What is the potential of the ecosystem service framework to support agroecological transitions ?

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What is the potential of the ecosystem service framework to support agroecological transitions ?

- Food for thought…
- Energizer
- World café – 3 questions + report back

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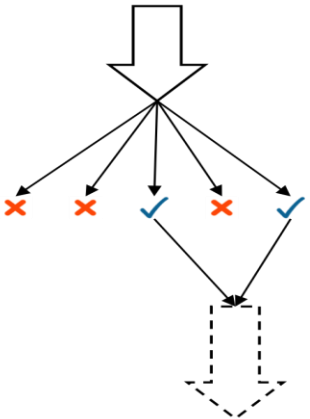
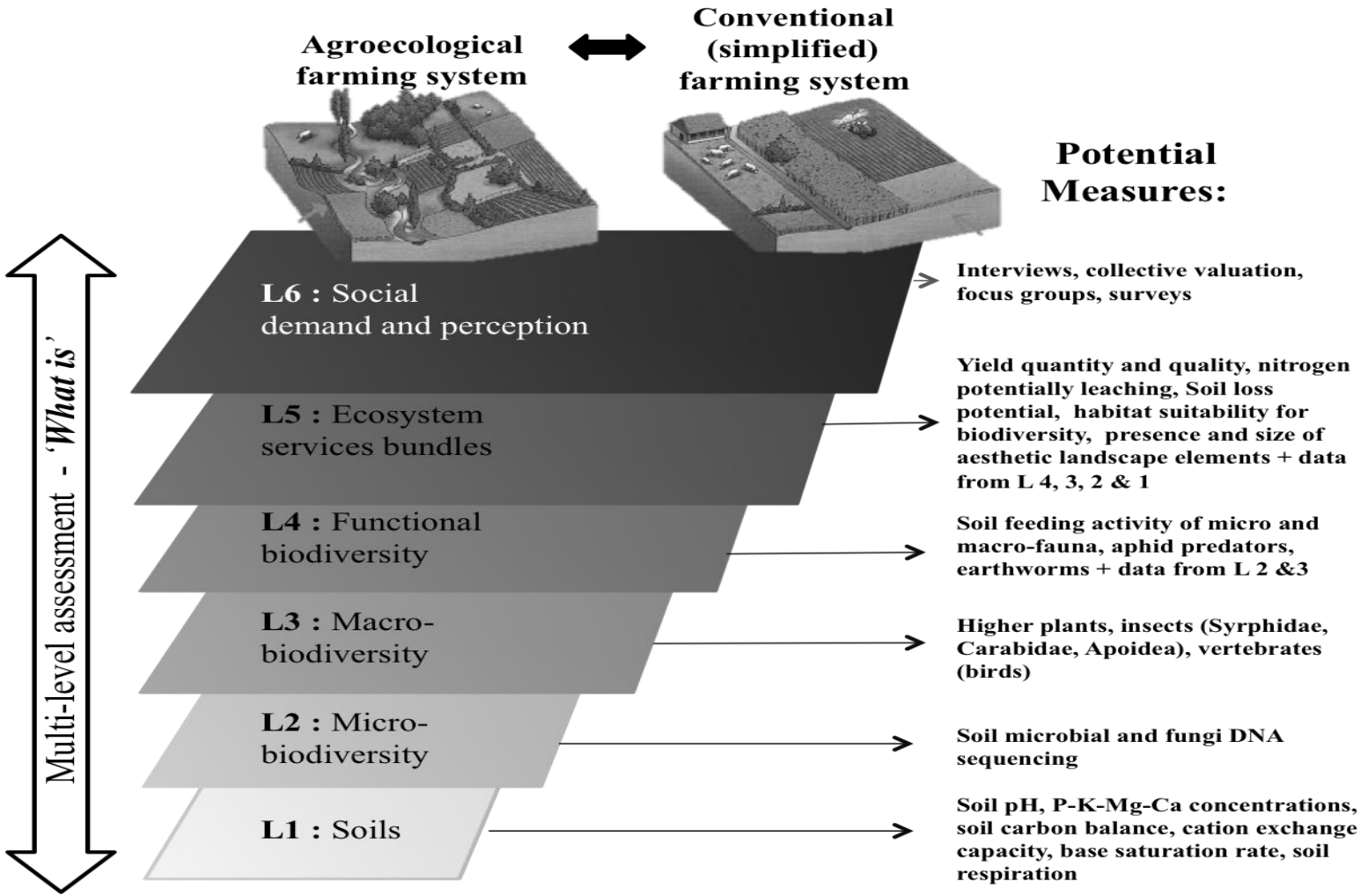
Framework 1



	Expected outcomes	*Example*
Step 1 - What is Develop a shared systemic approach (biophysical, socio-cultural and/or economic domains) see also Fig. 1	➔ Assessment of current supply and demand of ES bundles	*Assessment of a current issue of low erosion control*
Step 2 - What could be Explore potential evolutions of the system ((un-)manageable drivers of change, power relationships)	➔ Identification of plausible transformations of the agroecosystem and of related ES bundles	*Scenario A - transformation towards hedge planting* *Scenario B - transformation towards no-till agriculture*
Step 3 - What should be Select acceptable pathways of change (diversity of value backgrounds and perceptions)	➔ Selection of the most acceptable pathway in terms of ES potential and values held	*Choice of scenario B - identified as having locally the highest potential in terms of erosion control and most valued by stakeholders*
Step 4 - Toward a renewed 'what is' Collectively propose and implement change (coevolution of approaches, iterative consultations)	➔ Implement selected update of the supply and demand of ES bundles	*Implementation of no till agriculture on the ground → modification of other ES flows, e.g., provides a soil favorable to micro-organisms and enhances the ES 'soil formation'*

