



# Sustainable Biotech Innovation Symposium 2020

## Perspectives in the South African Indigenous Knowledge-based Bioeconomy: Opportunities & Realities

March 2 - 3, 2020

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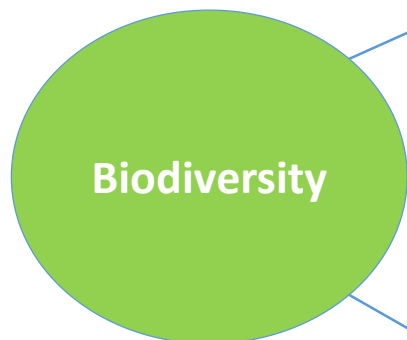
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*Inspiring excellence. Transforming lives.*  
*Inspireer uitnemendheid. Verander lewens*



UNIVERSITY OF THE  
FREE STATE  
UNIVERSITEIT VAN DIE  
VRYSTAAT  
YUNIVESITHI YA  
FREISTATA

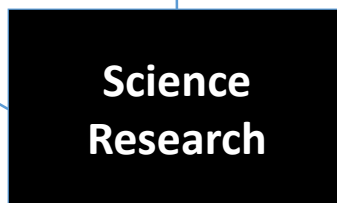




30 000  
4 000  
350 000  
< 10%



1:40 000  
350 000  
1:500



Political Will

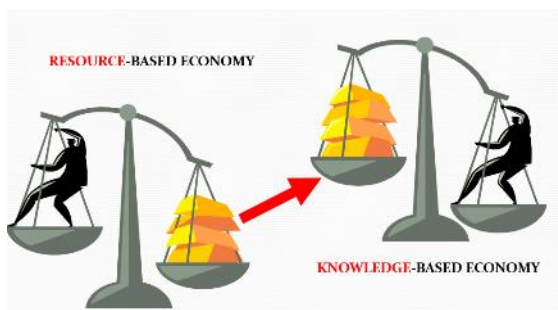
Community  
Support

Institutional  
Support

Global trends



**Advantages:  
Competitive & Comparative !!**



# IKS (Health) Sustainable Biotech Innovations

IKS & Natural Products – Sources of NCE

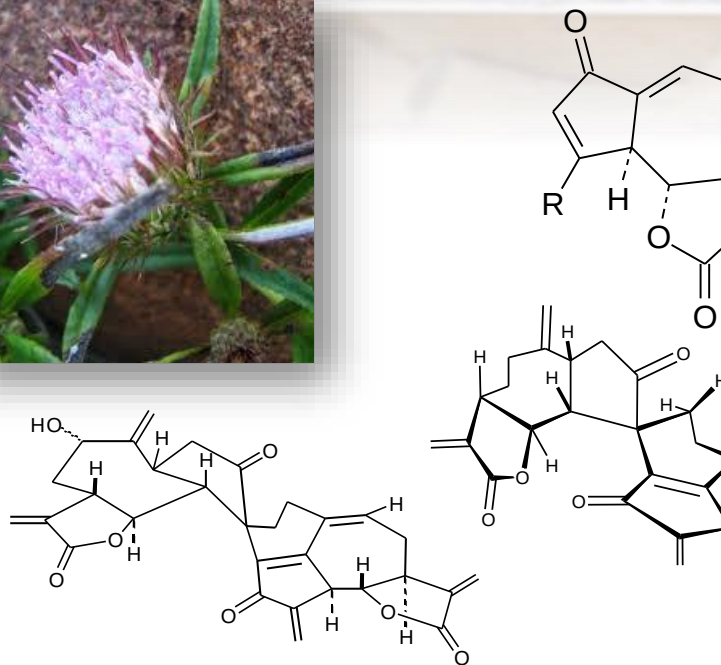
IKS – Technology Development for Industry

