Agroecology and Ecosystem based Adaptation (EbA)

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Section 1

Agroecology in FAO

Global and regional consultations

Recognizing the role that agroecology can play in food security and nutrition, FAO organized in 2014 an International Symposium on agroecology followed by Regional Symposia from 2015 to 2017

FAO agroecology knowledge hub

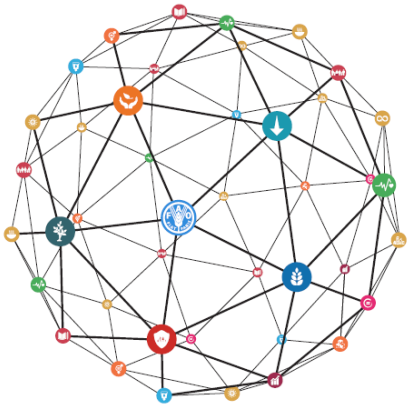
Official portal launched in 2017

www.fao.org/agroecology

Agroecology in FAO work plan in 2017

FAO 40th Conference (July 2017): Agroecology in the Medium Term Plan and Programme of Work and Budget

The Director-General's
Medium Term Plan 2018-21
and
Programme of Work and Budget 2018-19



"*More integrated, cross-sectoral and coherent approaches, including those based on landscapes, territories, agricultural heritage systems, **agroecology**, ecosystems, and/or value chains, are needed to change policies and practices in a sustainable way (FAO DG MTP 2018-2021)*

Next step 2018

- Analysis of FAO workplan regarding agroecology and gradually **embedding the work on agroecology in FAO's Strategic Framework** (analysis of the workplan)
- Launch of a new, forward looking and action-oriented "***scaling up agroecology initiative***" in cooperation with major partners such as IFAD and others in April 2018 (2nd International Symposium)
- Develop a global analytical framework for policy-makers, researchers and analysts to **assess the multi-dimensional performance of agroecological approaches** (FAO Global Knowledge Product SP2 – 2018-2019)
- Many other activities and field projects…

Agroecology and agroecological approaches are already developped in FAO process even if not so called « agroecology»

→ **EbA is one of them**

Section 2

Agroecology: definitions

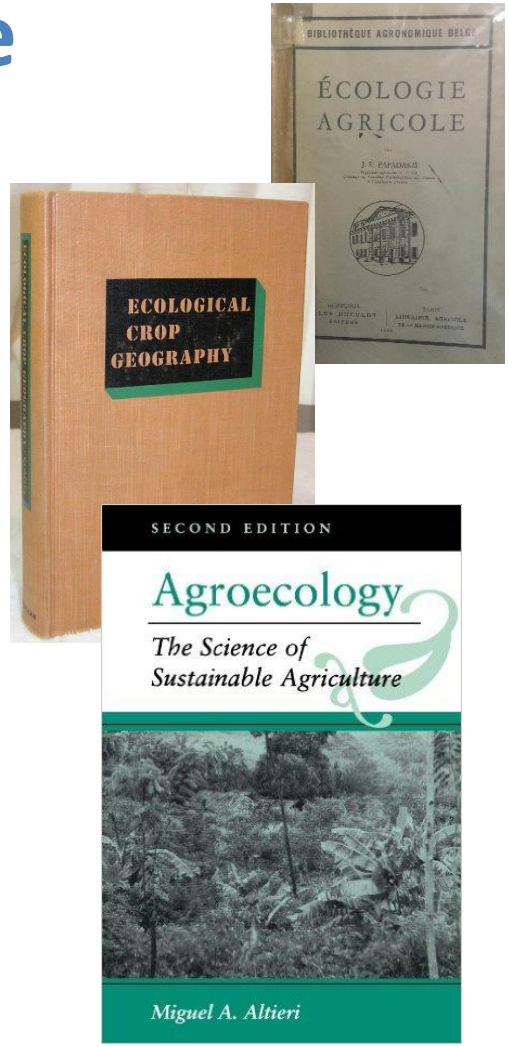
Scientific perspective

➡ From the field to the food system

There are many definitions on agroecology since 1928 (Bensin) moving from **field/farm/agroecosystem** to the entire **food system level** (Francis et al, 2003)

