

[Prof Lise Korsten]

[Co-Director NRF DSI Centre of Excellence Food Security]

[University of Pretoria]

**“DIVERSE AGROECOLOGY
PRACTICES/PERSPECTIVES AND
INTEGRATION INTO AGRICULTURAL
PRODUCTION”.**

Panel 1 – Reflecting on the past



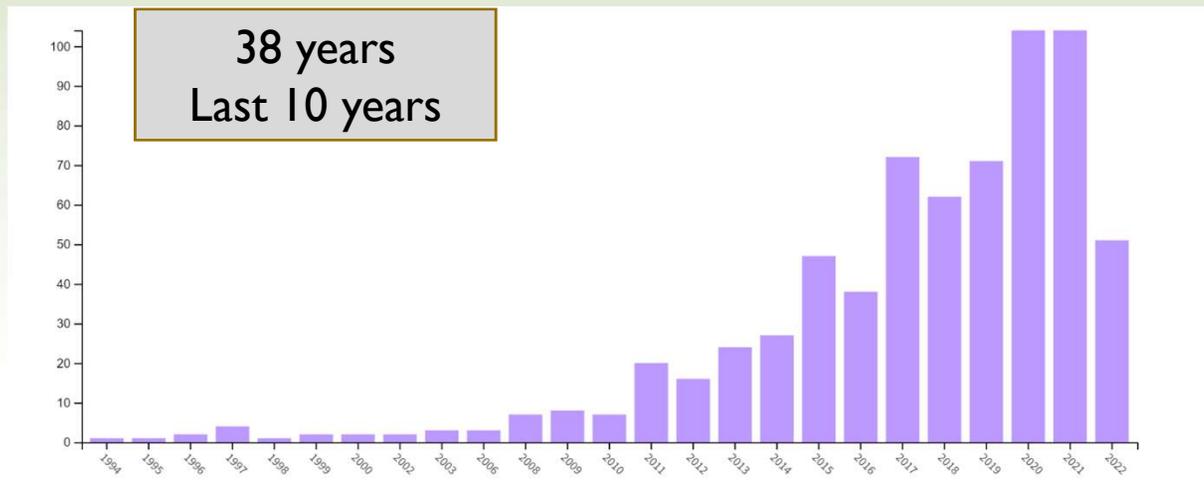
Agroecology

- “a holistic and integrated approach that simultaneously applies **ecological** and **social** concepts and principles to the **design** and **management** of sustainable agriculture and food systems” (FAO Knowledge Hub).



Historic perspective

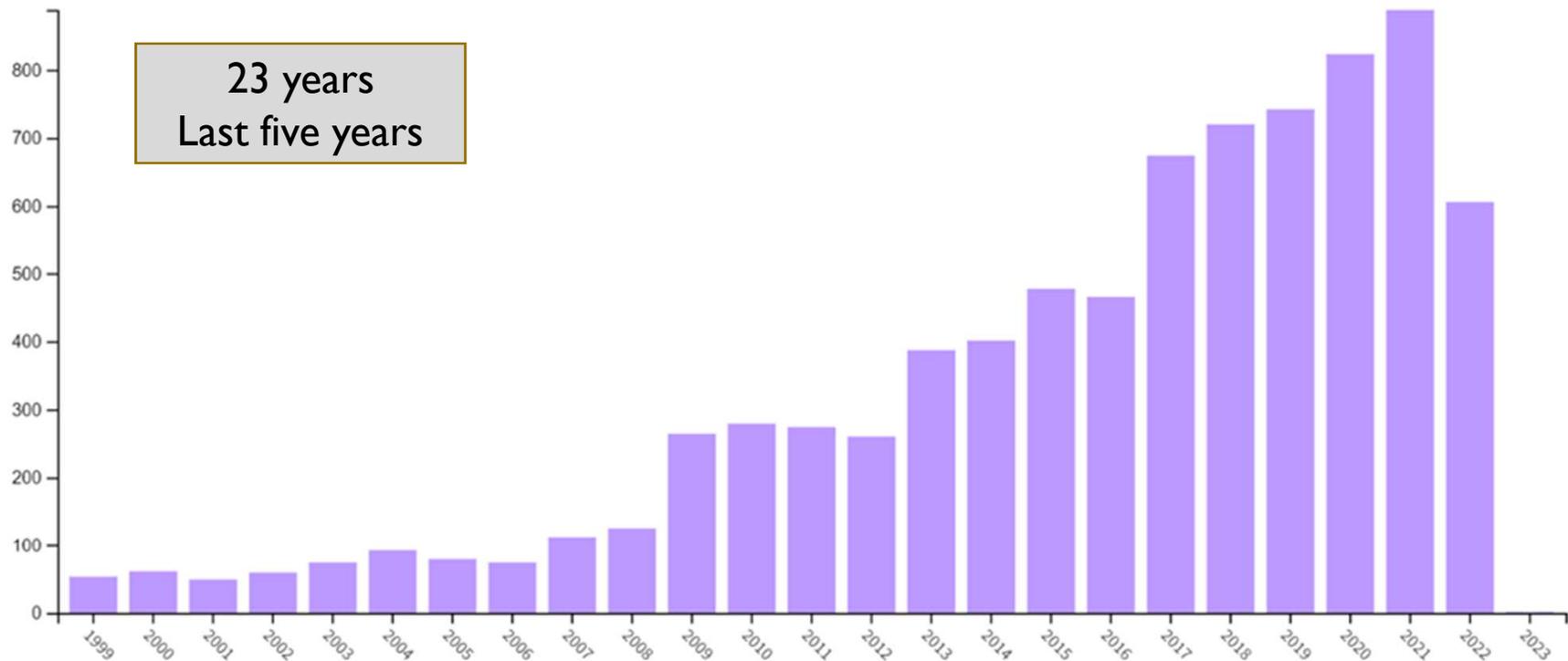
- Term first used in 1928 by US agronomist Basil Bensing (Agroecological characteristics description and classification of the local corn varieties chorotypes).
- The idea grew progressively during the 1960-70-80s and was globally adopted 1990-2000.
- 695 publications (Web of science collection 1956-2022).



agroecology since 1994-2022 (Source Web of Science Collection).

