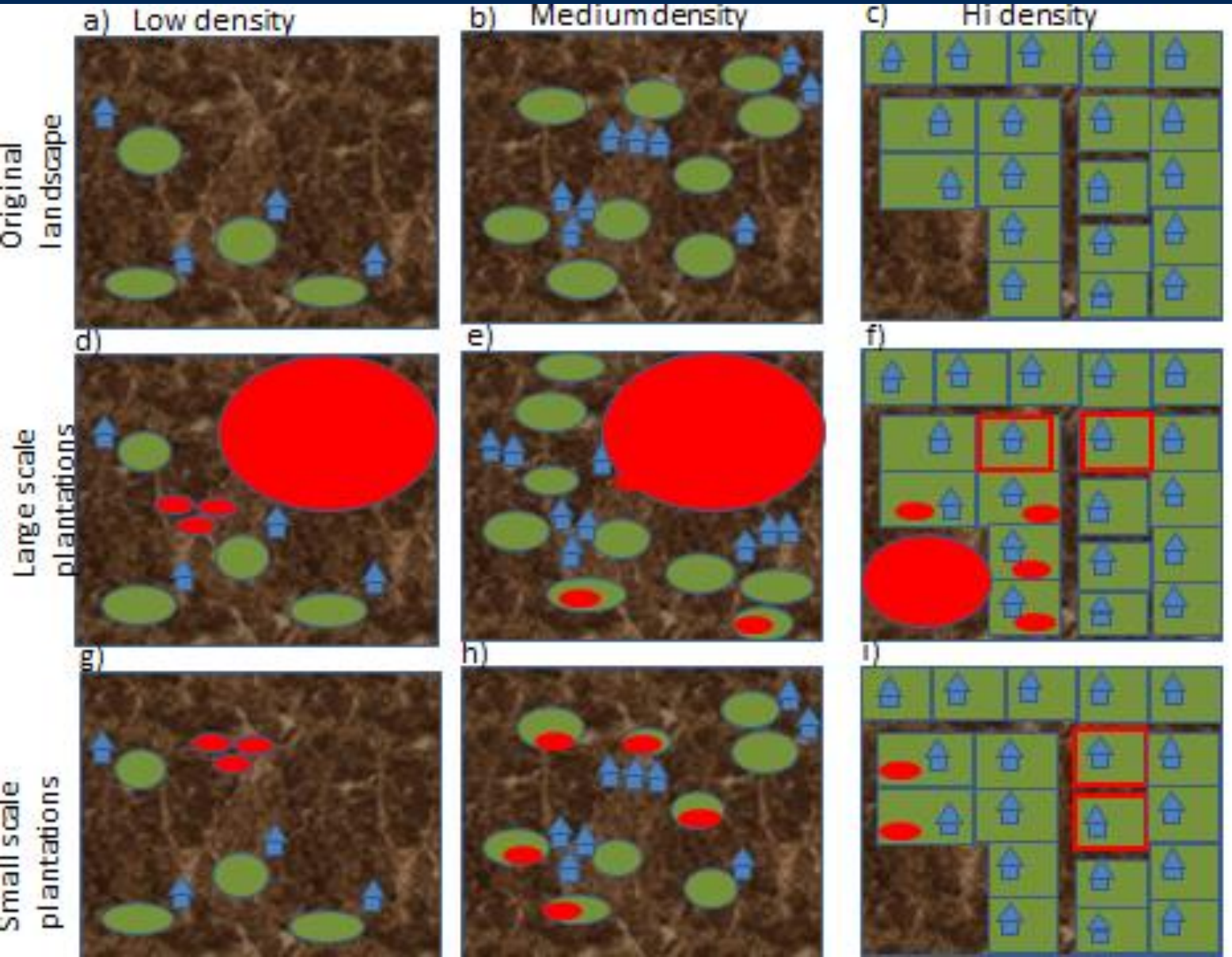
Models for feedstock production

Models



our future through science

Models



our future through science

Large estate criteria

- Ensure free, informed and prior consent is obtained from local communities (FPIC).
- Use an intermediary (NGO or Government)
- Make sure crops are fully tested
- Ensure that all expectations not exaggerated.
- Ensure that the principles of certification (e.g. RSB)
- Environmental and social impact assessments.
- Local residents have preferential access to job opportunities.
- Labour rates are fair
- Compensation is fair and just.
- land ownership
- Consider options where the community become owners or part owners of the plantation.

CSIR
our future through science

Smallholder crioteria

- 1) The crop needs to be easily stored and transported.
- 2) Have a value per unit land that is greater than the farmer can achieve from surplus food crops (if grown on surplus land)
- 3) Have a value considerably greater than the purchase price of food crops if grown on land that the farmer uses for food crops for home consumption.
- 4) Must have a operational market with relative price stability
- 5) The crop must not compete strongly with food crops or the labour required for food crop production.

Conclusions

- Huge biofuel potential. Especially Zambia and Mozambique
- Need new models to bring true development to rural communities

Thank you

Name (email@csir.co.za)