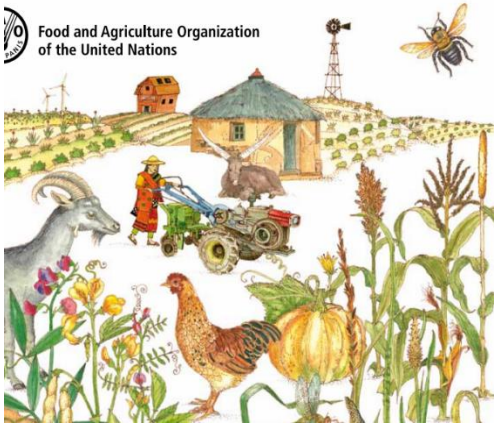
•**Altieri, 1995**: The application of ecological science to the study, design, and management of sustainable systems" (Altieri, 1995)

•**Francis et al, 2003**: Agroecology: the integrative study of the ecology of the entire **food system**, encompassing **ecological, economic and social dimensions**



HLPE definition: in FAO publications

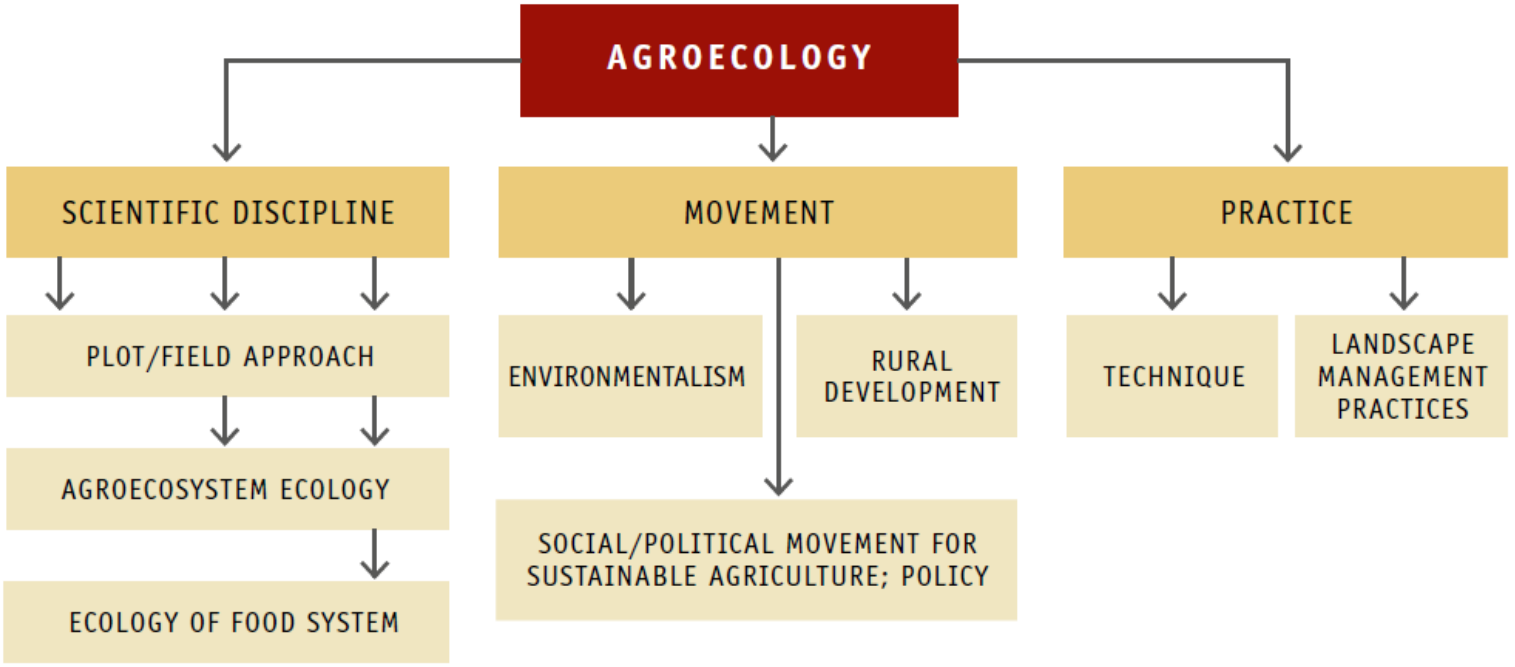
➡ From science to Society for a transformative vision



"From a **scientific and technical perspective**, agroecology applies ecological concepts and principles to farming systems, focusing on the interactions between microorganisms, plants, animals, humans and the environment, to foster sustainable agriculture development in order to ensure food security and nutrition for all, now and in the future" (HLPE, 2016)

Today's **more transformative visions of agroecology** integrate transdisciplinary knowledge, farmers' practices and social movements while recognizing their mutual dependence.