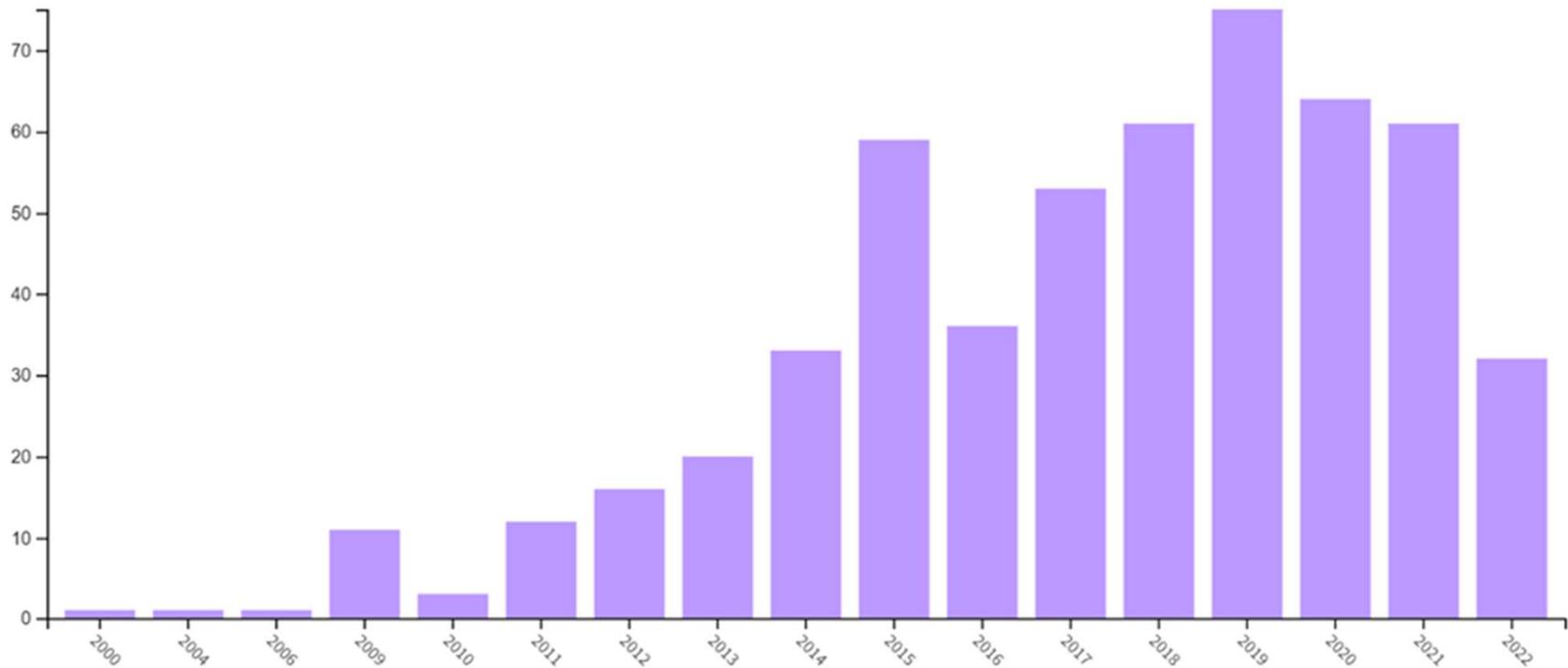
Food Security

- 8494 publications (Web of science collection 1970-2022).



food security since 1999-2022 (Source Web of Science Collection).

Food Sovereignty



2000 – 12 year profile
2015 increasing

539 publications food sovereignty since 2000-2022 (Source Web of Science Collection).



Food Sovereignty

Food Sovereignty developed in 1996 at the end of the World Food Summit by NGO and Civil Society Organizations (CSO)

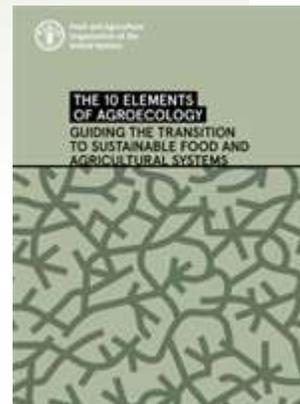
“[it is] the ability of states and peoples to exercise the right to define and freely implement policies and strategies regarding food and nutrition with sovereignty, with the aim of achieving food and nutrition security, organizing production, access and food consumption according to the needs of their populations, giving priority to food production by small producers, community and family-based producers, as well as local food consumption.”
CP/doc.4691/12 by the Bolivian Delegation (FAO 2013)

Agroecology concept

- **Launched April 2018:** Second FAO International Symposium on Agroecology
- **FAO Committee on Agriculture (COAG)** at its 26th Session identified Agroecology as a guide to **promote sustainable agriculture and food systems**.
- Following the review, revision, and clearance process through FAO's governing bodies, 10 Elements of Agroecology were approved by the 197 Members to guide **FAO's vision on agroecology** by the 163 session of the Council December **2019**.



Tool for Agroecology Performance Evaluation (TAPE).



AgroecologyLex is a specialized database on different legal frameworks, policies and programmes.

