



# Family farming and agroecology in sub-Saharan Africa: small is beautiful?

P. Girard<sup>1</sup>, S. Mercandalli<sup>1</sup>, D. Berre<sup>2</sup>, B. Dedieu<sup>3</sup>, A. Thomson<sup>4</sup>

(1) CIRAD, UMR ART-Dev, Montpellier

(2) CIRAD, UR AIDA, Montpellier

(3) INRAE, Clermont-Ferrand

(4), Stat4SD, Londres

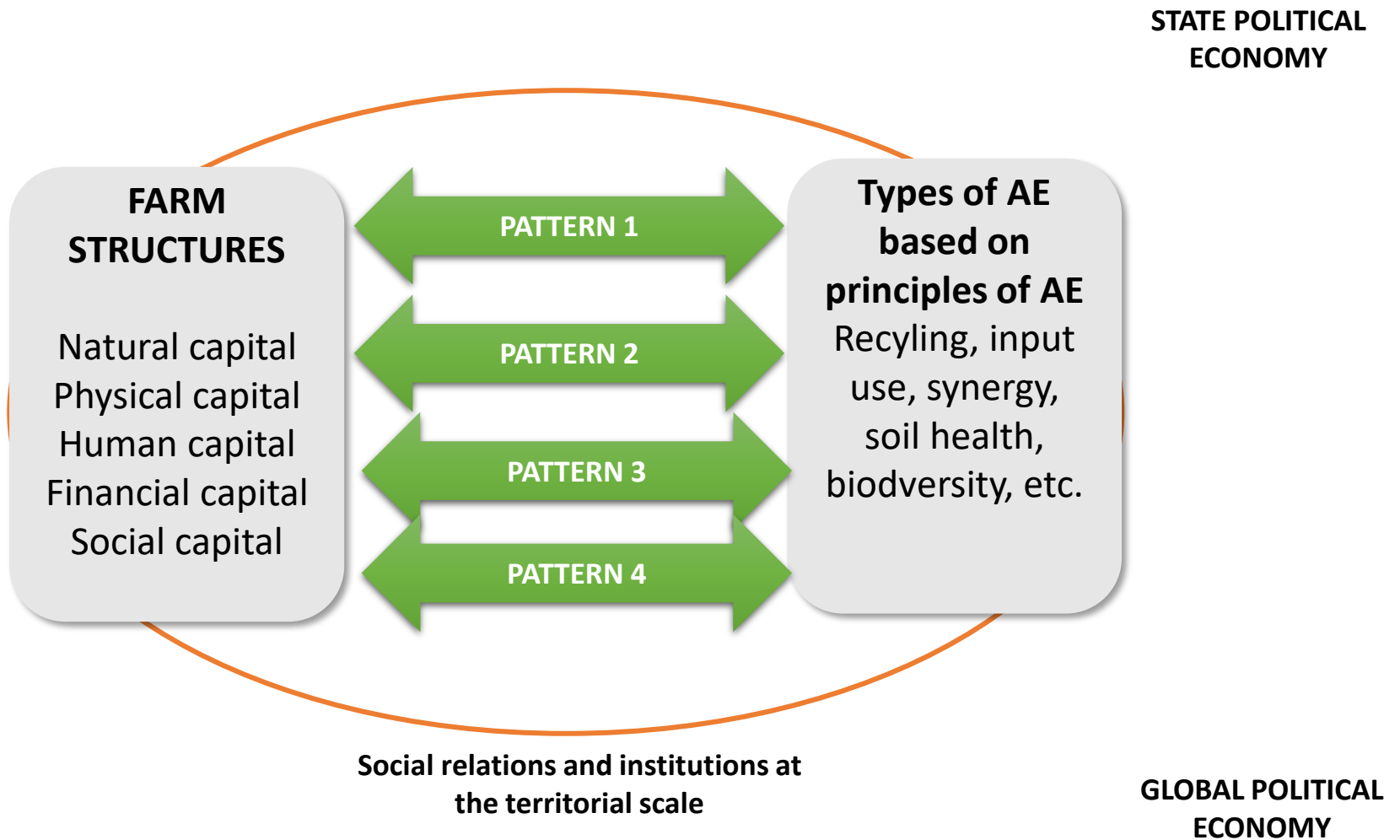
# Introduction

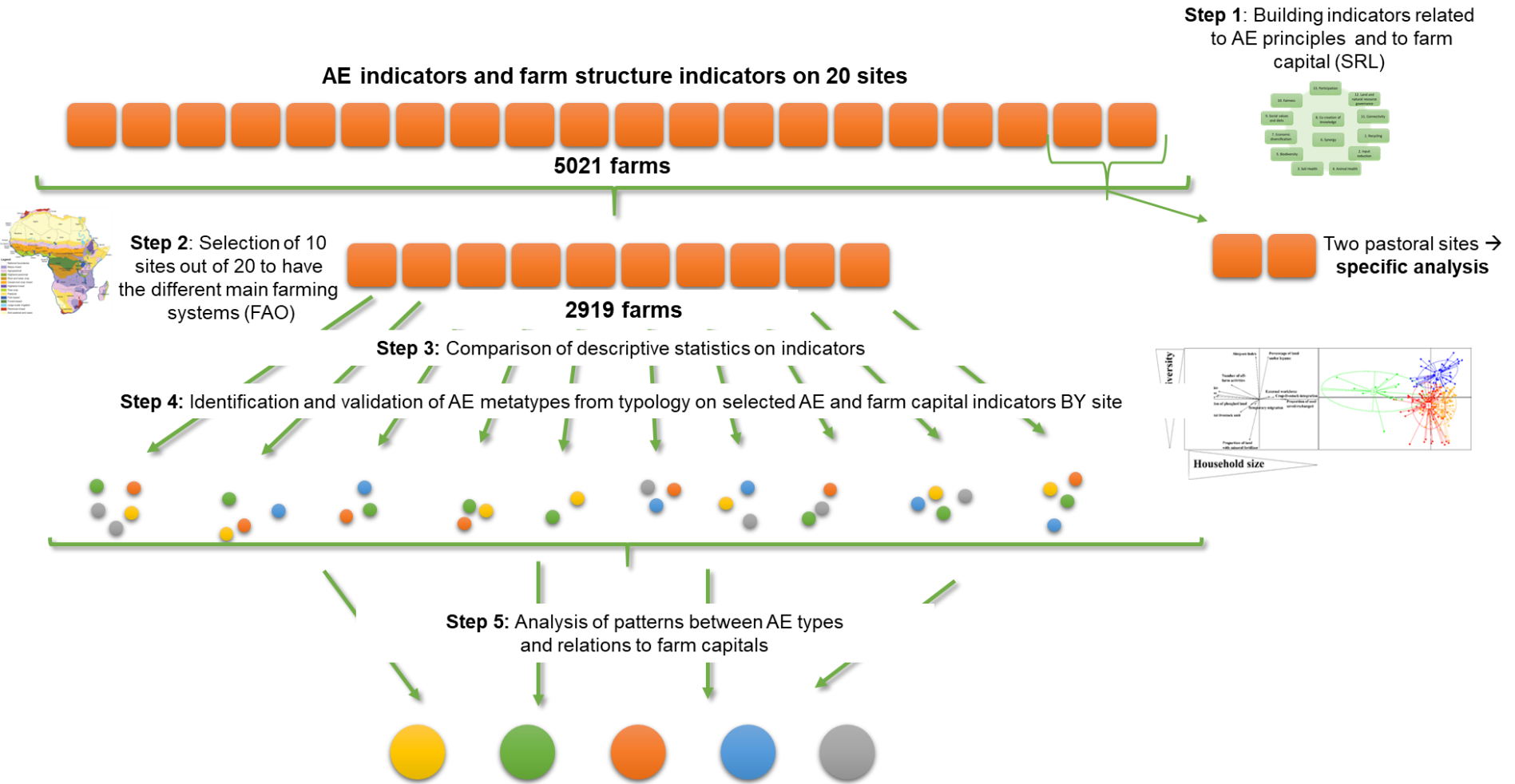
- ❑ The rise of agroecology in the debates on agricultural models in sub-Saharan Africa
  - ✓ Agroecology is increasingly put forward by development actors as a way forward for family farming in SSA to meet several challenges faced by family farming in SSA (AFSA 2016, Debray et al. 2019, Gliessman 2020)
  - ✓ Benefits of agroecology for income and food security (Kangmennaang et al. 2017; Gollin 2018; Bezner Kerr et al. 2022), ecosystems sustainability (Dufumier et al. 2019), or women empowerment (Bezner Kerr et al. 2019; Cetrone et al. 2021)
  
- ❑ But farming structure is a marginal dimension of agroecology in many researches while the issue of farming structure is a central point in the way in which the transformation of agriculture “should be” carried out
  