3 components of agroecology



(Wezel, Bellon *et al.* 2009, Agronomy for Sustainable Development; *updated in Wezel 2017, forthcoming book: Agroecological practices for Sustainable Agriculture: Principles, Applications, and Making the Transition*)

Section 3

Agroecological principles and practices and EbA

Agroecological principles

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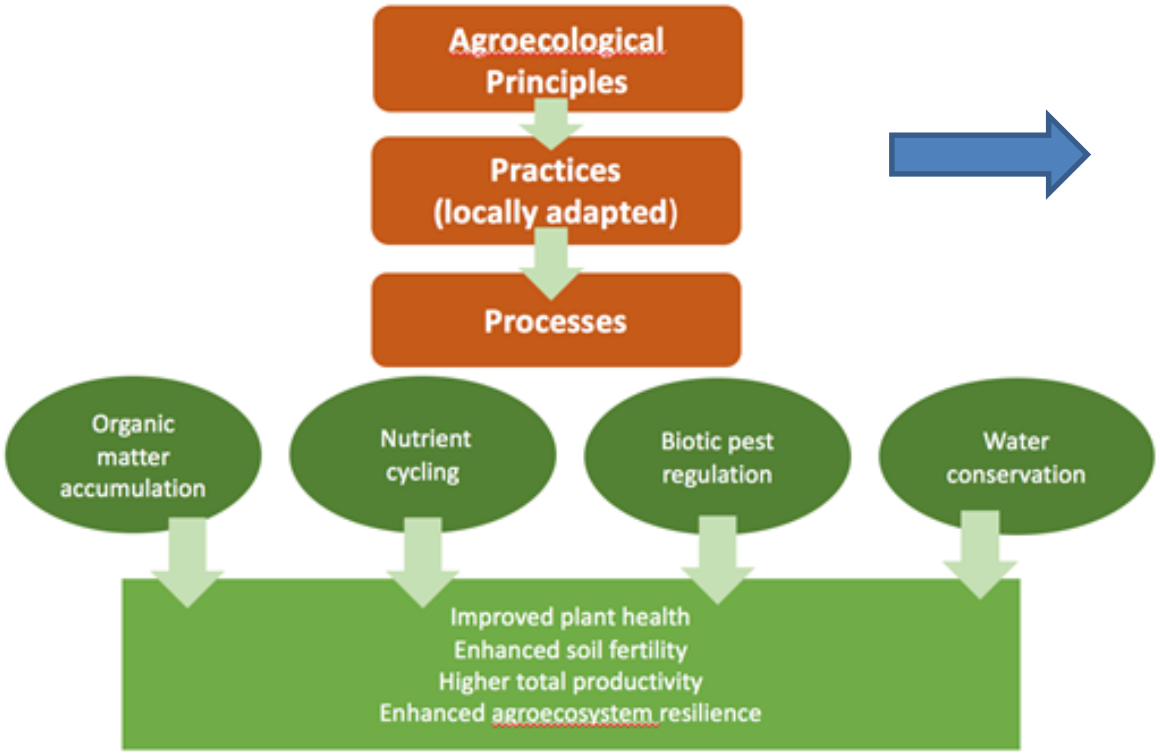
Agroecology does not promote technical recipes but rather the above principles* to be adapted to local context, strengthening natural processes:

1. Enhance the **recycling of biomass**, with a view to optimizing organic matter decomposition and nutrient cycling over time
2. Strenghten the "**immune system**" of agricultural systems through enhancement of functional biodiversity –natural enemies, antagonists, etc. by creating appropriate habitats
3. Provide the most **favourable soil conditions for plant growth**, particularly by managing organic matter and by enhancing soil biological activity
4. **Minimize losses** of energy, water, nutrients and genetic resources by enhancing conservation and regeneration of soil and water resources and agrobiodiversity
5. **Diversify species and genetic resources** in the agroecosystem over time and space at the field and landscape level
6. Enhance biological interactions and synergies among the components of agrobiodiversity, thereby promoting **key ecological processes** and services

* The **agroecological principles** for the design resilient farming systems, Nicholls and Altieri (2016)

Agroecology: principles, practices and processes

Agroecological principles for the conversion of farming systems (Nicholls and al.)