Historical evolution of Agroecology and its principles

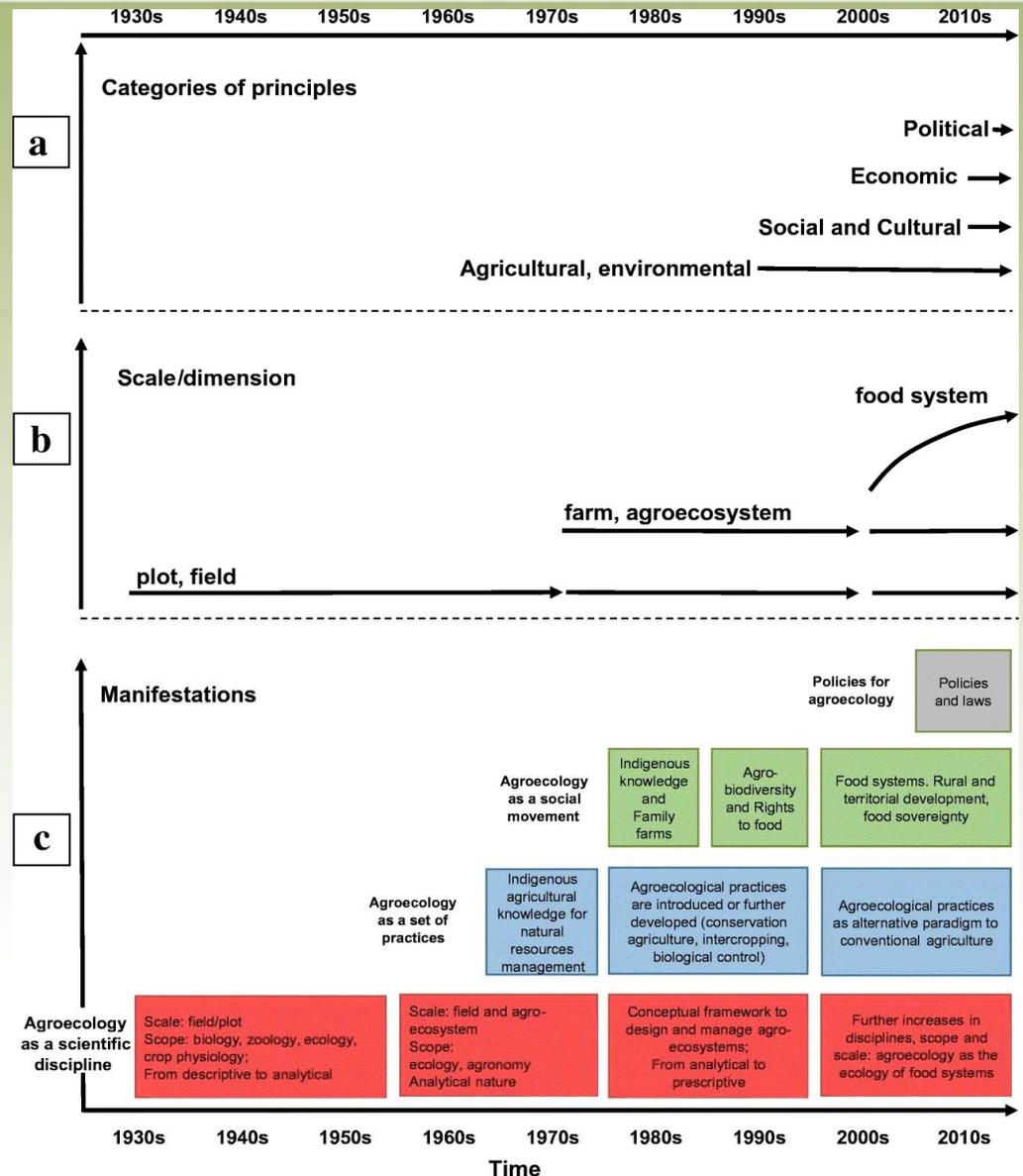
a Disciplinary basis of principles articulated within agroecology.

b Scales (adapted Wezel et al. 2009).

c Aspects, showing the emergence of the three manifestations of agroecology (science, practice and social movement) with key topics and the nature and scope of research (adapted from Silici 2014, based on Wezel et al. 2009)

Note that **indigenous knowledge and practice predate the 1980s** as well as older forms of indigenous agroecology that existed prior to the formal sciences.

Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review © 2022 Springer Nature Switzerland AG.



FAO Portal: Common elements



1. Efficiency

innovative agroecological practices
produce more using less external resources



2. Balance

enhanced **resilience** of people,
communities and ecosystems is key to
sustainable food and agricultural systems



3. Diversity

is key to agroecological transitions to ensure food
security and nutrition while conserving, protecting and
enhancing natural resources



4. Co-creation & Sharing of Knowledge



5. Recycling

production with lower economic
and environmental costs

FAO Portal: Common elements



6. Synergies

enhances key functions across food systems, supporting production and multiple ecosystem services



7. Human and social values

protecting and improving rural livelihoods, equity and social well being



8. Circular economies

Circular **and solidarity** economy: reconnects producers and consumers and provides innovative solutions for living within our **planetary boundaries** while ensuring social foundation inclusive + sustainable development



9. Cultural and food traditions

by supporting healthy, diversified diets, that contributes to food security and nutrition while maintaining the health of ecosystems



10. Land/natural resource, responsible governance



Other dimensions

Agroecology and Sustainable Agriculture

USA, 1990, Congress defined **Sustainable Agriculture** as an “*integrated system of plant and animal production practices having a site-specific application that will, over the long-term: satisfy human food and fiber needs; enhance environmental quality and the natural resource base upon which the agriculture economy depends on; make the most efficient use of nonrenewable resources and integrate, where appropriate, natural biological cycles and controls; sustain the economic viability of farm operations; and enhance the quality of life for farmers and society...*”

Food, Agriculture, Conservation and Trade Act of 1990.