- ❑ Many monographies but few comparative studies with a common method

# Research question and hypothesis

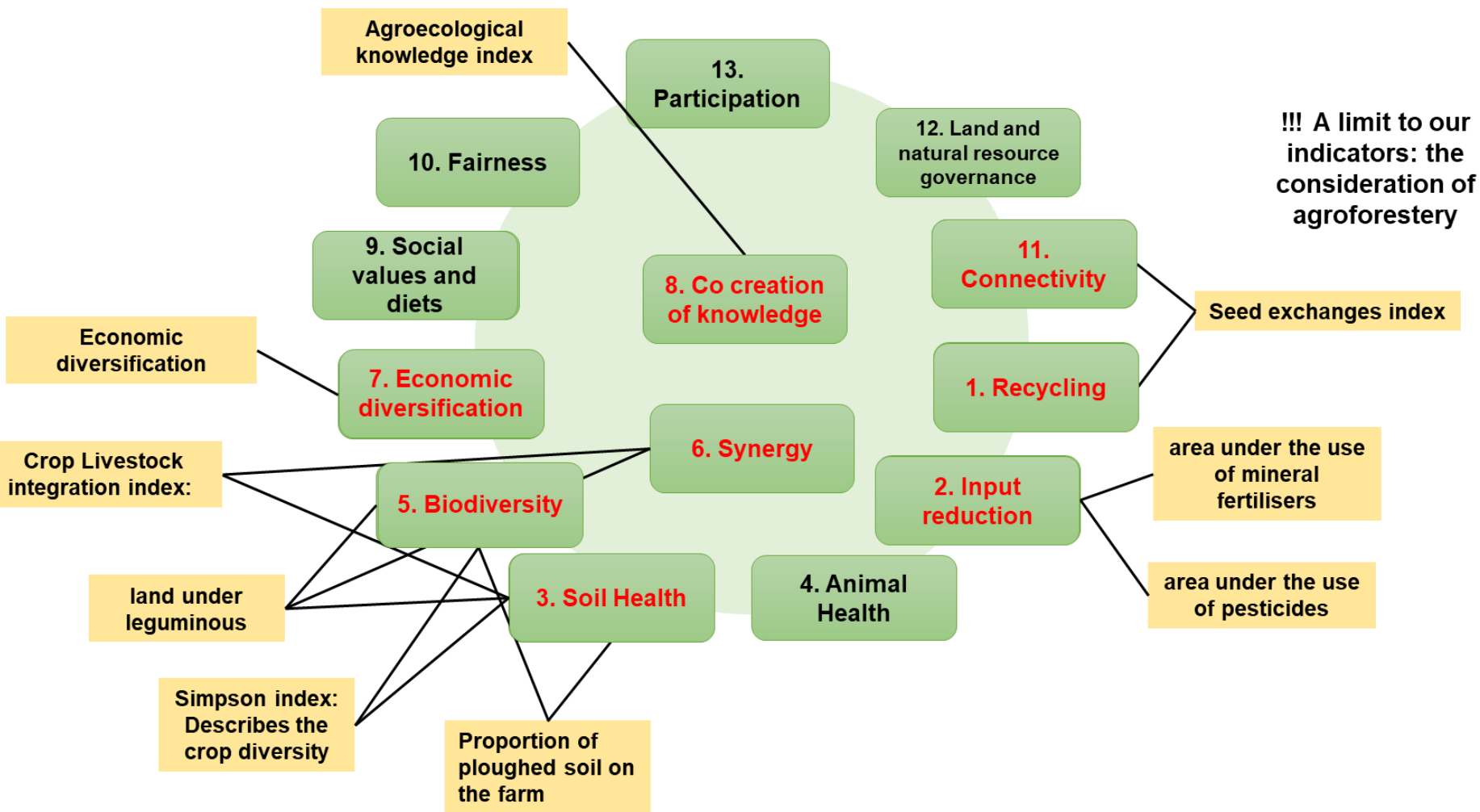
- ❑ **Research question:** what are the patterns of relations between family farm structures and types of agroecology in SSA?
- ❑ **Hypothesis:** the implementation of agroecological principles depends on the structural characteristics of farms (social, human, natural, financial, physical assets) and that the configuration of this relationship between structures and agroecology depends on the context
- ❑ **Precaution:** it is not a fine analysis of farming systems, the aim is to identify structural trends