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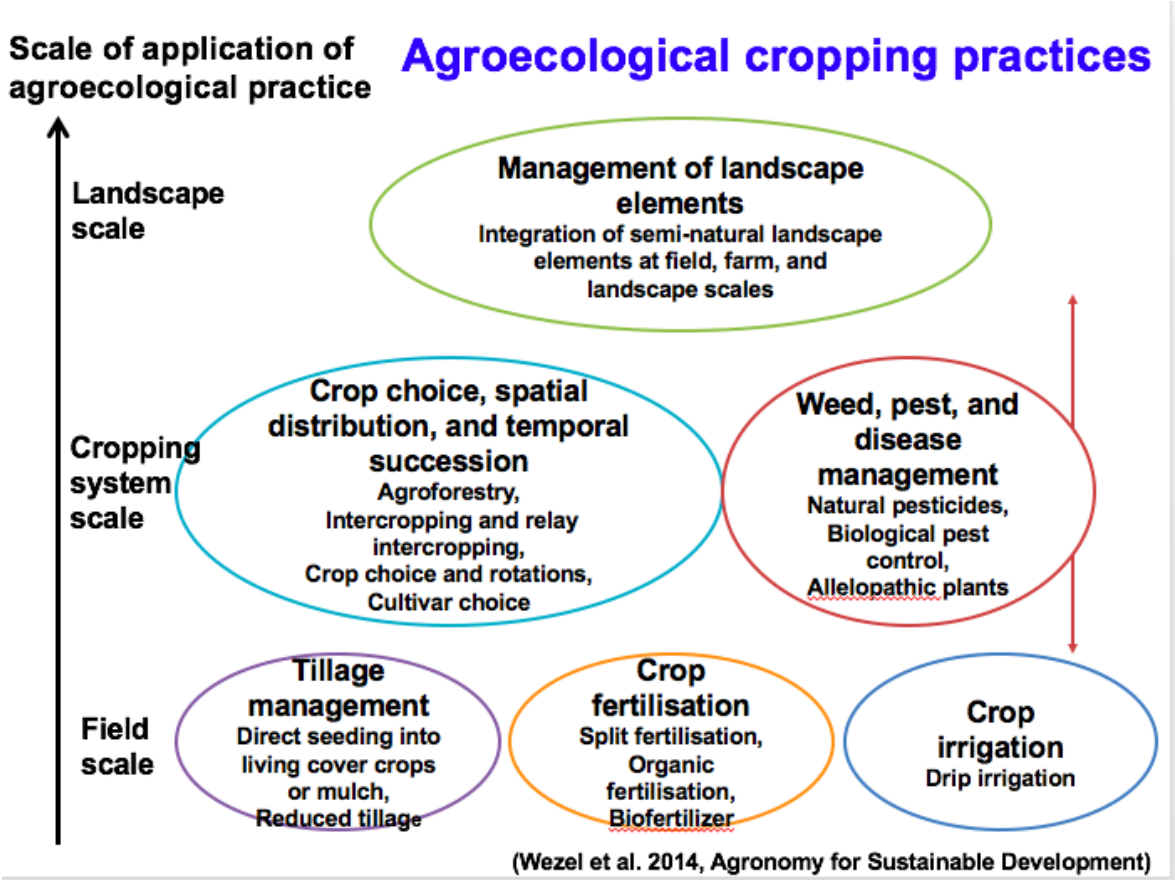
Agroecological practices