IKS-Based Health Beverages

Medical Cannabis – Local Innovations

IKS-based African Proprietary Traditional Medicines

# Antiplasmodial positional isomeric non-symmetrical sesquiterpenes dimers



## Antimalarial Research

### Granted Patents

PCT/IB2005/003268

RSA Patent No. 2007/04160

Chinese Patent No. 935480

USA Patent No. US 8,586,112 B2

ARIPO Application No. AP2256

Nigeria Application No. NG/C/2007/04160

Tunisia Application No. 19881

Madagascar Application No. PCT/IB2005/003265

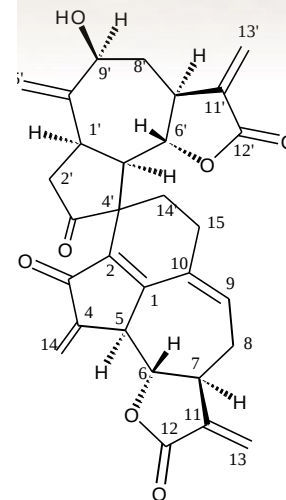
### Patent Applications

Brazilian Patent Application No. P105170752

Egyptian Application No. PCT 454/2007

Indian Application No. F21187

OAPI Application No. F21179

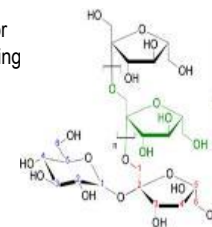
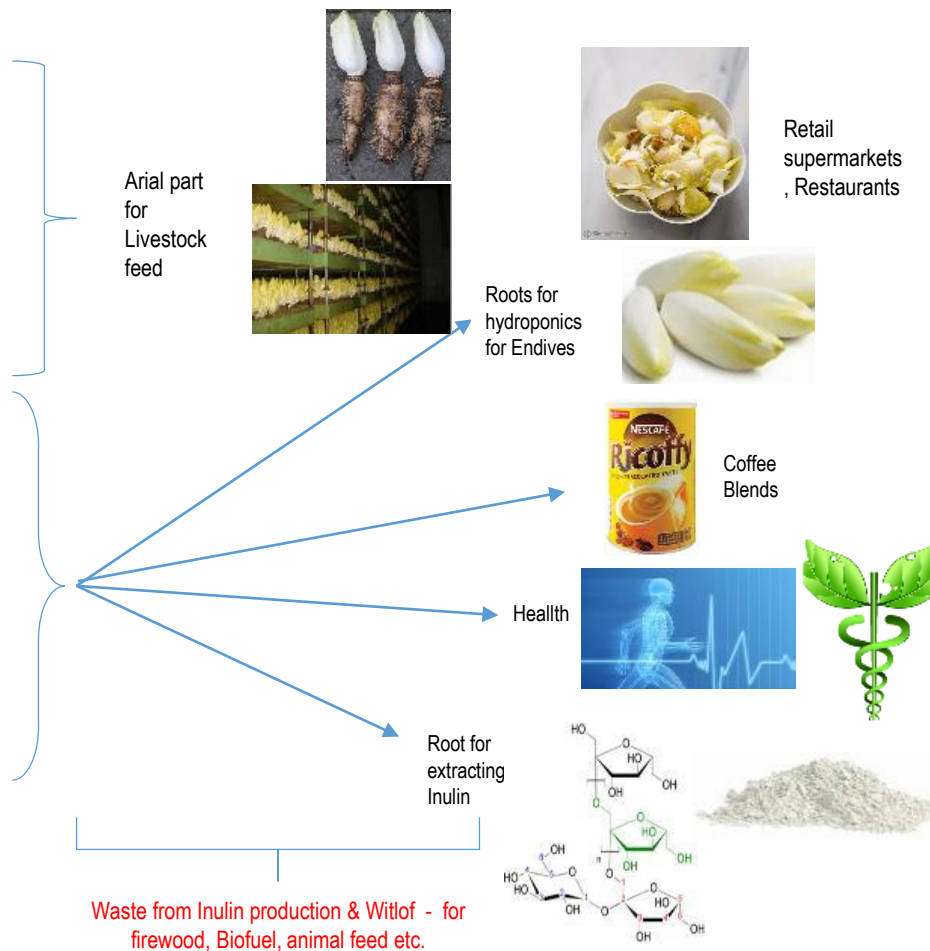


506, 508

# Inulin Extraction Technology

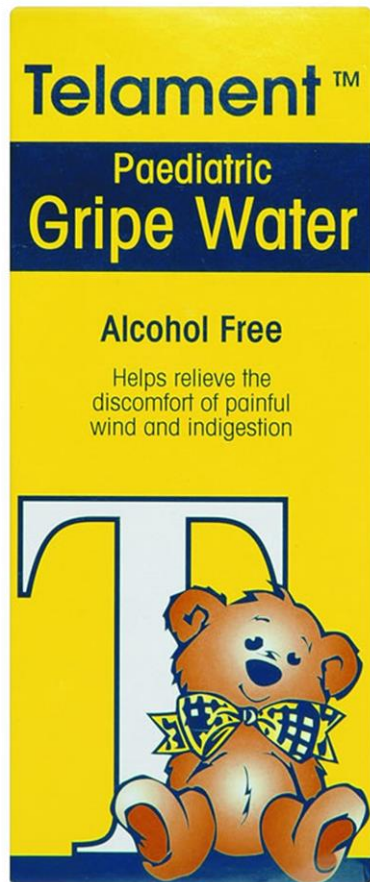


Chicory Plant (*Cichorium intybus*)



