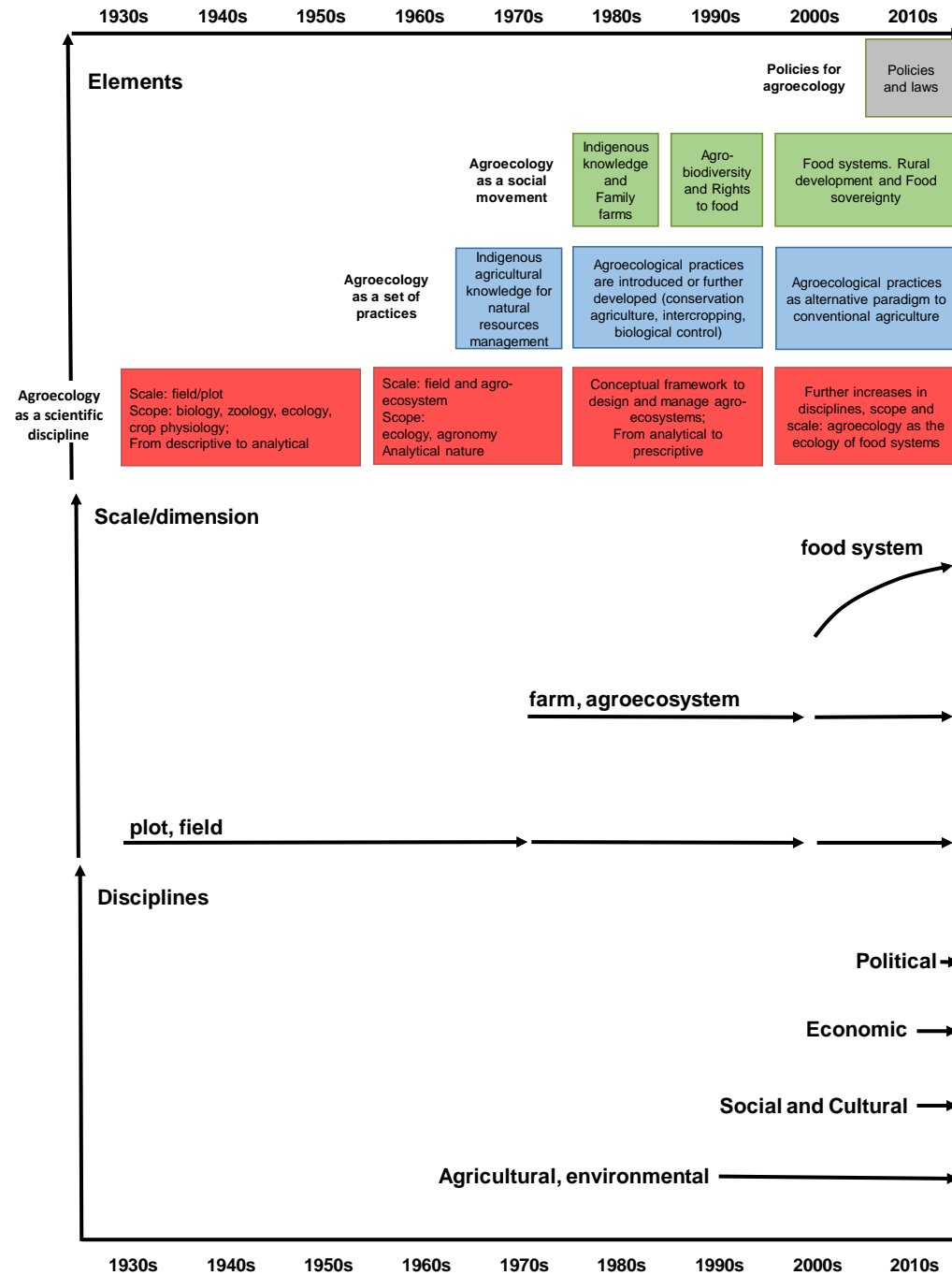


# Evolution of agroecology



**HLPE**  
High Level  
Panel of Experts

Fergus Sinclair (ICRAF)  
Project team leader  
Agroecology and other  
innovations report