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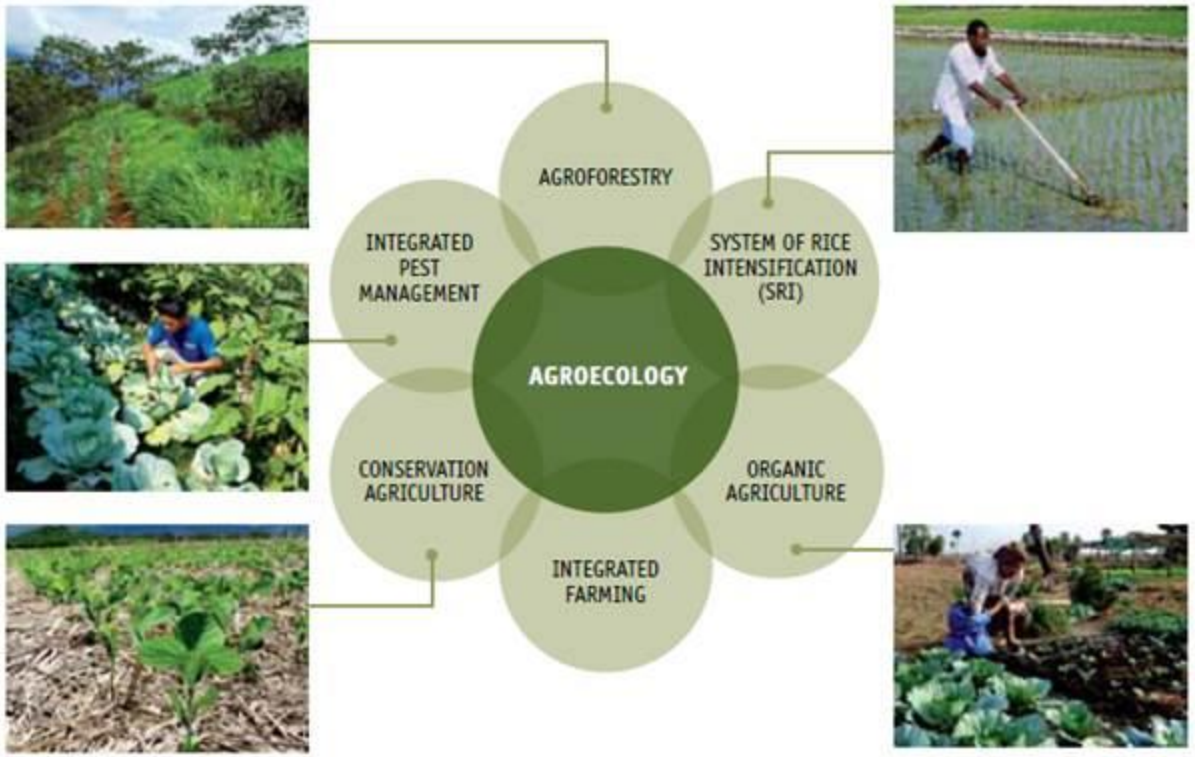
Agroecological approaches

Agroecology takes different technological forms depending on the prevailing socioeconomic and biophysical circumstances of farmers. It can also have many diverse representations and technical appellations.



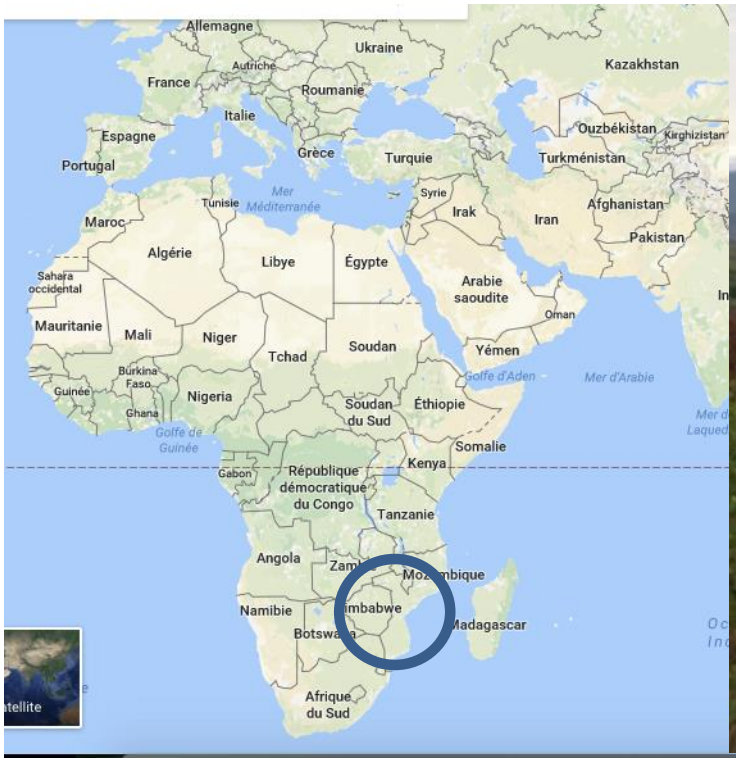
Source: P. Ferrand, presentation FAO Agroecology Symposium for Asia 2015, adapted from E. Hainzelin