# Work done on Telament gripe water , Muthi we Nyoni & MediGrow cannabis products

Analytical method development  
Reformulations  
Stability testing





**“Drinking tea with a purpose”**

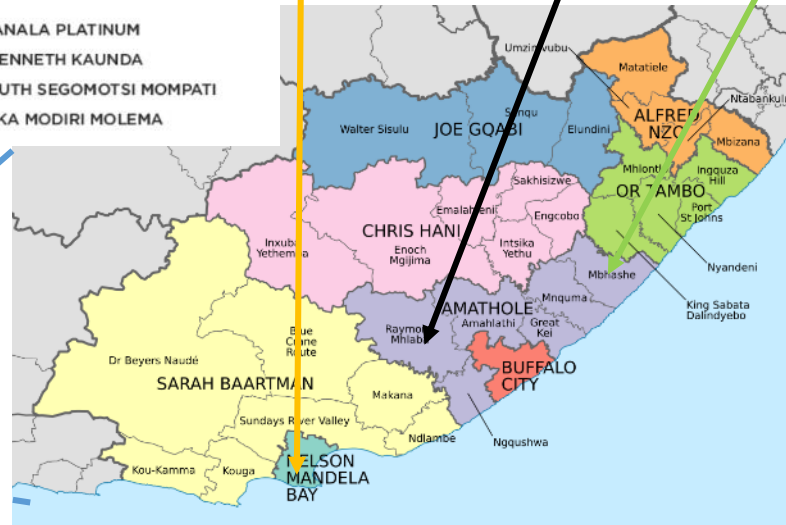
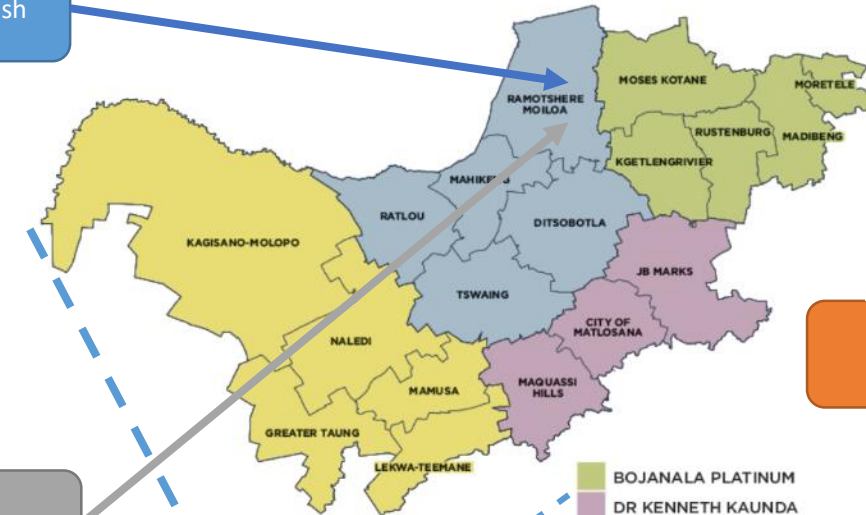
**“Drinking tea for a reason”**

## Geographical Origins of the Infusions / Teas plant knowledge

Mokgola:  
Resurrection bush  
Moologa



Lekubu:  
Mosukujane



Uitenhage:  
Iti ye Hlathi



Krwakrwa:  
Zinibar  
Gancair



Ntshatshongo:  
Haw Haw



# Eastern Cape Province: Krwa Krwa



Uncompromising to good peer-reviewed science while upholding principles of humanness, Ubuntu, continuous research, development and innovativeness.

# Eastern cape Province: Krwa Krwa



Uncompromising to good peer-reviewed science while upholding principles of humanness, Ubuntu, continuous research, development and innovativeness.