# Conceptual framework



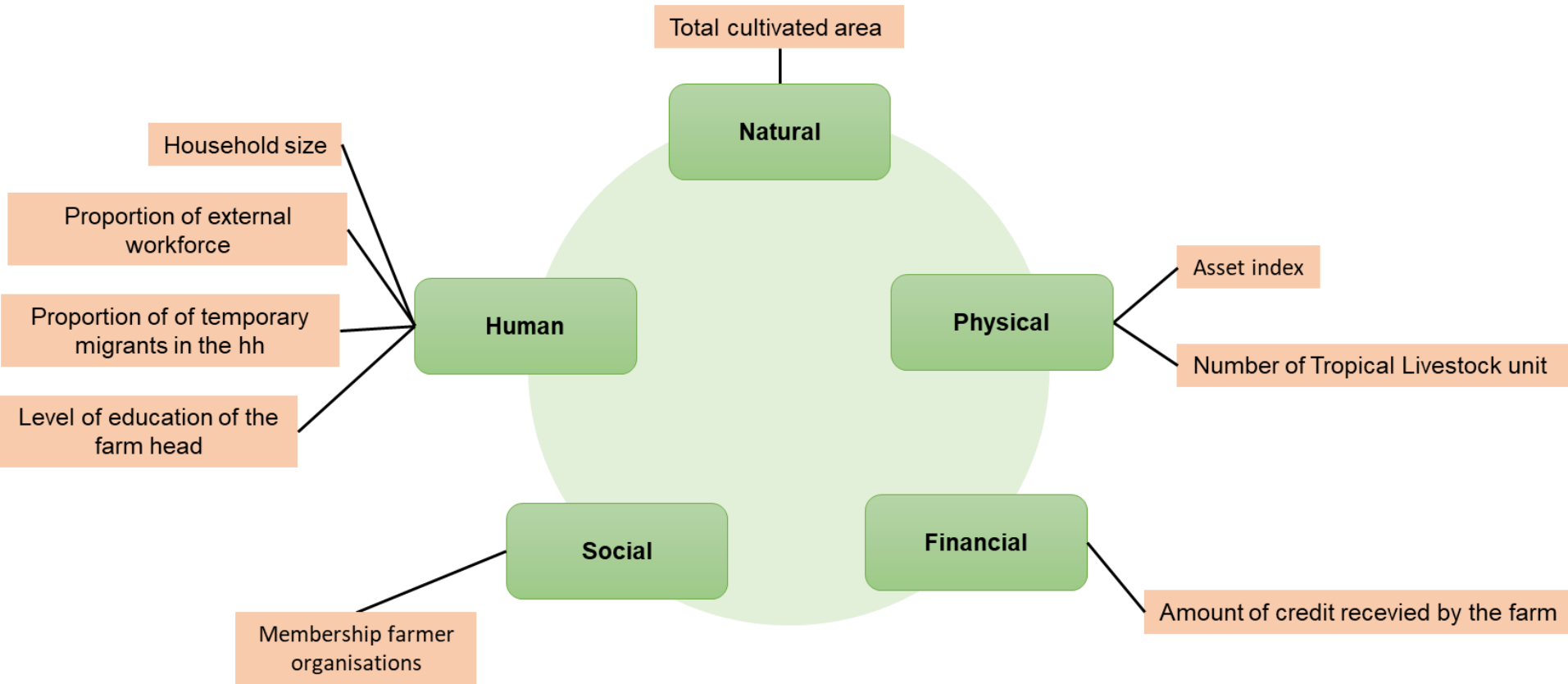


# Step 1: Building indicators related to AE principles



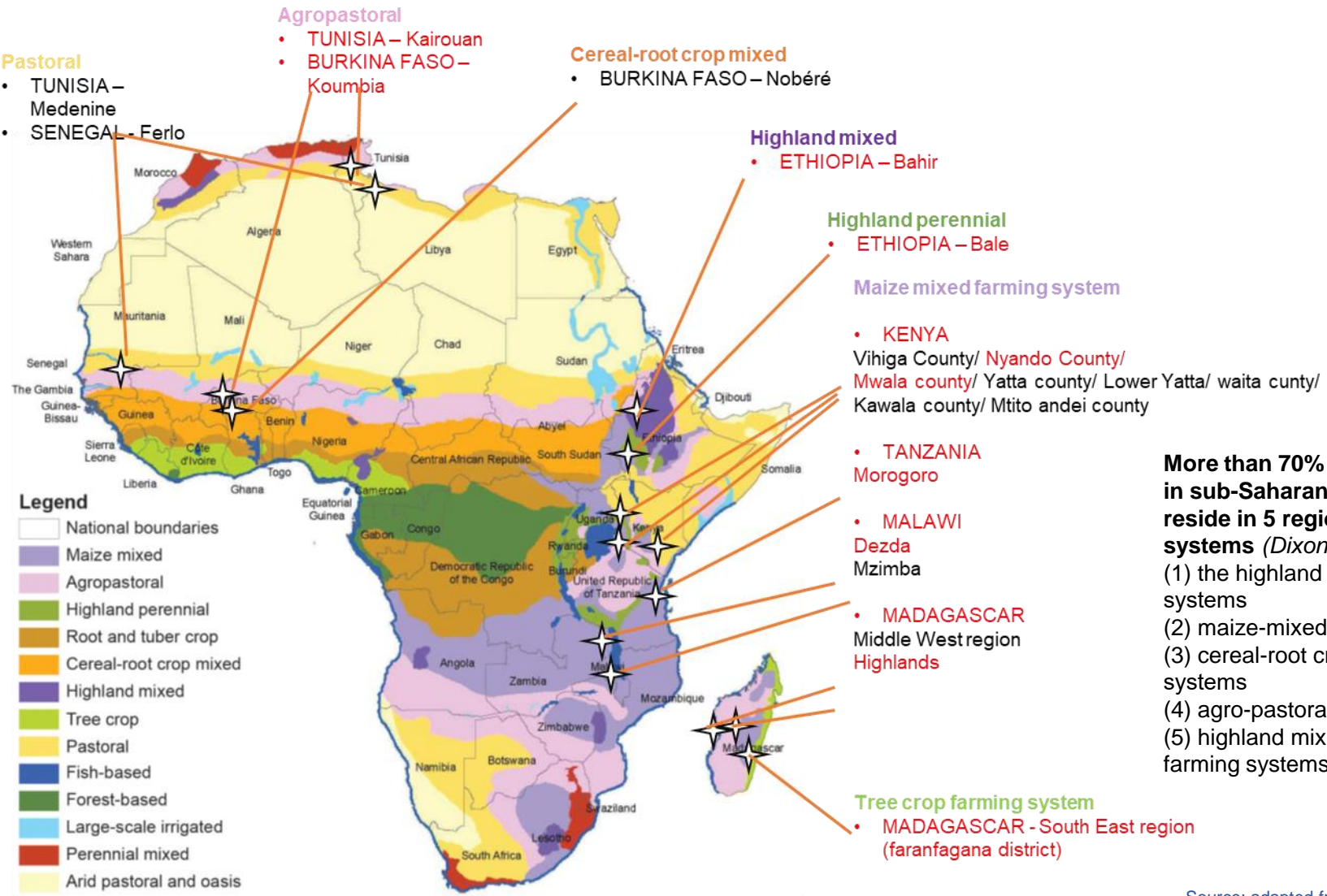
Source: adapted from Wezel 2020

# Step 1: Building indicators related to farm structure



Source: adapted from Ssoones et al. 1998

# Step 2: Selection of sites



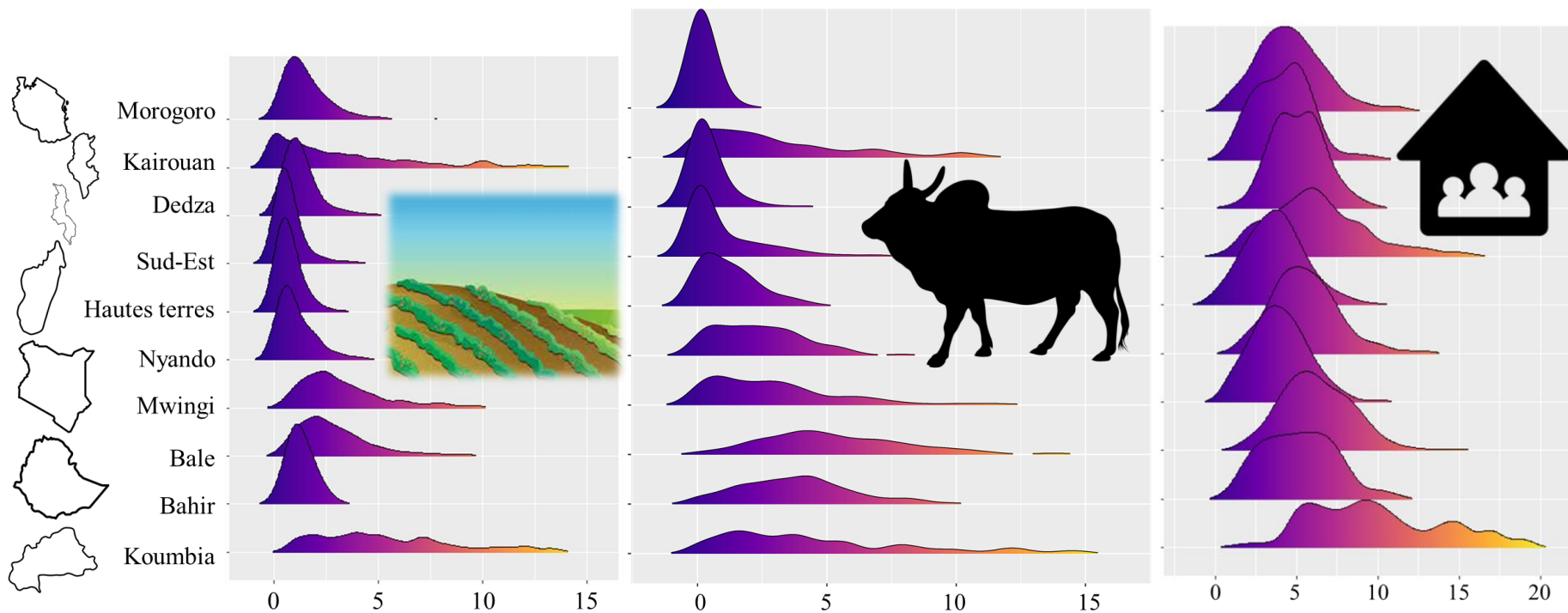
**More than 70% of the rural poor in sub-Saharan Africa (SSA) reside in 5 regional farming systems** (Dixon et al. 2020)

- (1) the highland perennial farming systems
- (2) maize-mixed farming systems
- (3) cereal-root crop mixed farming systems
- (4) agro-pastoral farming systems
- (5) highland mixed farming systems