Centre for Environmental Farming Systems



NCSU | NCA&T | NCDA&CS



Amazing Grazing

NC Farm to Early Care and Education - Affiliations



Pasture-Based Dairy Unit

Pasture-Based Beef Unit

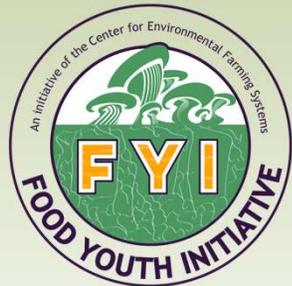
Alternative Swine Unit

Small Farm Unit

Organic Research Unit

Farming Systems Research Unit

Committee on Racial Equity in the Food System



Food Youth Initiative



CEFS Farm to School

NC State
University

ORGANiC

WITHOUT BOUNDARIES

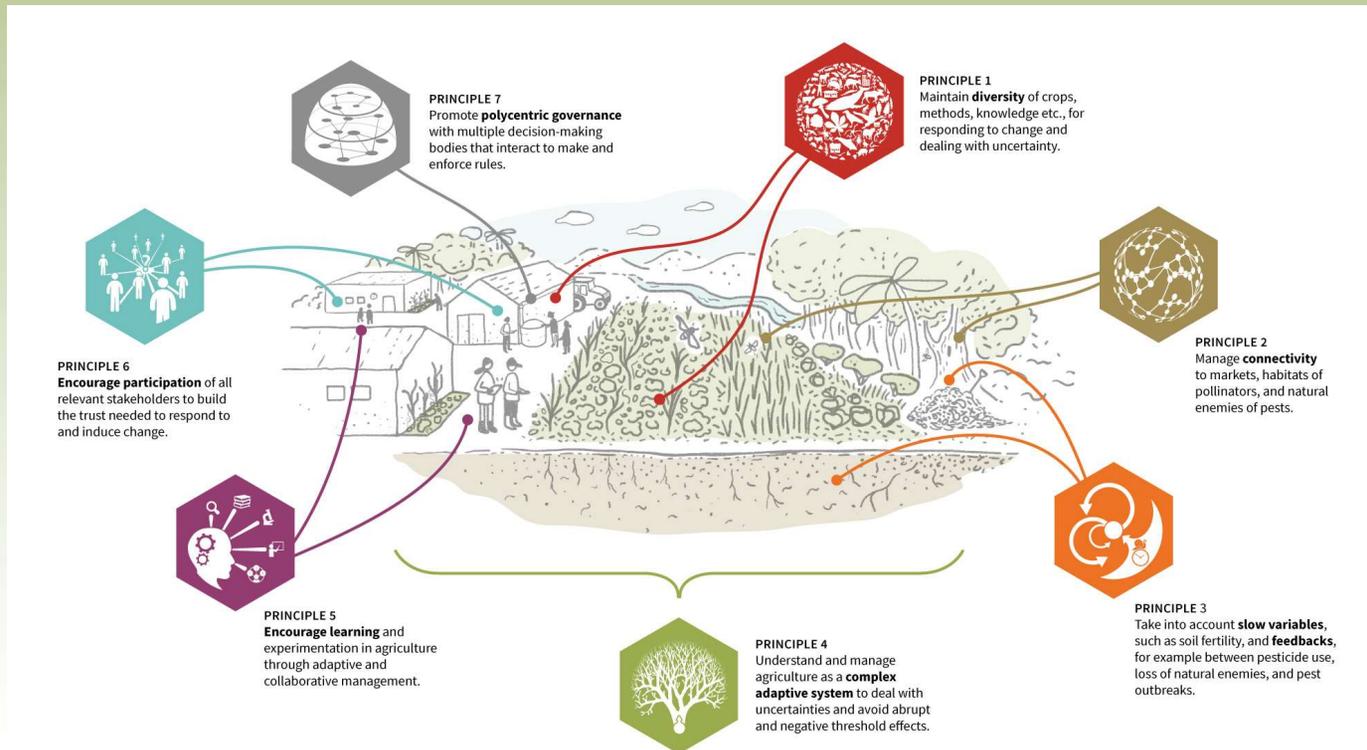


Biodiversity is key for soil health and **fertility, and resilience**. A multitude of organisms inhabit the soil, decomposing organic matter and making nutrients available. Illustration: E. Wikander/Azote

<https://www.organicwithoutboundaries.bio/2018/08/08/agroecological-farmers-rethink/>

Social Justice

- Connecting Agroecology and Resilience Thinking Gonçalves
- Agroecology is all about values such as social justice

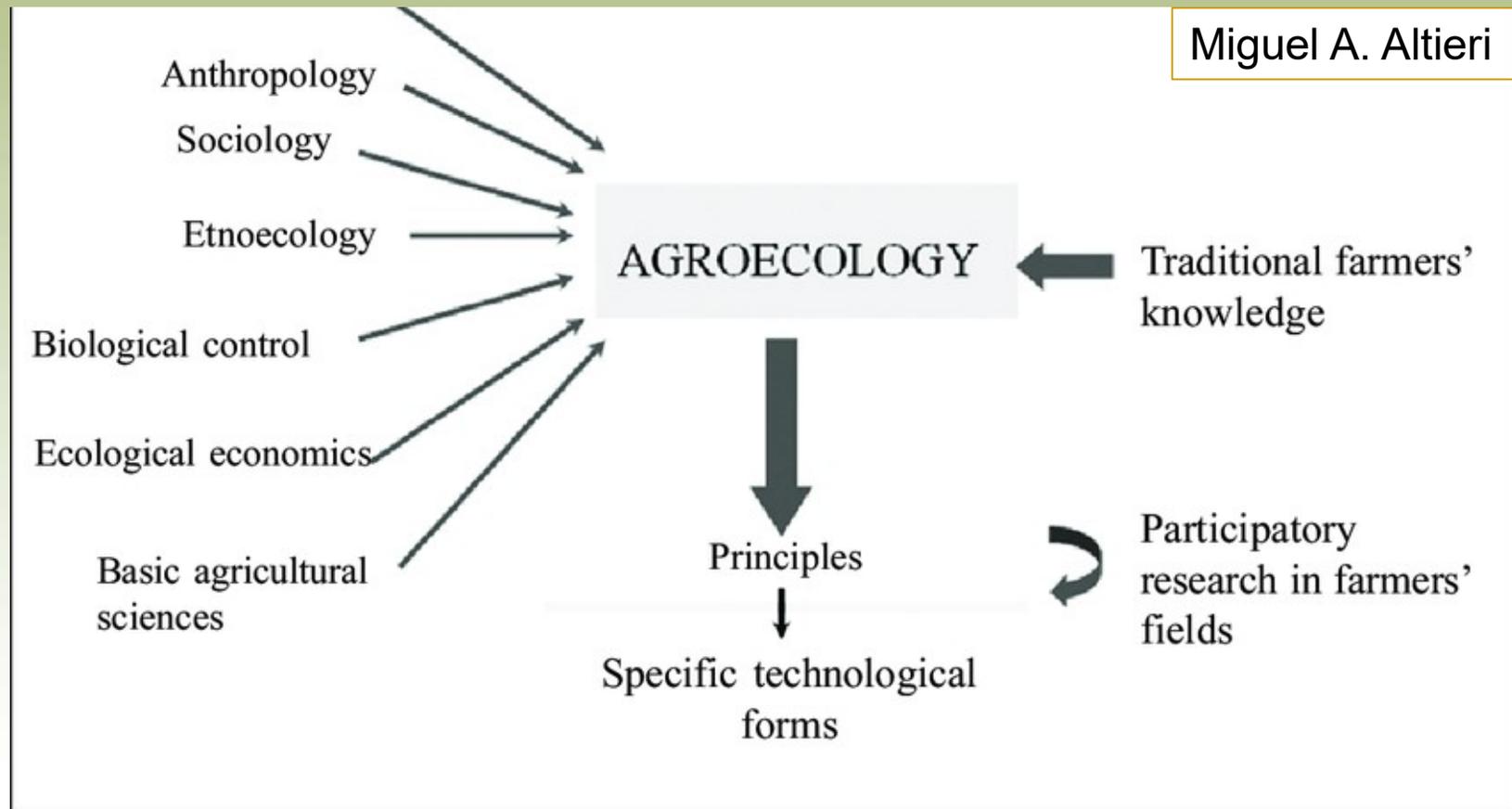


Gonçalves' **seven resilience principles** manifest in practice in agroecological farming:
E. Wikander/Azote

<https://www.organicwithoutboundaries.bio/2018/08/08/agroecological-farmers-rethink/>

Feed the Future USAid

- Agrilinks: Achieving agriculture-led food security



https://www.researchgate.net/figure/Agroecology-combines-elements-of-traditional-farmers-knowledge-with-elements-of-modern_fig1_284158848