# Eastern Cape Province: Uitenhage



Uncompromising to good peer-reviewed science while upholding principles of humanness, Ubuntu, continuous research, development and innovativeness.

# Eastern Cape Province: Ntshatshongo



Uncompromising to good peer-reviewed science while upholding principles of humanness, Ubuntu, continuous research, development and innovativeness.



Uncompromising to good peer-reviewed science while upholding principles of humanness, Ubuntu, continuous research, development and innovativeness.

# North West: Mokgola

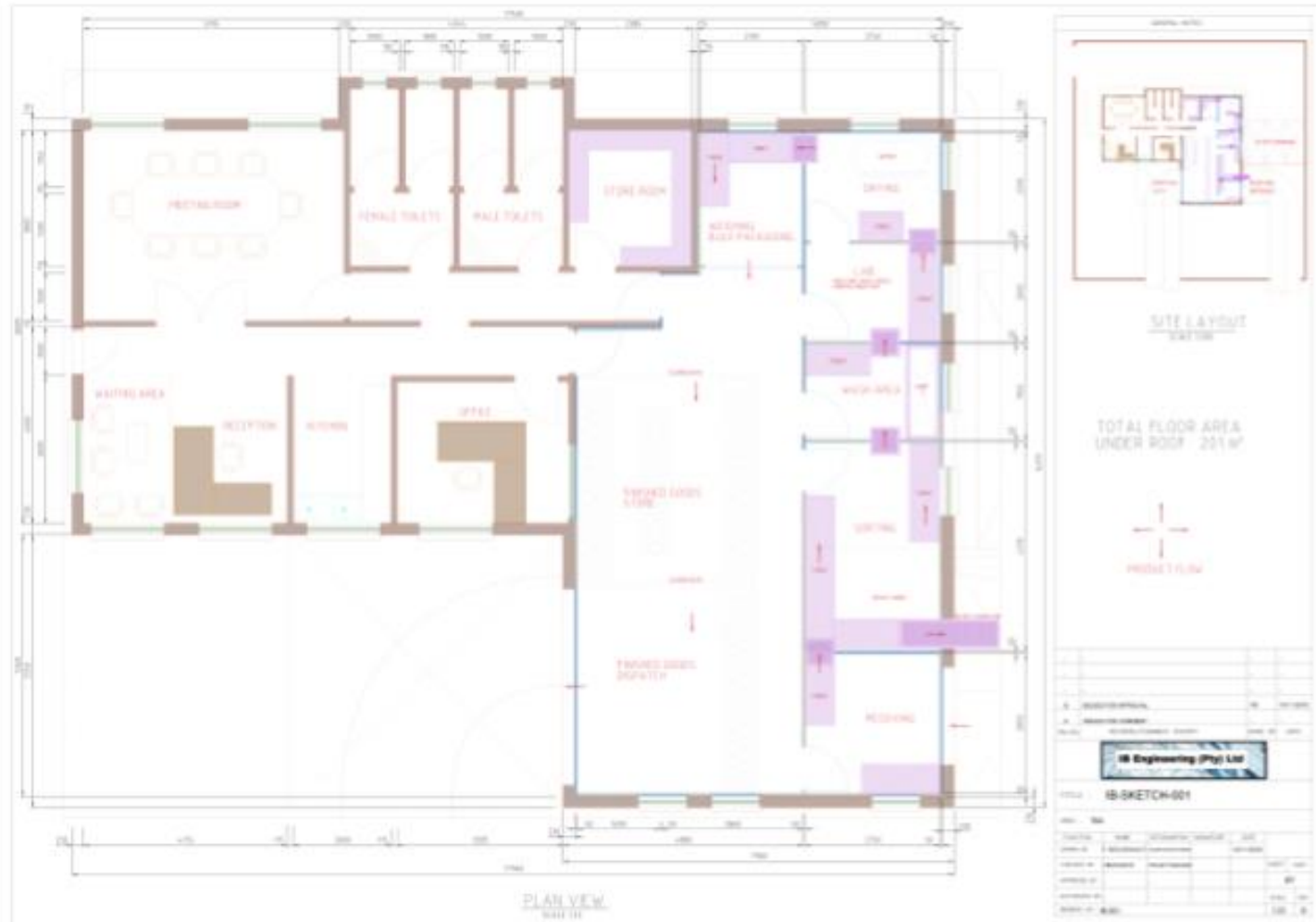


Uncompromising to good peer-reviewed science while upholding principles of humanness, Ubuntu, continuous research, development and innovativeness.