Courtesy:  
Alexander Wezel



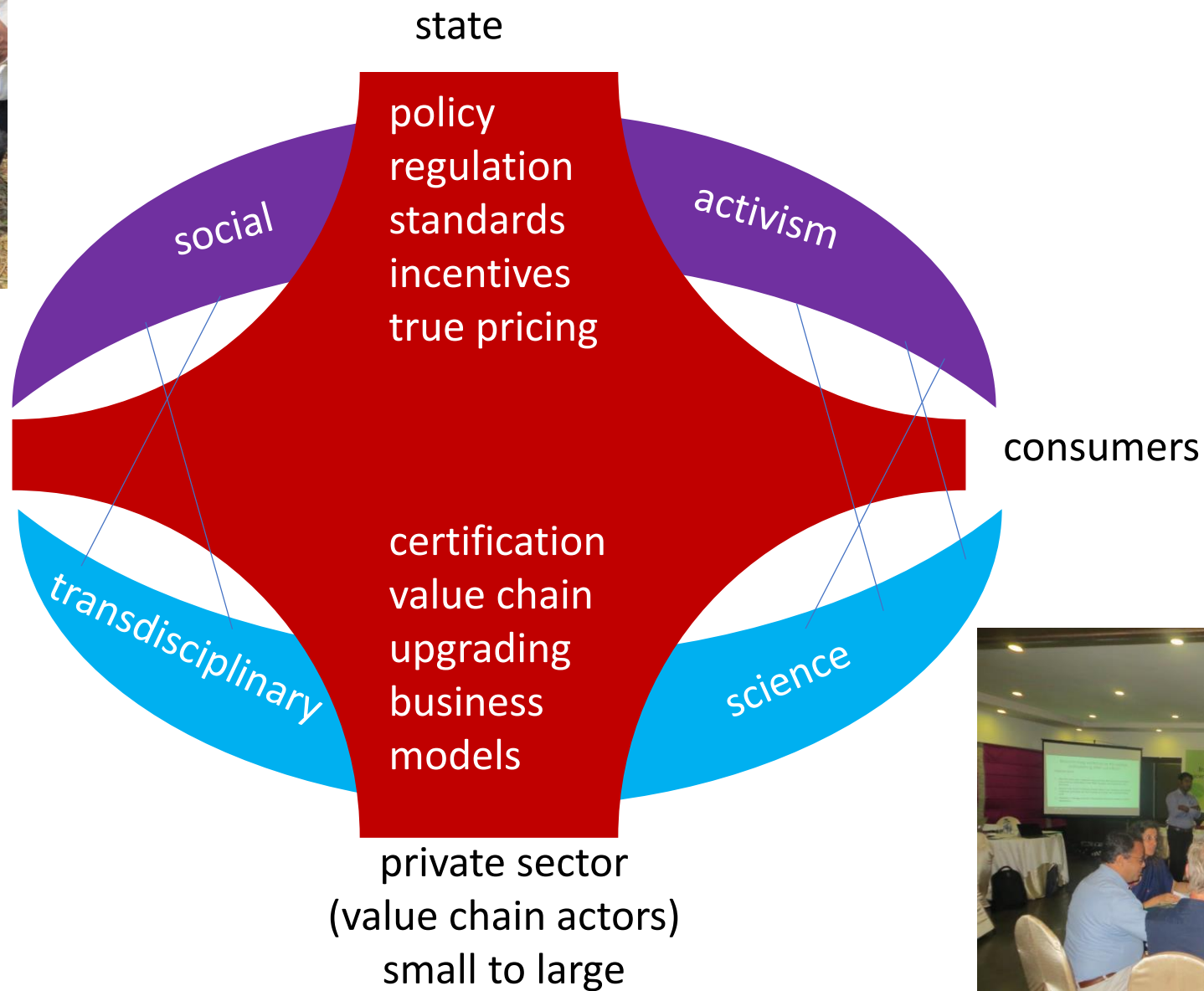
# Agroecological response to fall armyworm outbreak in Africa







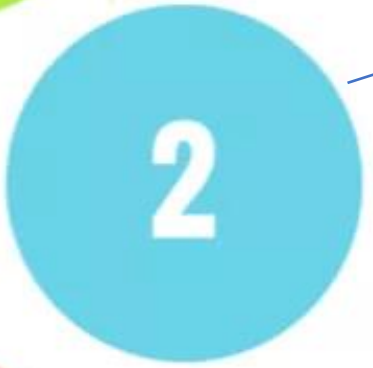
farmers



Wheel Zero  
Land preparation –  
initial (shallow / no)  
tillage, initial  
inoculation



**First Wheel**  
Bijamrita  
(Seed treatment)



**Second Wheel**  
Jiwamrita  
(No fertilizers  
No Pesticides)  
Use of inoculum



**Third Wheel**  
Mulching  
(Soil, straw & live)  
Cover, biomass transfer (+/- incorp)

**Fourth Wheel**  
Waaphasa  
(Soil moisture)

This is part  
of the  
mechanism  
rather than a  
practice?

Appropriate crop  
varieties / densities ?

Nutrients other  
than C & N ?