Section 4

Case study on agroecology

Malawi farmer to farmer agroecology project

Legumes diversification to improve soil fertility



Source: Soil and Food - http://soilandfood.org/malawi-farmer-to-farmer-agroecology-project/

The project

A Project with 6600 farming households in 308 villages on 2 areas

Typical planting patterns are monocropped maize with limited organic matter returned to the soil, and reliance on commercial fertilizer

Transdisciplinary research-action project began due to the rising costs of commercial fertilizer, low crop and dietary diversity, high gender inequality and high levels of child malnutrition and agroecosystem degradation (organic matter and soil fertility)

Soils, Food and Healthy Communities organization, Chancellor College, the University of Malawi, Ekwendeni Hospital, Western University, Cornell University and the University of Manitoba, funded by Global Affairs Canada and the Canadian Food Grains Bank

Practices

Agroecological practices implemented

•Use of site adapted cultivar
•Diversification (sorghum, finger millet, sweet potatoes, cowpea pigeon pea, groundnut, soya bean…) crop rotation
•Intercropping with legumes
•Agroforestry
•Incorporating crop residues (vs burning)
•Organic matter management and compost

Other agroecological practices and methodology

•Integration of equity concerns into programming and research activities (women, youth, poor households)
•Community seed banks creation
•Farmer research team created and participatory action research
•Farmer exchanges (field trips and trainings) to deepen knowledge on ecological principles, equity, farmer associations and marketing
•Involving people from multiple disciplines (i.e. nutrition, social sciences, agriculture, medicine, development) and different stakeholders (e.g. hospital staff, village leaders) in carrying out research and in development activities.

Impacts on adaptation (1)

Farmers experiment diverse mixed systems, including growing edible legume intercrops, diversifying their cropping system with additional crops and agroforestry

Resilience of the global agroecosystem

•Agroecological diversification, by breaking the monoculture nature of farming systems, contributed to yield stability in the midst of climatic variability

Spreading out of the harvest period

•Sweet potatoes have early harvest but also multiple benefits, such as soil cover, a source of both leafy greens and tubers

Drought tolerance of crops

•Sorghum and finger millet are drought tolerant indigenous grains that can be substituted for maize, the main staple in Malawian diets

•Local orange landrace varieties of maize (Mtinkinya) source of provitamin A and harvested earlier than other maize varieties, drought tolerant, reducing risk of crop failure

Impacts on adaptation (2)

and mitigation

Protection from erosion, enhancing soil fertility and water retention

•Legumes fix Nitrogen and pigeon pea has deep roots that draw nutrients from deeper in the soil

•Agroforestry **(***Acacia albida*, *Gliricidia sepium* and *Tephrosia voglii)*, provide shade cover to reduce erosion and improve soil fertility but also attract beneficial insects and *Tephrosia has* a natural pesticide that does not kill beneficial insects but is effective with one of the major insect pests of pigeonpea

•After harvest, the legume residue can be incorporated into the soil, increasing soil organic matter, which builds both soil fertility and soil structure. Farmers have found that it is effective at increasing maize yields the following growing season, reducing the need for fertilizer application

•Some farmers are making compost, using a combination of animal manures, grasses, and legume residue. They make the compost during the dry season and incorporate it into their fields before planting

Other impacts

Food and nutrition security

- Legumes help to diversify the diet providing important source of protein
- local orange landrace varieties of maize having potential to contribute vitamin A in diets
- Greater crops: improved maize yield
- Longer harvest period (early harvest of sweet potato)
- Yield stability in the midst of climatic variability
- Seed sovereignty (community seed banks created)

Rural livehood and social well being

- Reduce of the costs an input dependency
- Raise of income through legume sale
- Greater improvement in decision making for women and men taking more household tasks
- Improved cohesion and social relations at the community level
- Empowerment of farmers creating their own research association
- Pigeon pea provide firewood