Uncompromising to good peer-reviewed science while upholding principles of humanness, Ubuntu, continuous research, development and innovativeness.

# COMMUNITY POST HARVESTING FACILITY

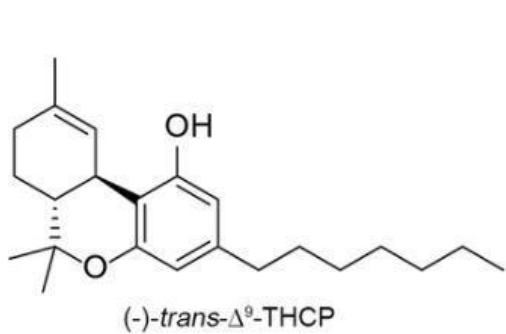




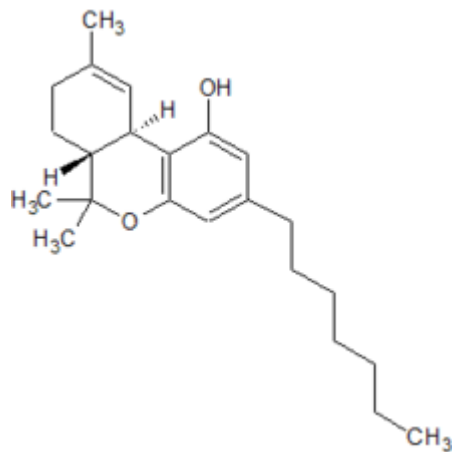
MEDIGRASS

SUPPLEMENT

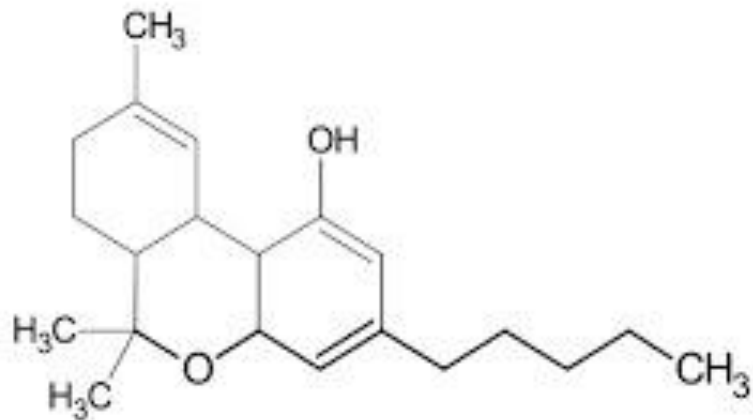
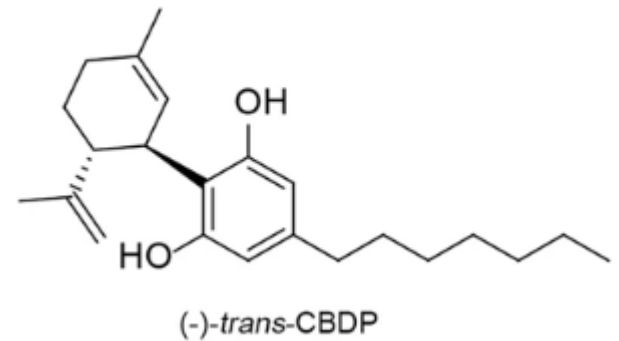
# New Cannabinoids



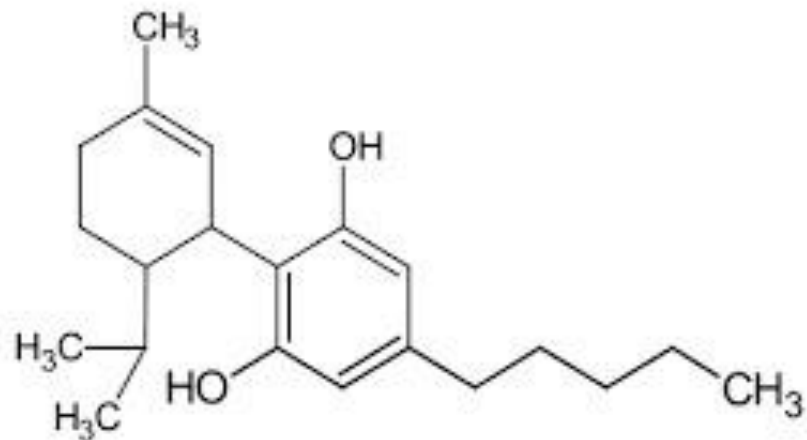
$\Delta^9$ -Tetrahydrocannabiphorol (THCP)