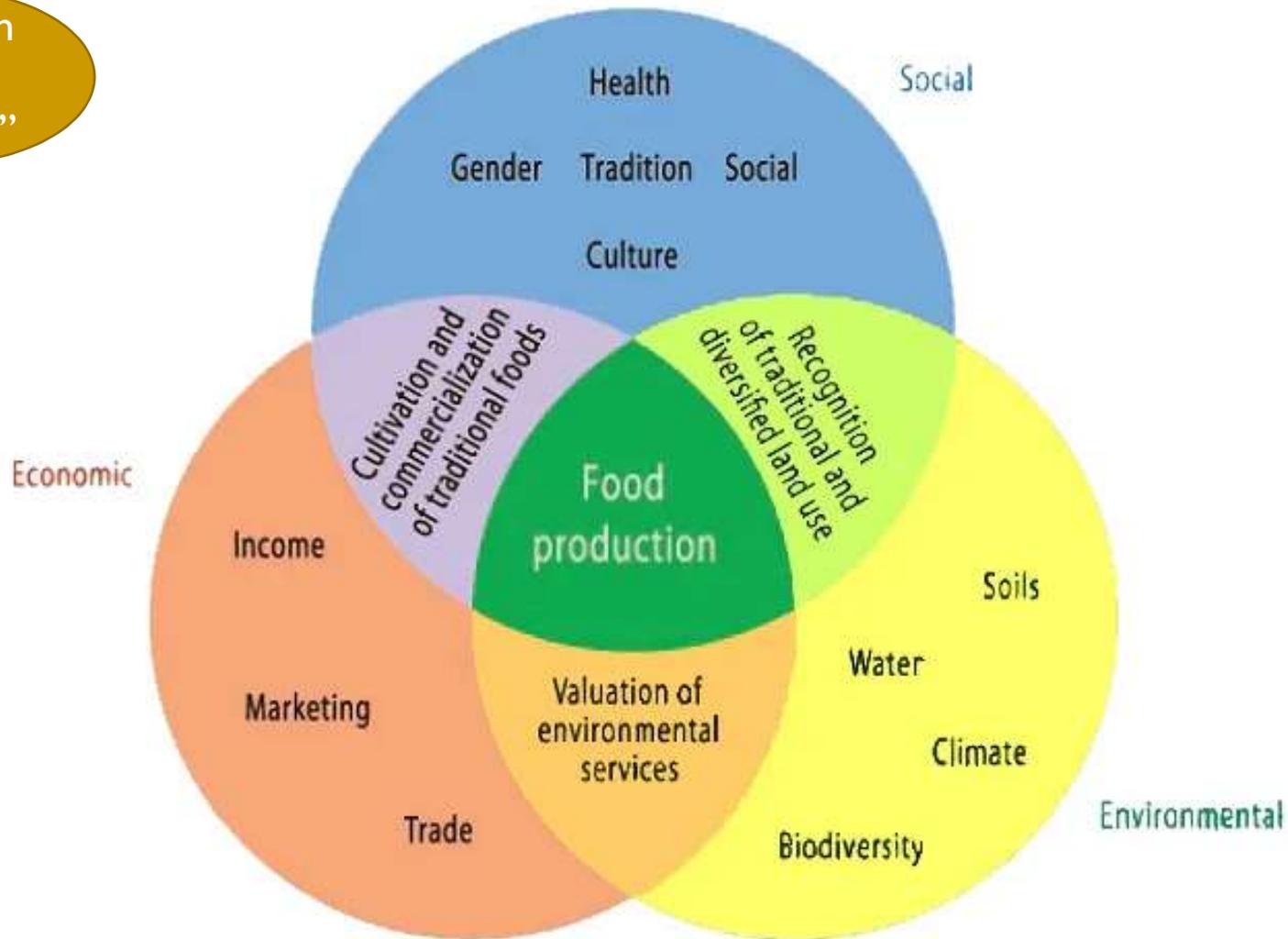
Transitioning toward sustainable, climate and ecosystem-friendly farming and food systems

European Green Deal will transform the EU into a modern, resource-efficient and competitive economy, ensuring:

1. no net emissions of greenhouse gases by 2050
2. economic growth decoupled from resource use
3. no person and no place left behind

A scientific field focused on practices that are sustainable alternatives to mainstream industrial agriculture

Focus on
“Fit for
Purpose”



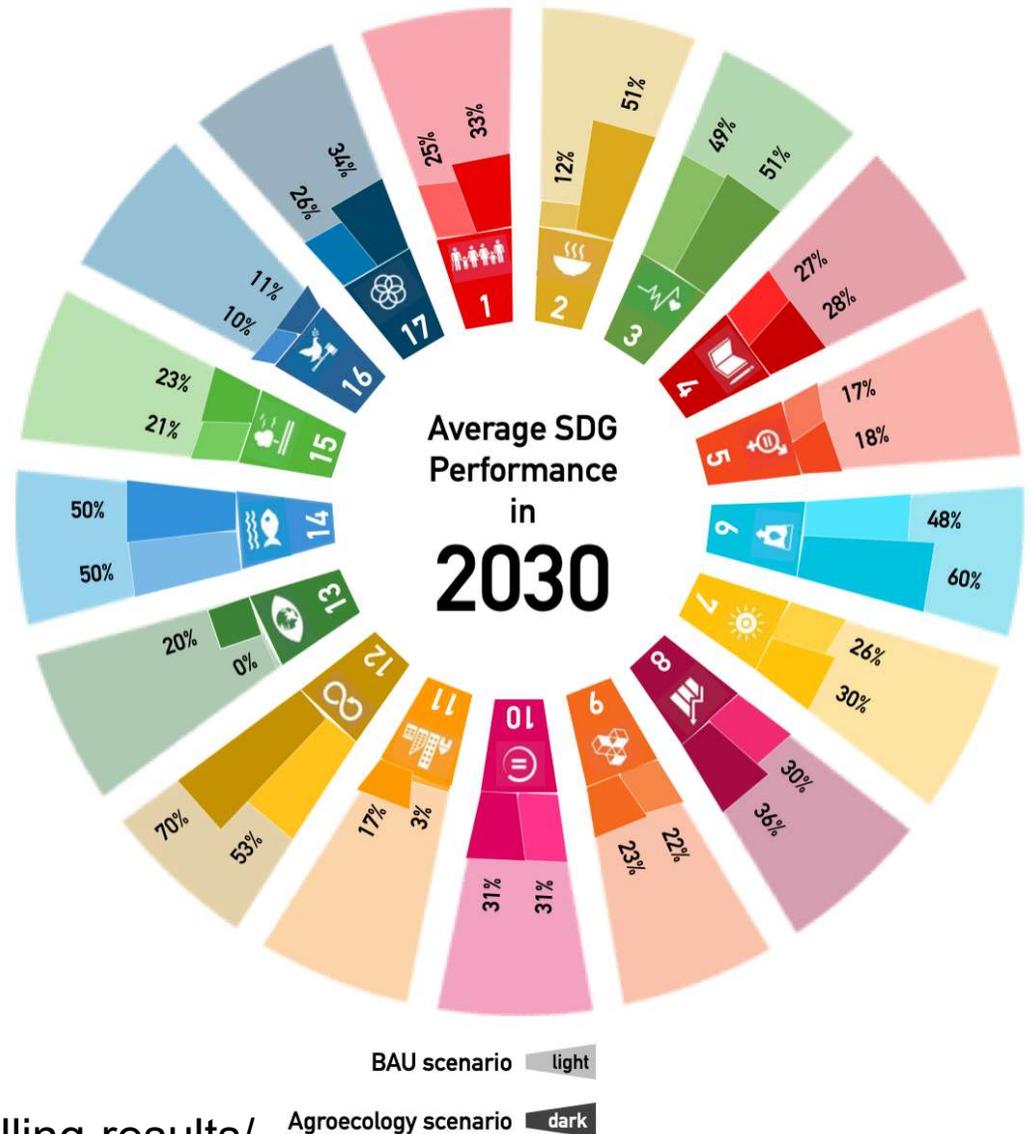
<https://communityfoodforests.com/agroecology/>

