



## Landscape Approaches to Agroecology



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## What is agroecology?



## How to avoid confusion?

Agreement on  
objectives

Agreement on  
principles

Agreement on  
practices

## What is agroecology?

### A science

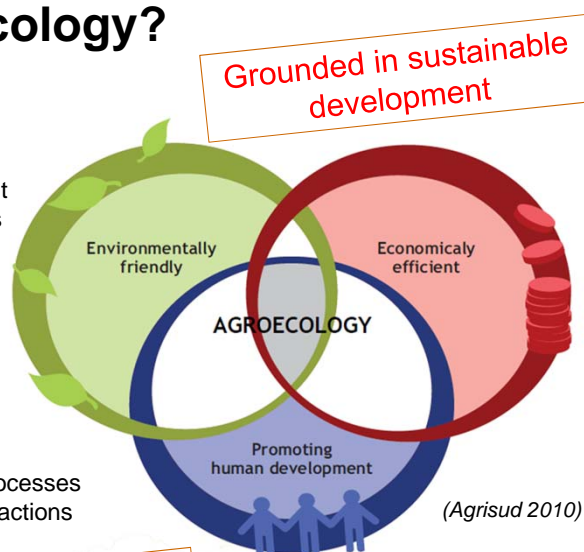
Ecology science applied to the study, design and management of sustainable agroecosystems

### A movement

Support to smallholder farming as opposed to industrial agriculture

### A set of practices

Practices mimicking natural processes and harnessing biological interactions in agroecosystems



## Agroecology principles

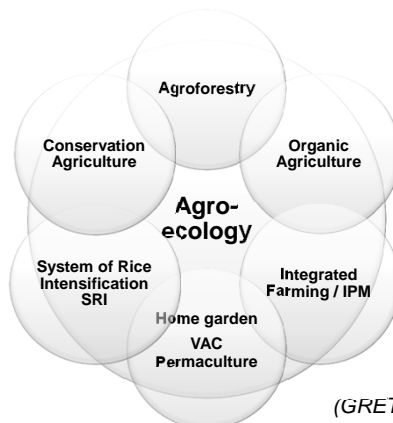
(Altieri, 2012)

- **Enhance the recycling of biomass**  
with a view to optimizing organic matter decomposition and nutrient cycling over time,
- **Minimize losses of energy, water, nutrients and genetic resources**  
by enhancing conservation and regeneration of soil and water resources and biodiversity,
- **Diversify species and genetic resources**  
in the agroecosystems over time and space at the field and landscape level,
- **Enhance beneficial biological interactions and synergies** among the components of agro biodiversity, thereby promoting key ecological processes and services.



Agreement on common principles

## Which practices belong to agroecology?



(GRET, 2013)