Cannabidiphorol (CBDP)



Tetrahydrocannabinol (THC)



Cannabidiol (CBD)

# I- MEDIGRASS Prototypes



**OINTMENT**



**SPRAY**



# MEDIGRASS PROTOTYPE



## SUPPLEMENTS



## CREAM



# MEDIGRASS PROTOTYPE



## OILS



# MEDIGRASS PROTOTYPE



## TRANSDERMAL PATCHES





# SUPPLEMENTS





# I - SUPPLEMENTS



## IK-Based Technology Innovation Programme

African Natural Medicines Platform

IK-Based Cosmeceuticals Platform

IK-Based Nutraceuticals Platform

IK-Based Health Infusions Platform

Technology Transfer (Incubation) Platform

Commercialisation (Entrepreneurship) Platform

# Background to ATM Flagship: Core Group

UNIVERSITY OF THE  
FREE STATE  
UNIVERSITEIT VAN DIE  
VRYSTAAT  
YUNIVESITHI YA  
FREISTATA



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

Denkleiers • Leading Minds • Dikgopolo tša Dihlalefi

# Knowledge Holder Training Program

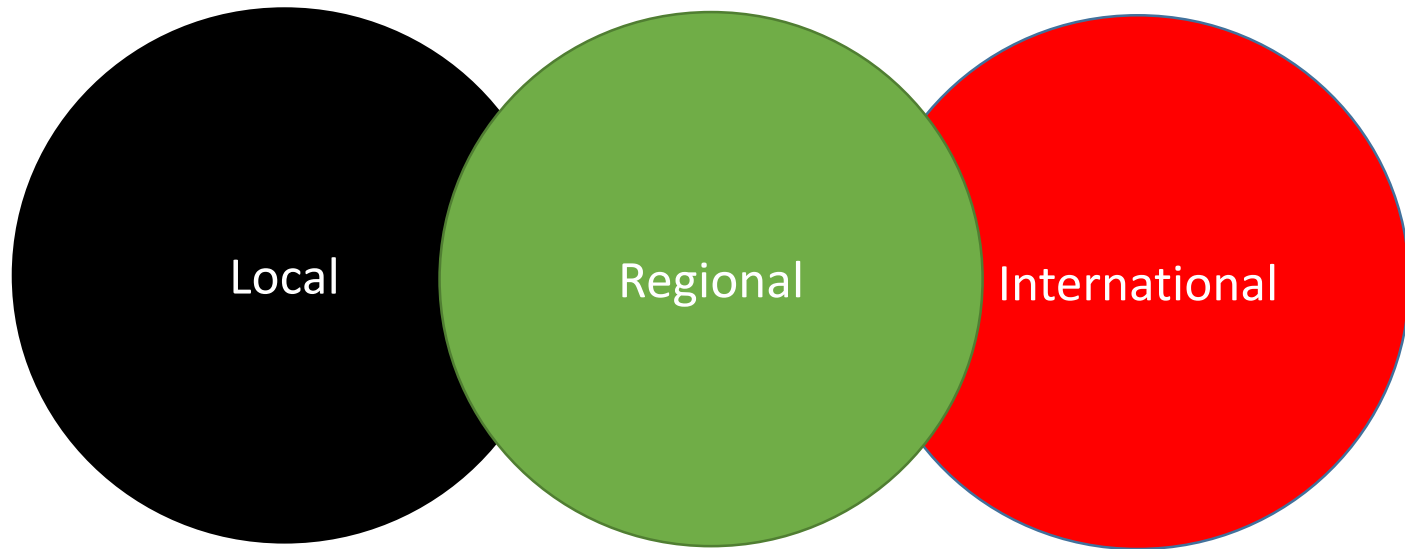
## Scientific Development of Indigenous Teas Project Workshop