Source: adapted from Ssoones et al. 1998

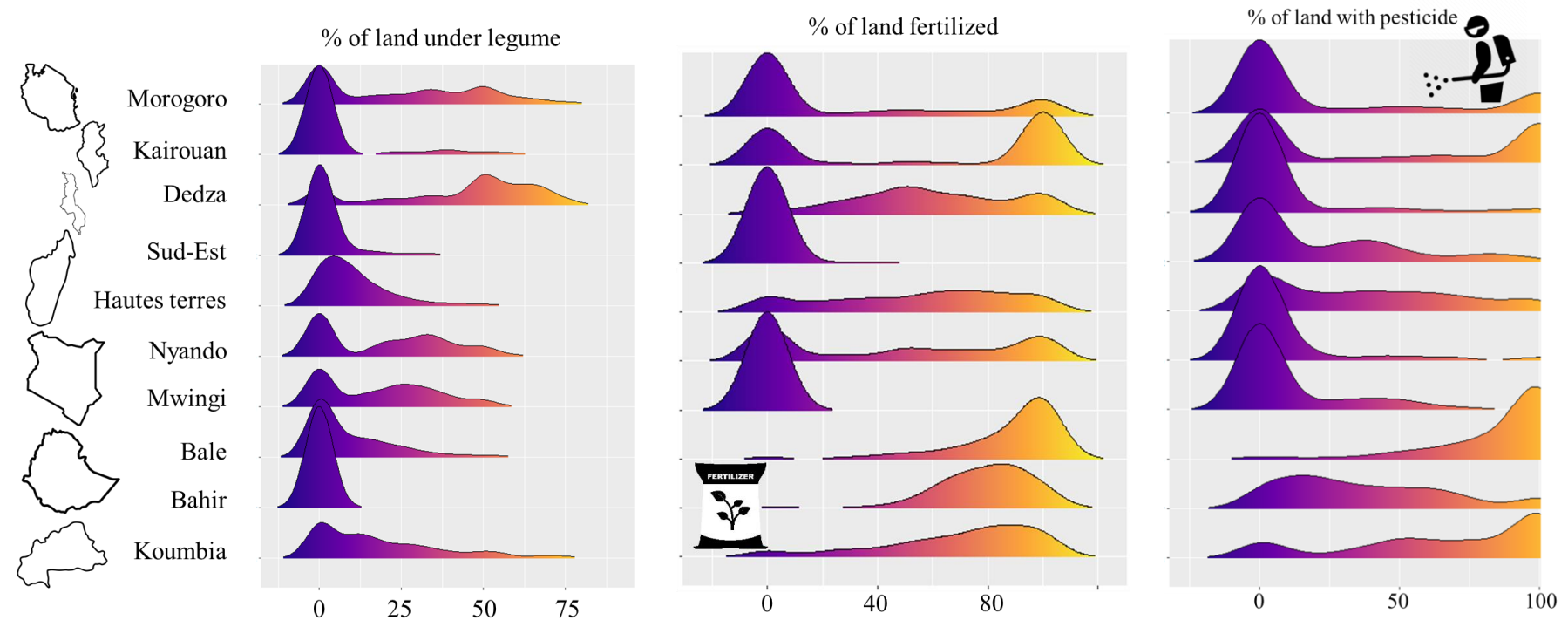


# Step 3: comparison of indicators between all sites



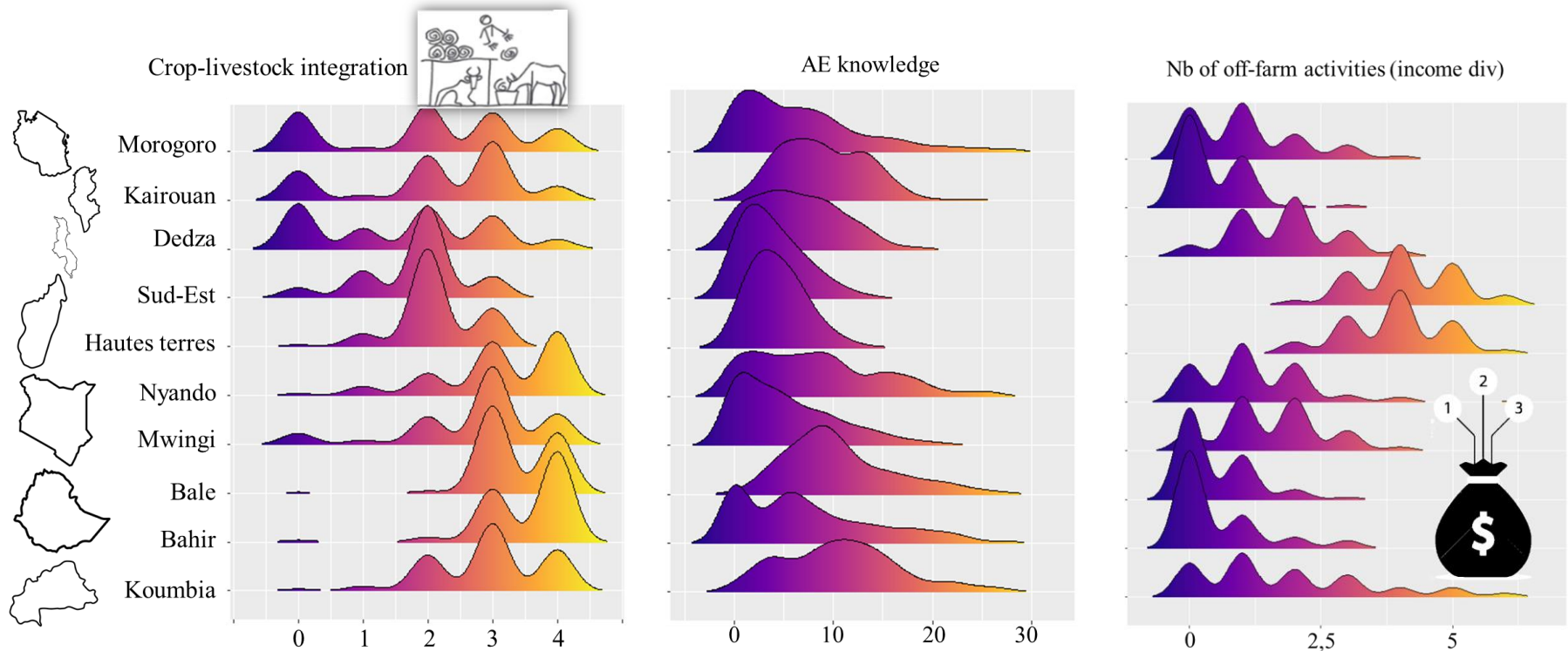
- ❑ Most HH have less than 10 members, 2.5 ha, and 10 TLU
- ❑ Livestock systems are diverse (pastoralism, agro-pastoralism)