Andhra Pradesh's Zero Budget Natural Farming (ZBNF)

Simulation model:

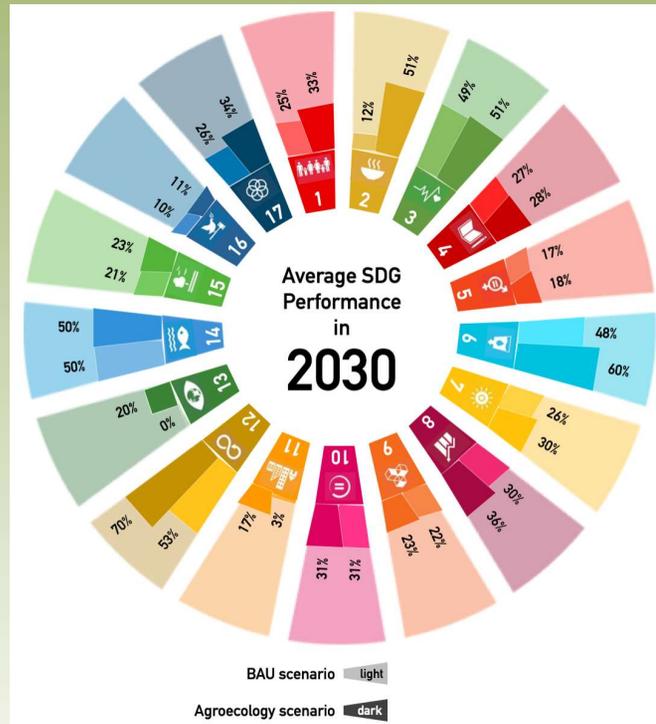
The iSDG simulation analysis led to 8 key findings regarding the assessment of the impact of a set of agroecological interventions for a typical semi-arid African country on the achievement of all SDGs.

Four goals have their performance more than double: in the AE scenario compared to the BAU: SDG 2, 11, 13 and 15.



<https://www.agroecology-pool.org/modelling-results/>

Simulation Models



The Agroecology scenario
AE generates significant improvements in SDG achievement compared to the Business as Usual *BAU* scenario

FAO Agroecology Knowledge Hub - SA

- This review of the agroecology debate in South Africa is part of the research project "Transitions to Agroecological Food Systems: a case for policy support (TAFS)" launched in 2020.