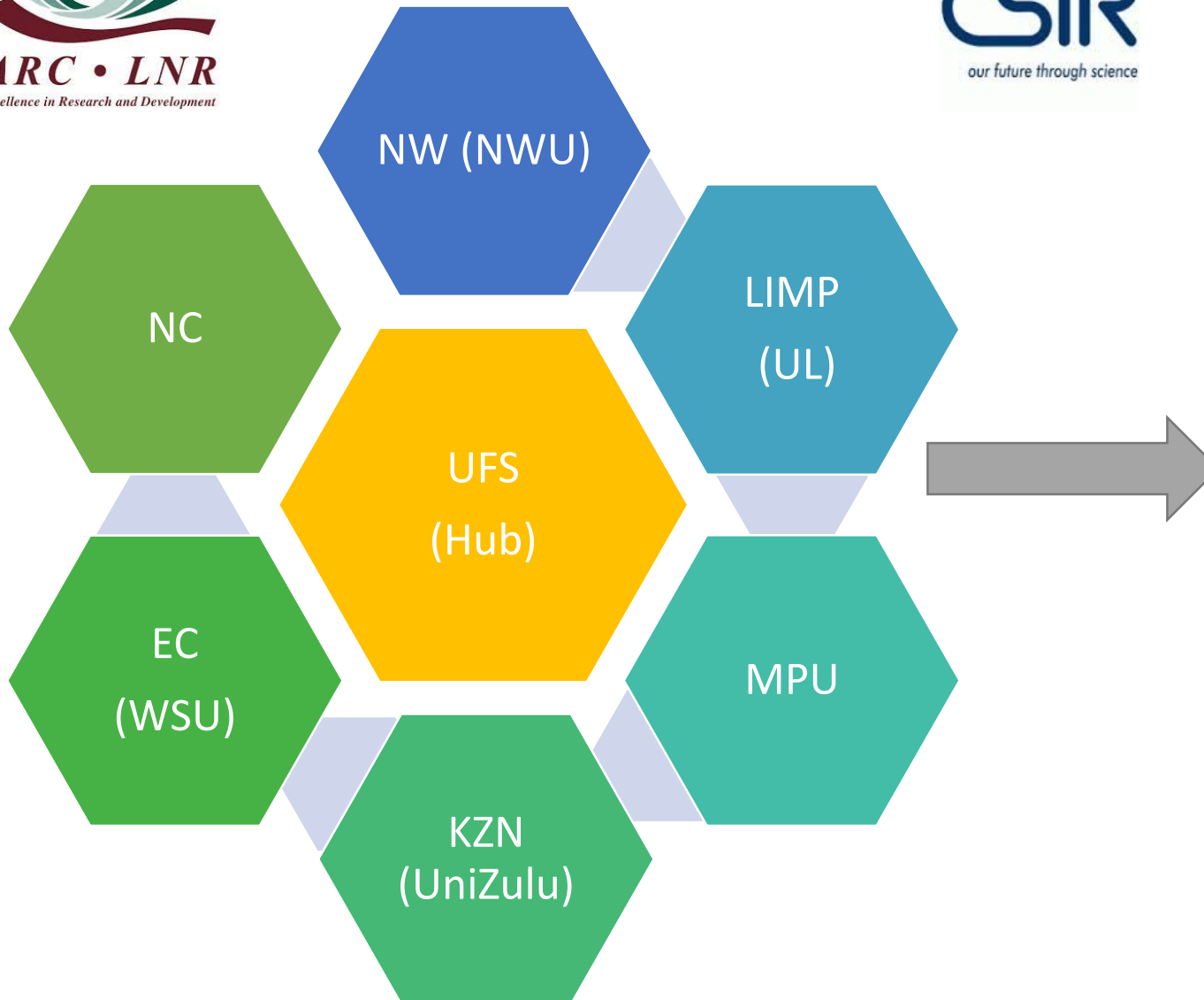
# HUMAN CAPITAL DEVELOPMENT: Communities



# MARKETS CREATED



# UFS Model for IKS Institute / Platform



Agriparks

Smart Villages

Tech transfer

Skills transfer

Confidence building

Land acquisition

SMMEs

Wealth creation

Improved  
infrastructure

Jobs

HCD

Entrepreneurs

# Conclusion & Recommendations

**DSI** - Coordination on right track but can be improved

**Unlock bottlenecks**

Develop biocultural protocols on working  
with communities

**Business model to commercialize** - Need to assist IK Holders / THPs to organize themselves

**Community development??**  
( They need support)

**Equipment & Facilities:** Funding for modern R&D Equipment & Facilities (GLP, GMP manufacturing and testing facilities)

# Thank You

Innovations inspired by iconic indigenous  
botanicals and Indigenous knowledge  
through good continuous Science