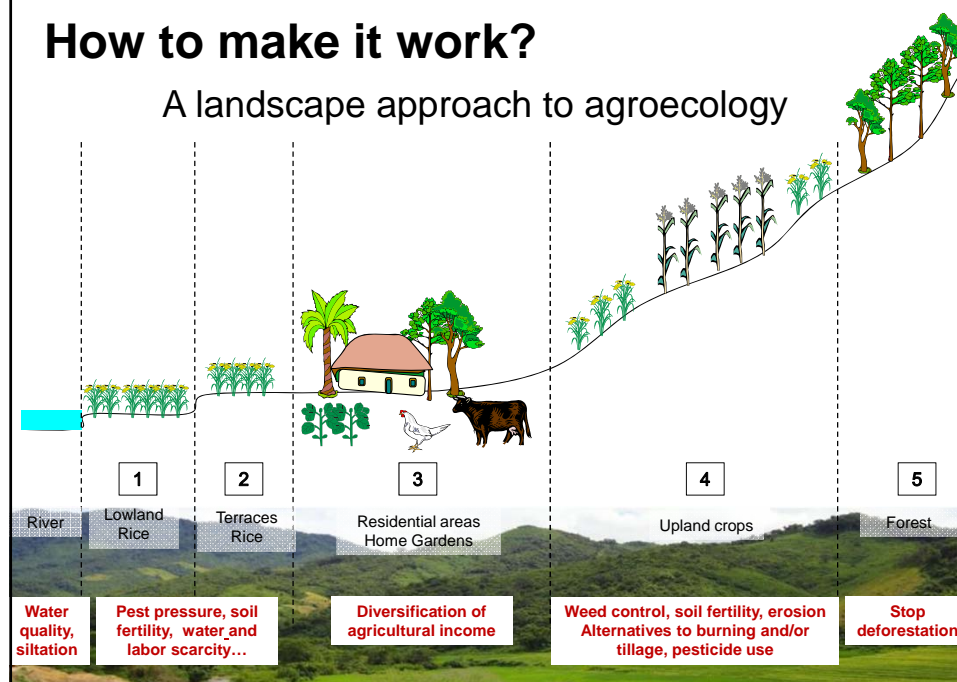
Agreement on  
practices

Common  
objectives

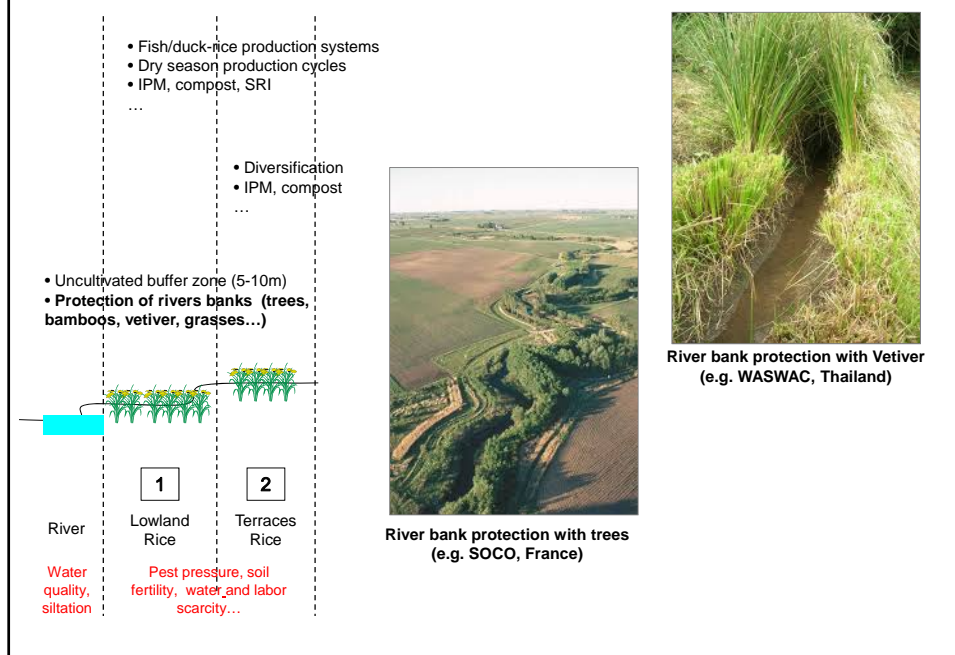
Common  
principles

## How to make it work?

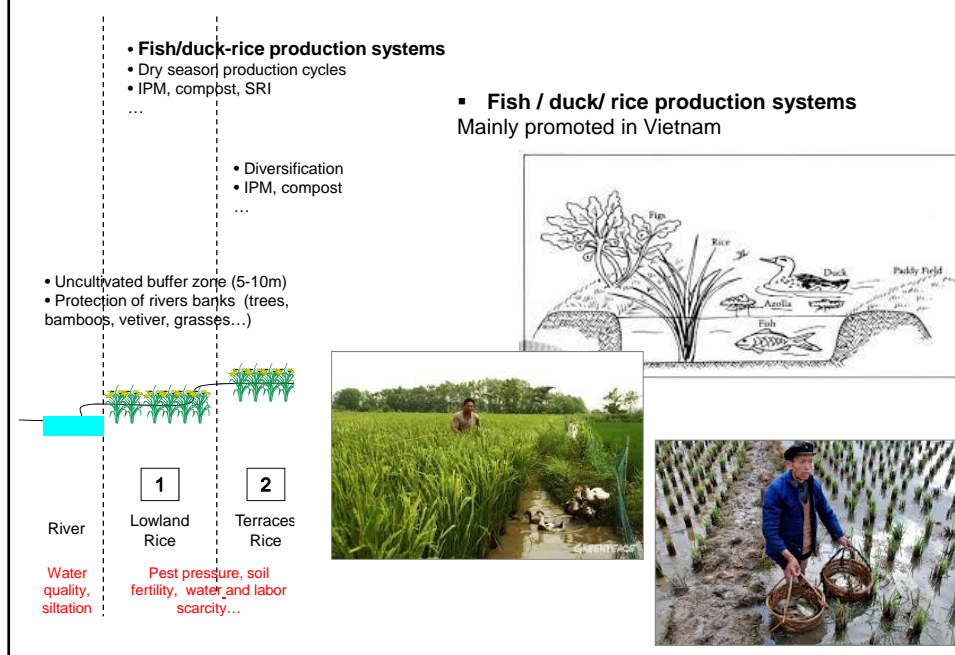
A landscape approach to agroecology



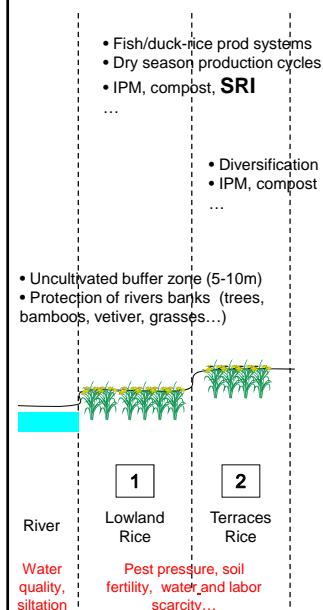
### Some agro-ecological options according to LANDSCAPE UNITS



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#### System of Rice Intensification (SRI):

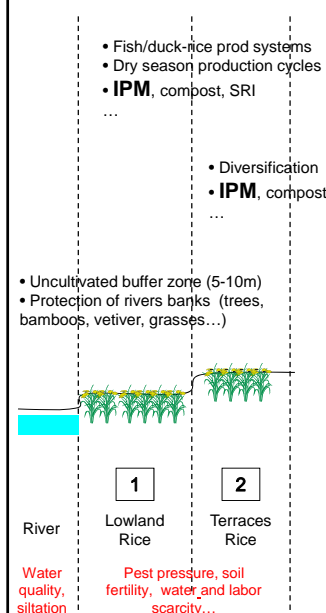
##### Principles:

- Early transplanting,
- Limited rice population density (to facilitate rice tillering),
- Intermittent and temporary irrigation (regular water drainage).

In Cambodia, Laos, Myanmar, and Vietnam SRI was initially promoted by NGOs in the early 2000s, then was incorporated by agricultural services in government extension strategies

(GRET, feasibility study ACTAE, 2013)

### Some agro-ecological options according to LANDSCAPE UNITS



#### Integrated Pest Management (IPM):

##### Principles:

Pest management using agronomic techniques and biological / physical / chemical methods that take into account the health of people (i.e. farmers and consumers) and of the environment.

FAO introduced IPM concepts through Farmer Field School (FFS) in Mekong countries (Thailand, Laos, Vietnam and Cambodia) – since early 1990s,

Followed-up with the support of development projects and NGOs in the 2000s – successes in Laos, Vietnam, Cambodia.

(GRET, feasibility study ACTAE, 2013)



### Some agro-ecological options according to LANDSCAPE UNITS

- **Organic vegetable**
- Crop post-processing (dryer, silo)
- Forage plots (cut and carry)
- Dry season fodder (silage, urea treatment...)
- Agricultural diversification (frogs, mushrooms, trees, honey...)