- Stephen Greenberg and Scott Drimie

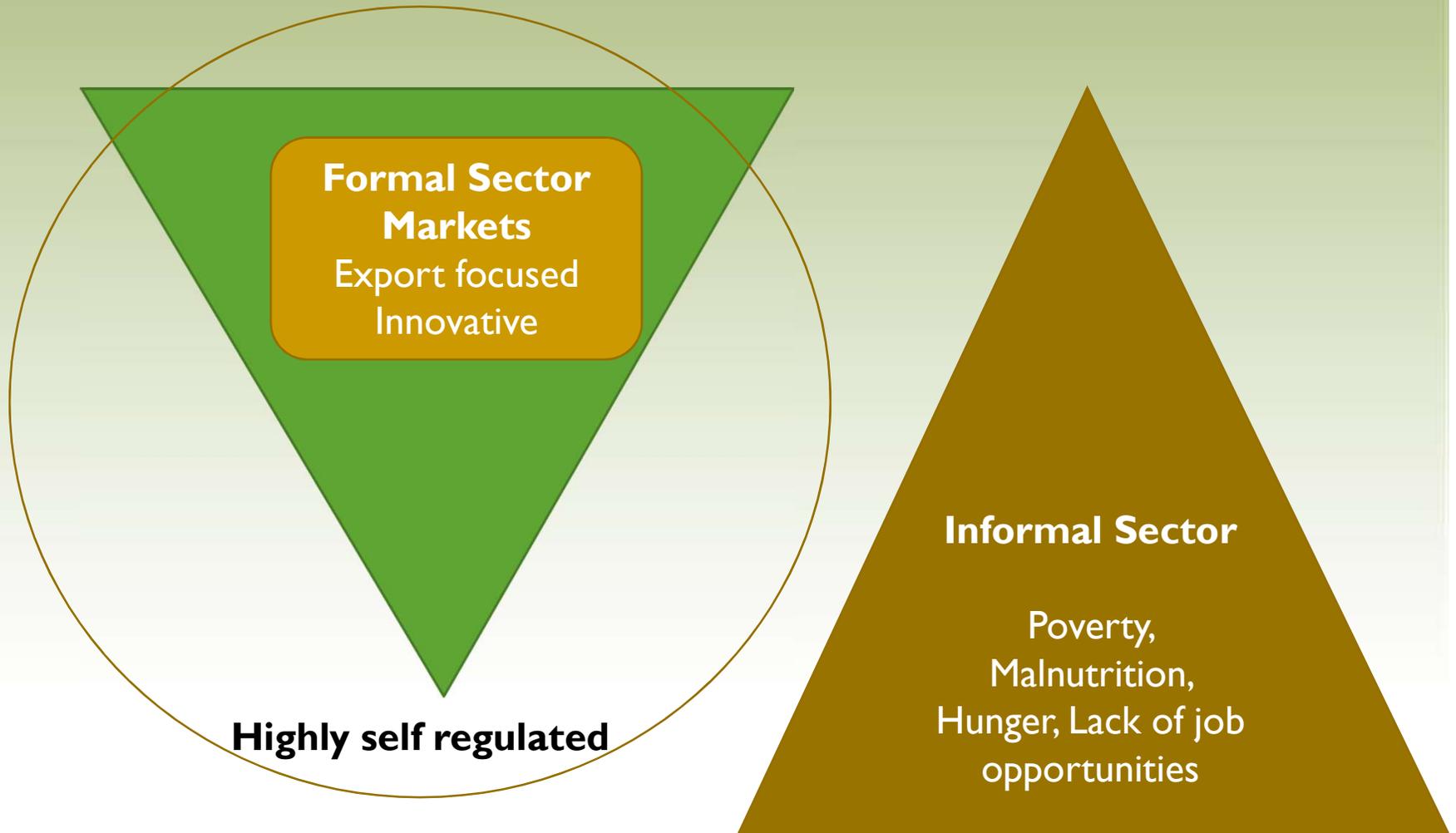


- “A regulatory framework to govern the sector is called for, in order to increase compliance, transparency, traceability and accountability in support of the widespread production of high quality and safe organic products for the local community and export markets”.



SA

Divided we are united we stand



Examples of Extensive studies in SA

- Agroecology for biodiversity, food sovereignty and farmers' rights.
 - We see agroecology as a way to work **towards food sovereignty** where the control of seed and land remains in the hands of farmers, and the land is used in an ecologically sustainable way.
- Exploring farming systems and the role of agroecology in improving food security, productivity and market access for smallholder farmers.