- ❑ Some case study have less diversity (Dedza) compared to others (Koumbia)

# Step 3: What about main agroecological indicators



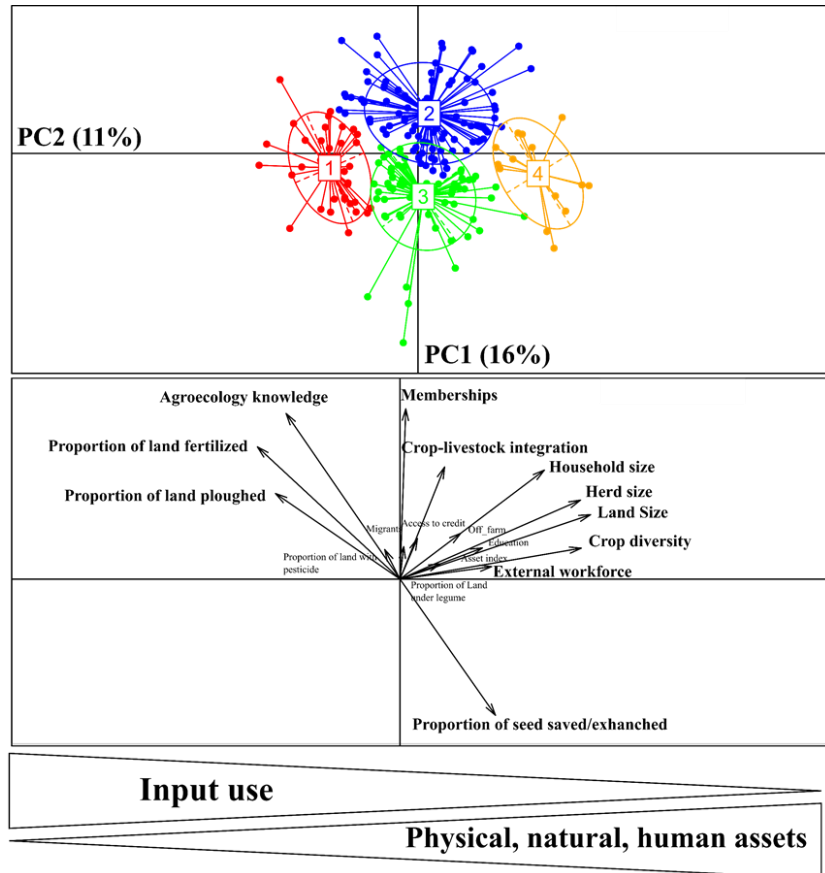
- A global low level of land under legume
- Polarized use of inputs (fert/pest) :all or nothing
- Except in Madagascar HT