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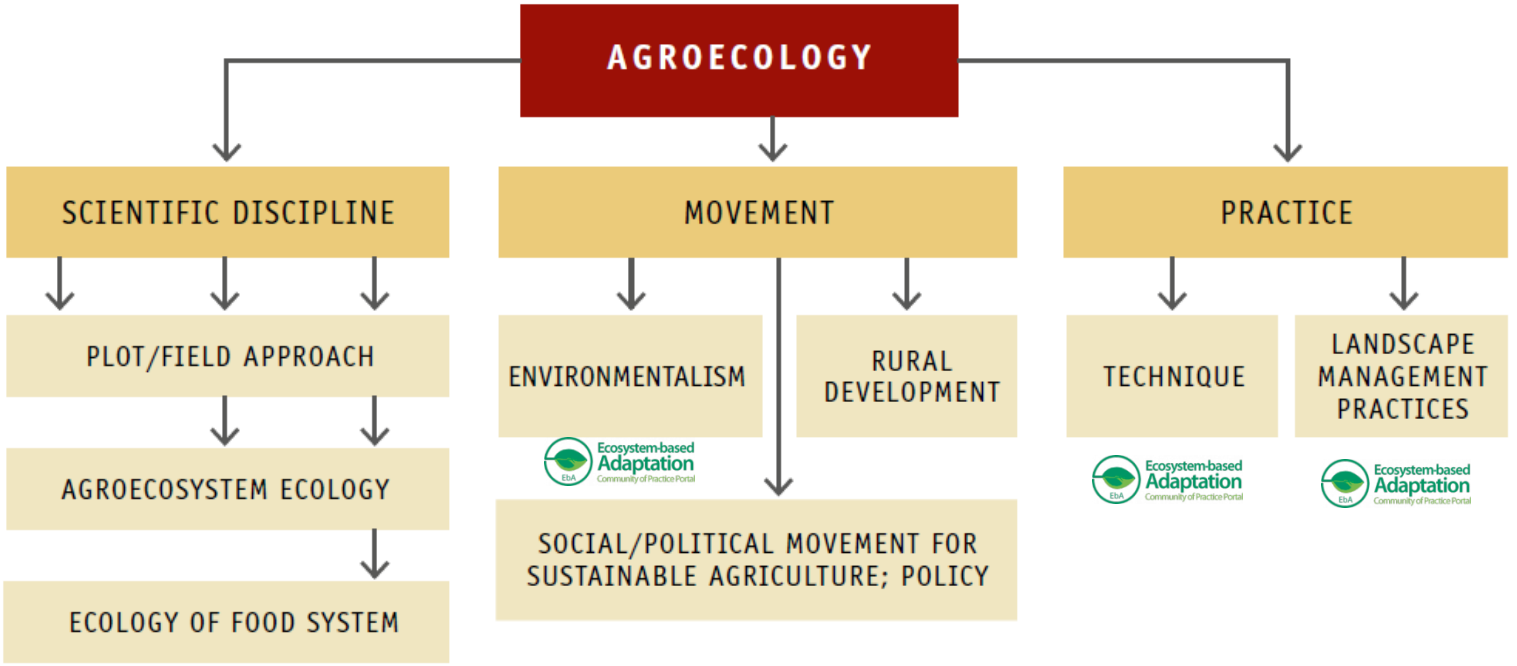
Section 5

Conclusion: Agroecology and EbA

3 components of agroecology

: *Paralell with EbA*



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Links between agroecology (AE) and EbA

EbA is « the use of biodiversity and ecosystem services to help people adapt to the adverse effects of climate change » (CBD, 2009)

Similarities

- **logic**: healthy agroecosytem are more resilient
- **practices** at field/landscape level
- **objective**: « helping people » [food security and nutrition]
- **approach**: involving community, participatory process

Differencies

- **entry points and scope**: adaptation as a clear entry point for EbA while AE aims at embracing all the environmental and socio-economical challenges linked to Food S.
- **stakeholders**: EbA from environmentalism/conservation and AE food producers and science?
- **strategic goal**: social innovation and food system for a transformative approach in AE

Synergies need to be made !

Thank you

Contact us

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