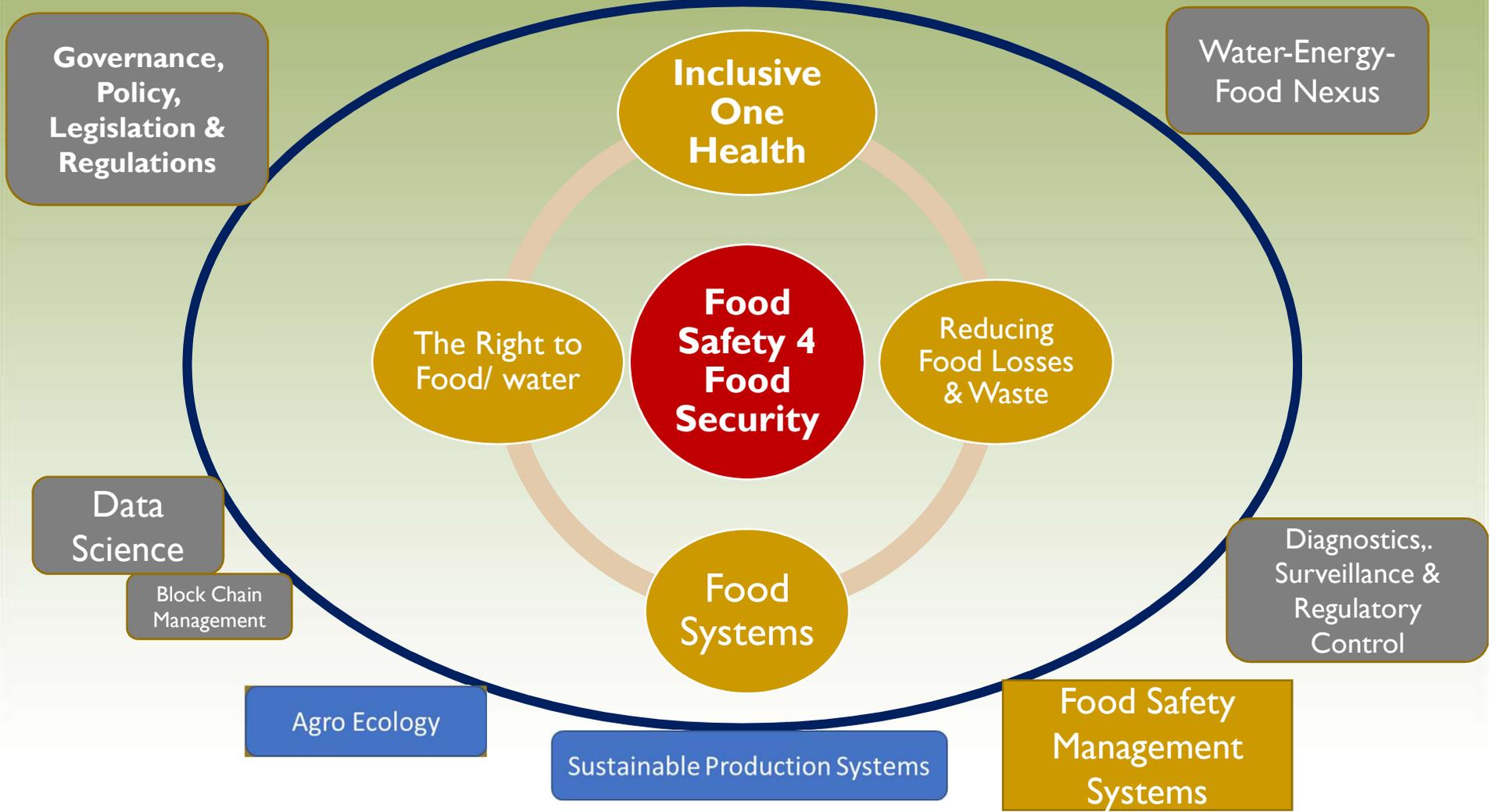


Pretoria University

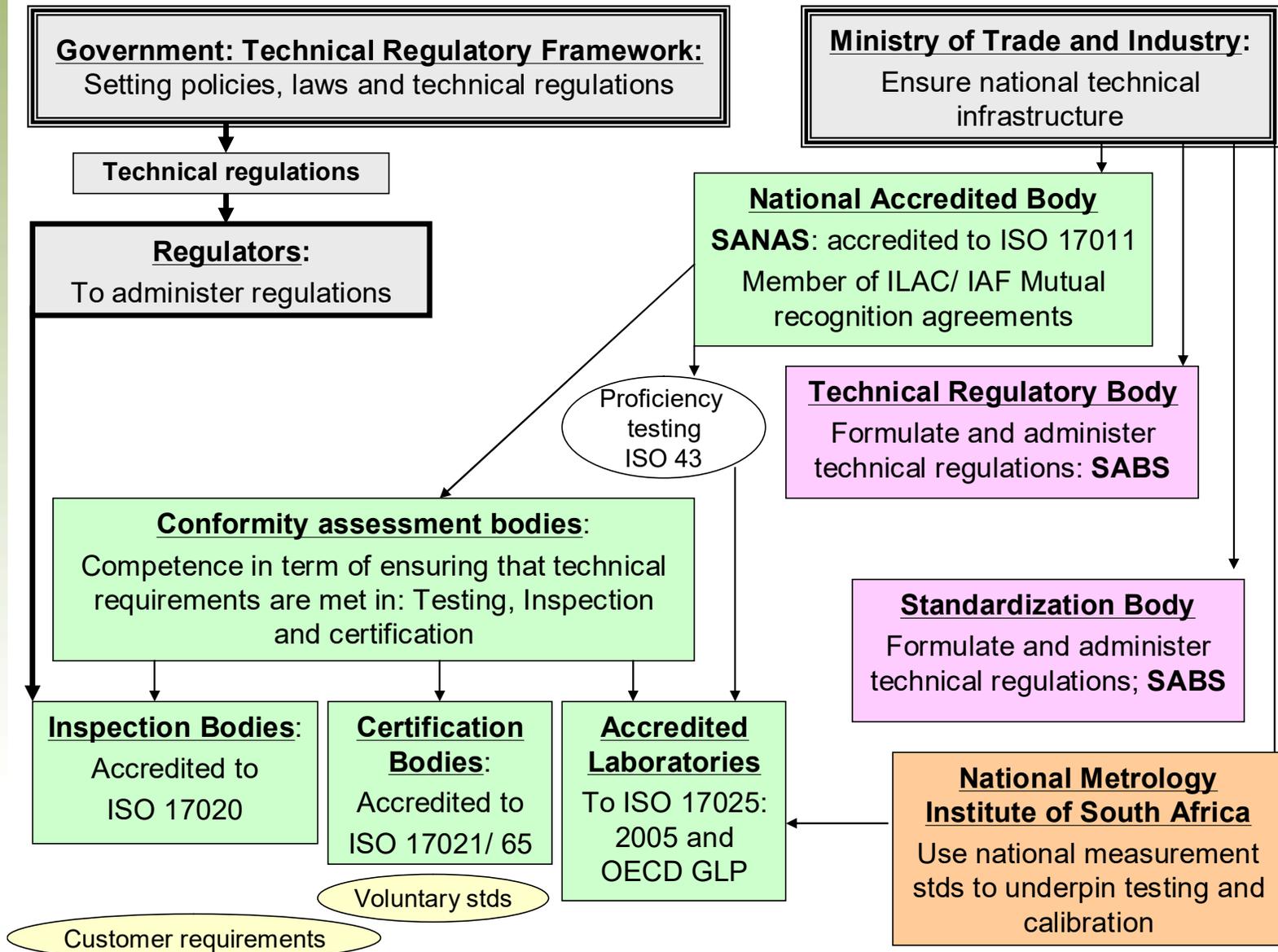
- Food Sovereignty Th!nk Tank (2010)
- DSI/NRF CoE Food Security
- ARUA CoE Sustainable Food Systems
- FSNet
- One Health Platform
- Biosecurity Hub
- DSI Food Security Knowledge Platform



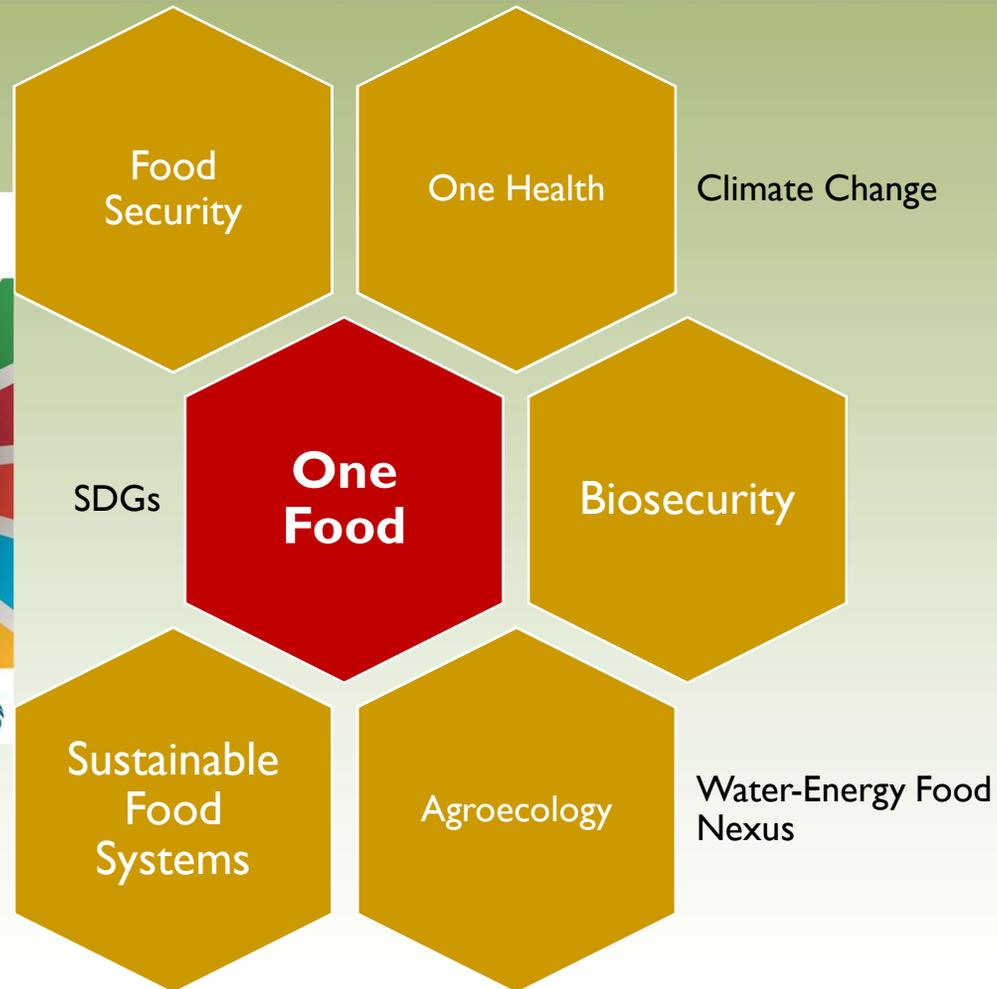
DSI-NRF
Centre of Excellence
in Food Security



Food Control



Transdisciplinary focus



Think Points

- “Feeding a Fragile World”, overcoming pervasive shocks to the global food system
- People Planet Profit

Questions & Answers