# Step 3: What about main agroecological indicators



- ❑ Strong crop-livestock integration in Burkina/Ethiopia and Kenya
- ❑ Diverse levels of knowledge on AE
- ❑ Income diversification in Madagascar

# Step 4: Typologies combining 13 AEP & structure indexes: example of Ethiopia - Bahir site



**TYPE 2 (93): Medium size farms oriented to Crop-Livestock integration AE**

- Medium asset endowment for land hh herd, + strong social capital (membership)
- Type of Ag: implement some AE principles (synergy, knowledge) highest CLI and Crop div

**TYPE1 (35): Small sized farms oriented to Conventional Agriculture**

- Small undiversified farms with low assets (low land, hh, and herd size)
- Ag practices: highest level of fertiliser and ploughed land,
- **Few AE principles** only AE knowledge: small farm which tried but are trapped into input use), lowest crop div

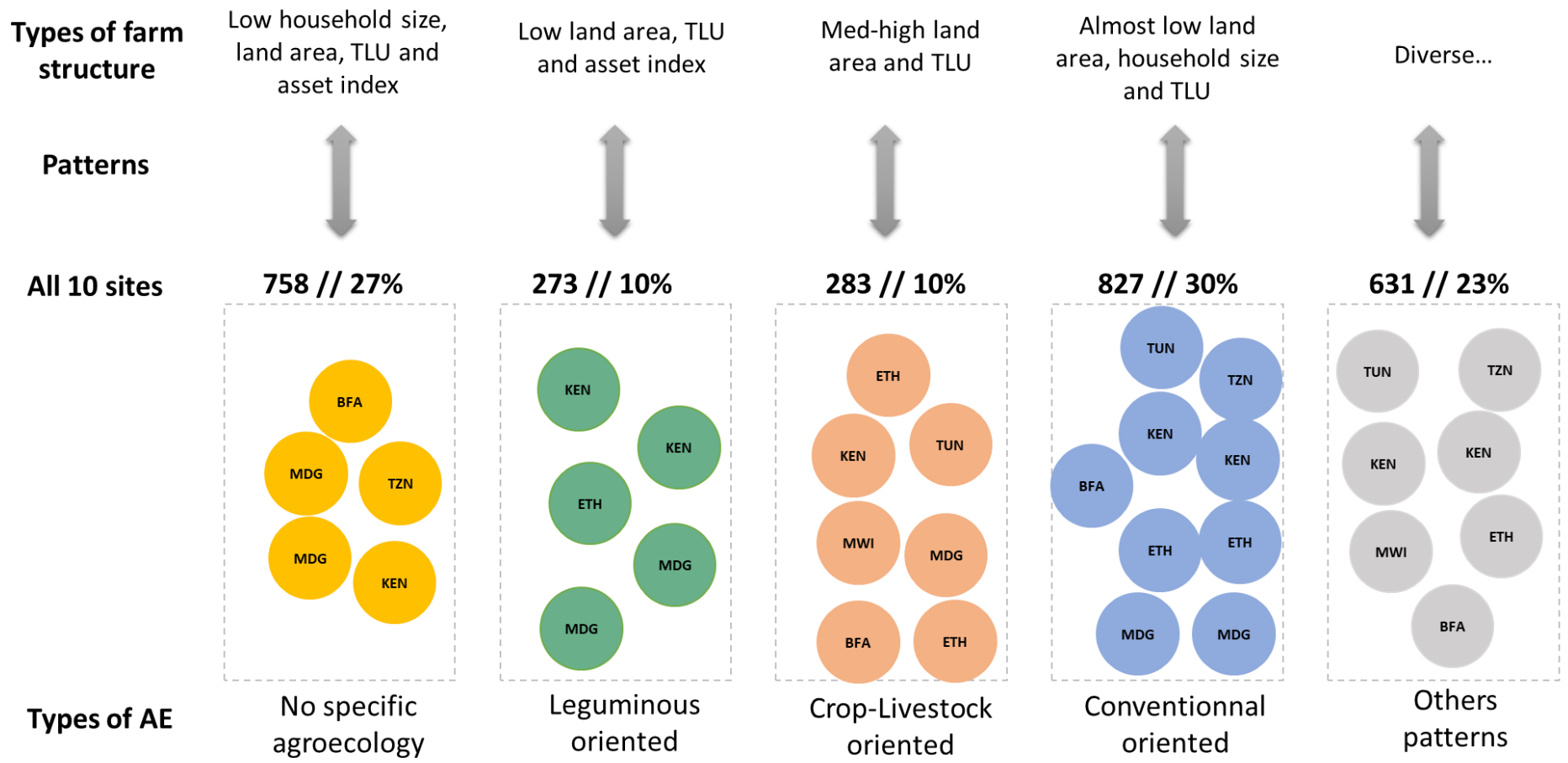
**TYPE 4 (14): Large agroecological (diversity based agroecology)**