Animal breed

Root exudates

Microbial diversity

Carbon and nutrient  
dynamics

Crop yield

Carbon  
accumulation

Macrofauna

Crop diversity

Nutrient use  
efficiency and  
budget

**Third Wheel**

Mulching  
(Soil, straw & live)

Cover, biomass transfer (+/- incorp)



Structure

Water holding  
capacity

Water use  
efficiency

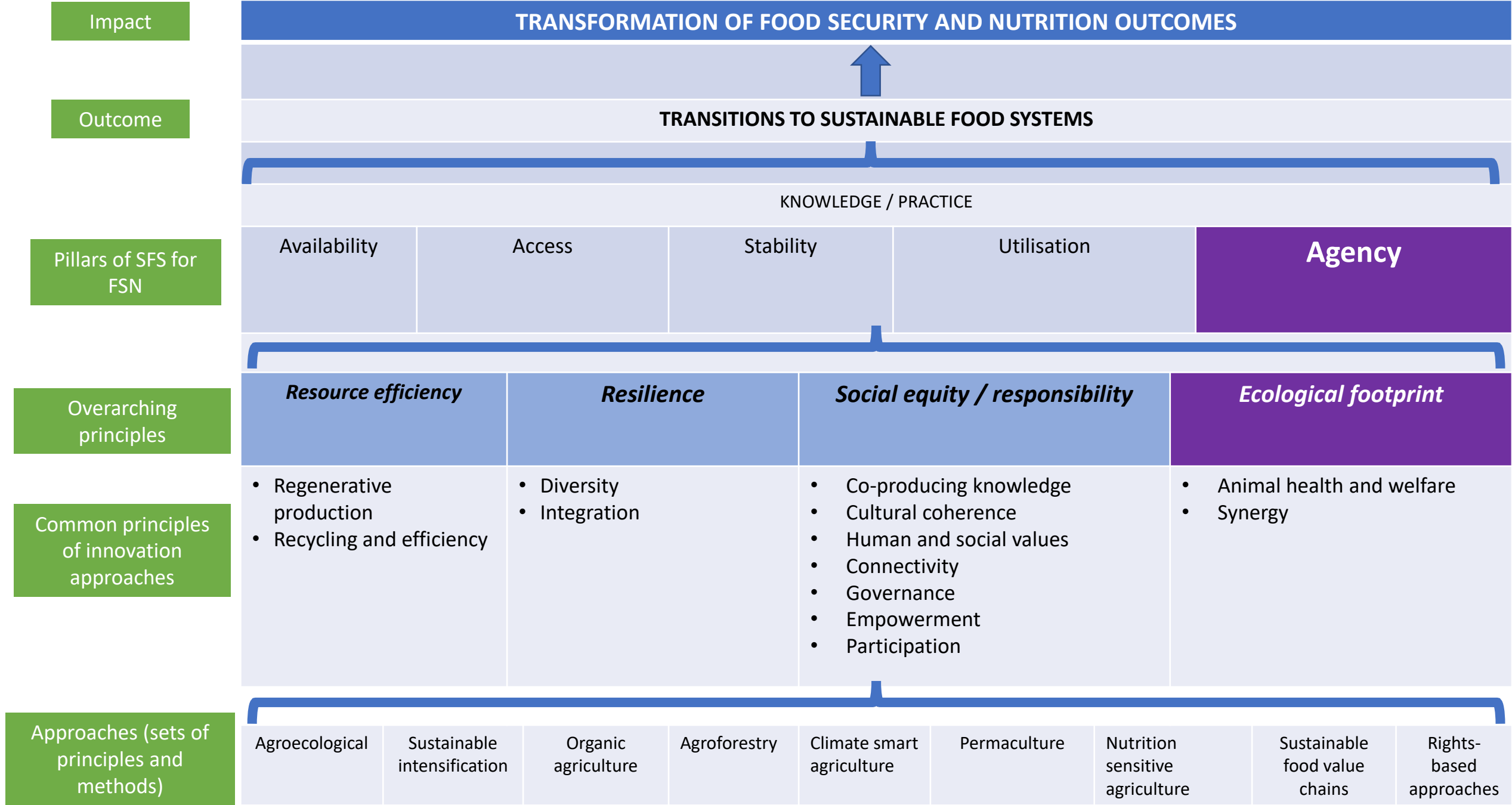
Resilience  
to drought,  
flood, cyclone

Aeration

Atmospheric  
water absorption

N - fixation

rapid humus formation



Impact

**TRANSFORMATION OF FOOD SECURITY AND NUTRITION OUTCOMES**



Outcome

**TRANSITIONS TO SUSTAINABLE FOOD SYSTEMS**

KNOWLEDGE / PRACTICE

**Pillars of SFS for FSN**

Availability

Access

Stability

Utilisation

**Agency**

**Overarching principles**

***Resource efficiency***

***Resilience***

***Social equity / responsibility***

***Ecological footprint***

**Common principles of innovation approaches**

- Regenerative production
- Recycling and efficiency

- Diversity
- Integration

- Co-producing knowledge
- Cultural coherence
- Human and social values
- Connectivity
- Governance
- Empowerment
- Participation

- Animal health and welfare
- Synergy

**Approaches (sets of principles and methods)**

Agroecological

Sustainable intensification

Organic agriculture

Agroforestry

Climate smart agriculture

Permaculture

Nutrition sensitive agriculture

Sustainable food value chains

Rights-based approaches