3

Settlement area - Gardens

Diversification of agricultural income



Compost



EM production



#### Organic Agriculture (OA):

Principles:

- Principle of Health (e.g., avoid the use of fertilizers, pesticides, animal drugs and food additives)
- Principle of Ecology (e.g.: production to be based on ecological processes, and recycling).
- Principle of Fairness (e.g.: natural resources used should be managed in a way that is socially and ecologically just)
- Principle of Care (e.g.: no GMO)

Main products: rice, vegetable, coffee, tea, and fruit trees

(GRET, feasibility study ACTAE, 2013)

### Some agro-ecological options according to LANDSCAPE UNITS

- Organic vegetable
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Settlement area - Gardens

Diversification of agricultural income



Forage plot for livestock feeding



Improvement of pig raising conditions



Dried fodder resources for dry-season



Rice straw treatment with urea

### Some agro-ecological options according to LANDSCAPE UNITS



**Diversification with legumes:**  
 - Maize + pigeon pea  
 - Maize + rice bean  
 - Cassava + stylo ...



**Crop residue management**



#### ■ Conservation Agriculture (CA):

Principles:

- Minimum soil disturbance (no-tillage),
- Permanent organic soil cover (crop residues and cover crops),
- Diversification of crop species grown in sequences and/or associations.

Promoted by CIRAD in Cambodia, Laos, Vietnam, etc.

- Crops diversification
- Improved pasture
- **Conservation agriculture**
- Managed/ improved fallows
- Agroforestry
- Contour hedgerows
- Natural vegetative strips
- ...



4

Upland crops

Weed management, soil fertility, erosion  
 Alternatives to burning and/or ploughing

### Some agro-ecological options according to LANDSCAPE UNITS



**Agroforestry systems:**

- Coffee + shading trees (CIRAD)
- Maize + trees (Honduras)
- Rubber + coconut (Indonesia, ICRAF)

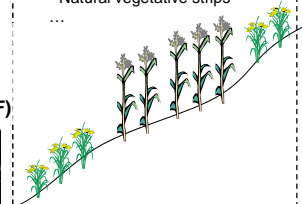


#### ■ Agroforestry

Principles:

Land-use systems where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence.

- Crops diversification
- Improved pasture
- Conservation agriculture
- Managed/ improved fallows
- **Agroforestry**
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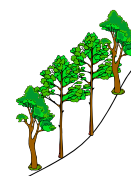
Upland crops

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### Some agro-ecological options according to LANDSCAPE UNITS



NTFPs resources management: bamboo shoot, cardamom, rattan...



- NTFPs
- Agroforestry
- Plantation

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Forest

Stop  
deforestation

- **Forest and NTFPs resource management**
  - Forests protection and regeneration
  - Development and protection of NTFPs resources

### Sustainable intensification of agriculture through agroecology

- Engaging the whole village community in landscape level management of agricultural innovations

*Diagnosis*



*Visualization*



*Learning*



*Improved negotiation*

*participatory landscape design*





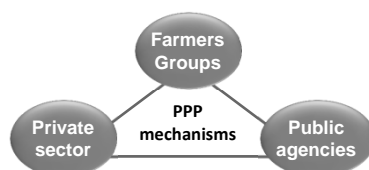
## Sustainable intensification of agriculture through agroecology

- Engaging the whole village community in landscape level management of agricultural innovations
- Overcoming organizational constraints to the adoption of agroecological practices
  - Productivity gains from conservation agriculture reinvested in expansion of agricultural land (forest encroachment)
  - Roaming livestock damage cover crops during the dry season and prevent large adoption of agroecological practices
  - Mechanized tillage service and use of chemical herbicides constrain the development of alternative cropping systems



## Sustainable intensification of agriculture through agroecology

- Engaging the whole village community in landscape level management of agricultural innovations
- Overcoming organizational constraints to the adoption of agroecological practices
- Scaling-up and dissemination of innovative practices through coordination mechanisms and partnerships with multiple stakeholder groups (e.g. development projects, NGOs, universities, research institutions)



# Thank you for your attention!

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