- Large diversified family farms with high assets (education, access to credit)
- Ag practices: several AE principles (diversity, low input use, connectivity)

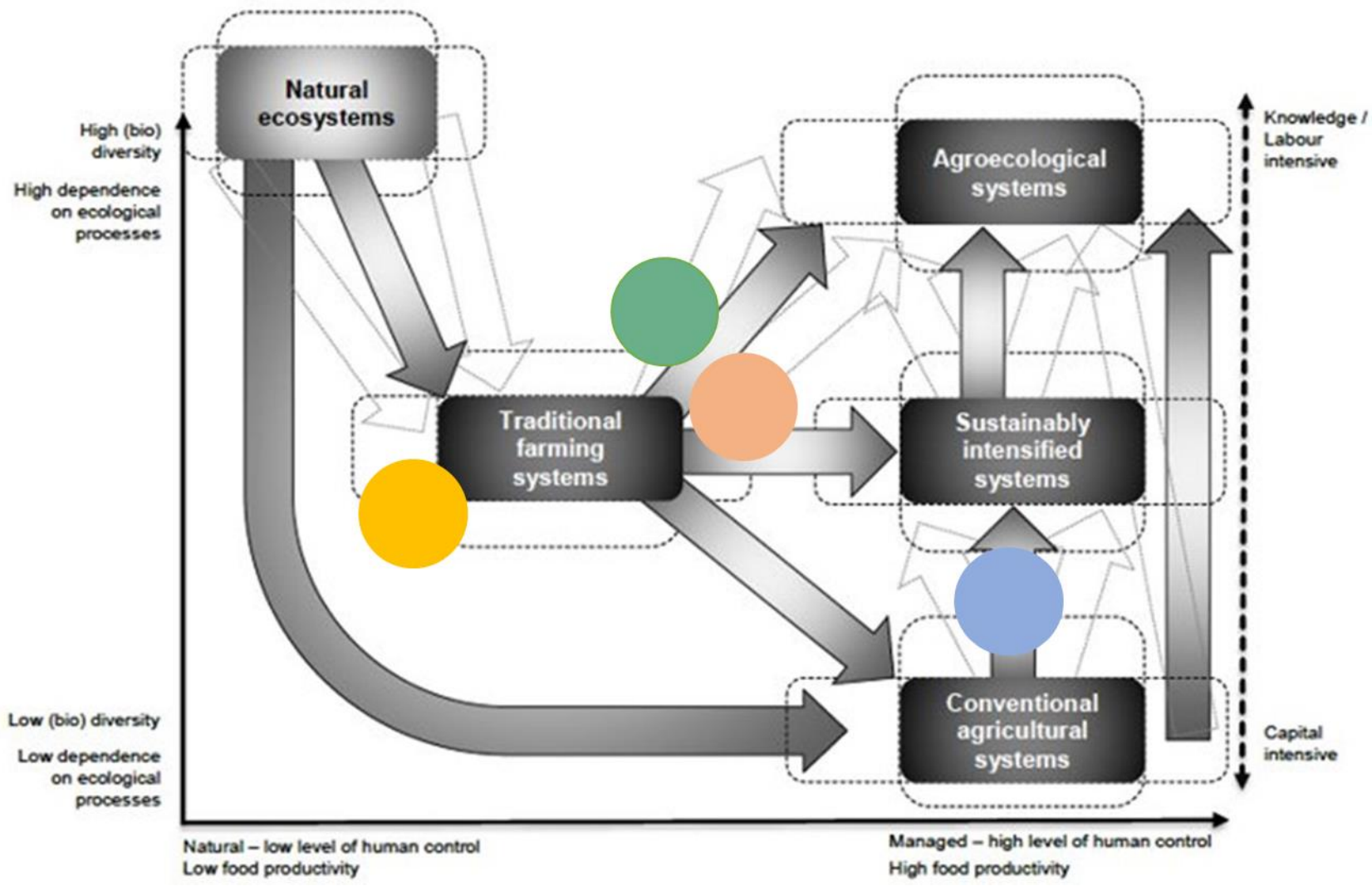
**TYPE 3 (76): Medium size farm - autonomy**

- Medium asset endowment for land hh herd
- Ag practices: (no memberships, no AE knowledge), High seed exchange

# Step 5: Patterns between AE and farm structure



# Step 5: Patterns and pathways transitions



# Conclusion

- ❑ Agroecology is context-specific: obviously but challenging when doing cross comparison (absolute vs. relative values)
- ❑ Small is beautiful? Larger family farms can be more agroecological than small family farm
- ❑ Is agroecology enough for smaller family farmers trapped in poverty?
- ❑ Understanding the diversity of patterns for a better public policies targeting for AE transition

Merci de votre attention