Dendoncker et al. In review



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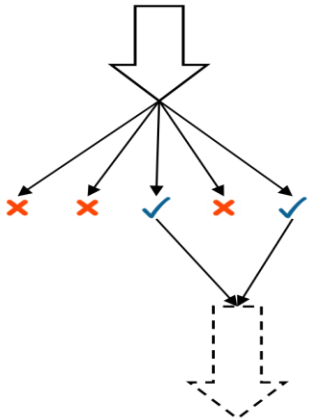

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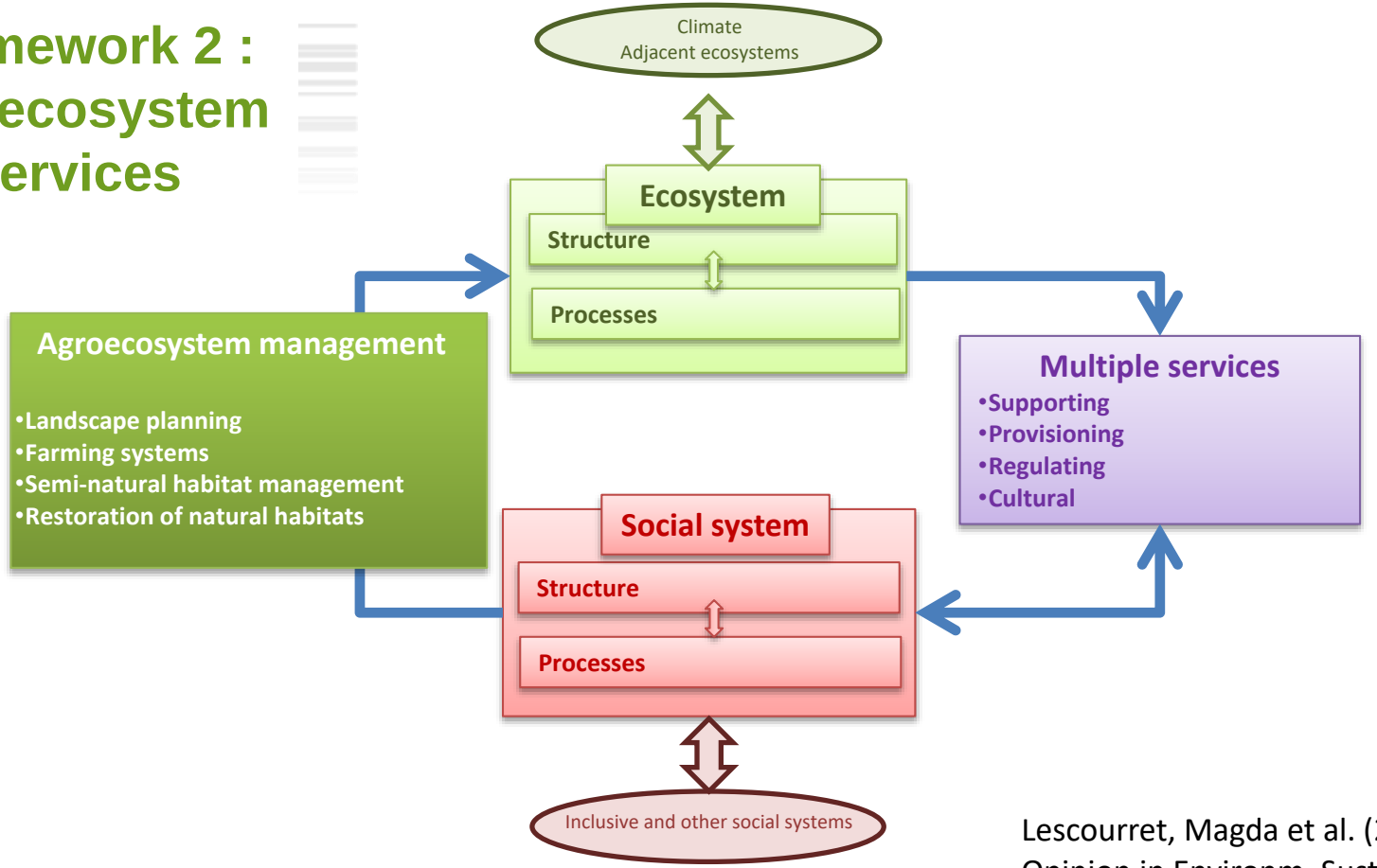
Framework 2 : agroecosystem services



Lescourret, Magda et al. (2015) Current Opinion in Environm. Sustainab.

Case study:

Coffee value chain in Central America

Ecosystem

Structure: functional biodiversity, coffee

Processes: organic matter dynamics, microbial biomass dynamics, coffee growth, …

Improvement of regulating services but lower coffee productivity (organic)

Multiple services

- **Provisioning:** coffee productivity
- **Regulating:** water conservation, pest control, soil quality

Balance between multiple ES

Social system

Structure: NGOs, companies, organic farmers, consumer groups

Processes: certification, design of technical systems, compliance control procedures, *distribution of premium, coordination between actors in the territory*

Coffee market (1990 crisis)

Create a new local SSE system

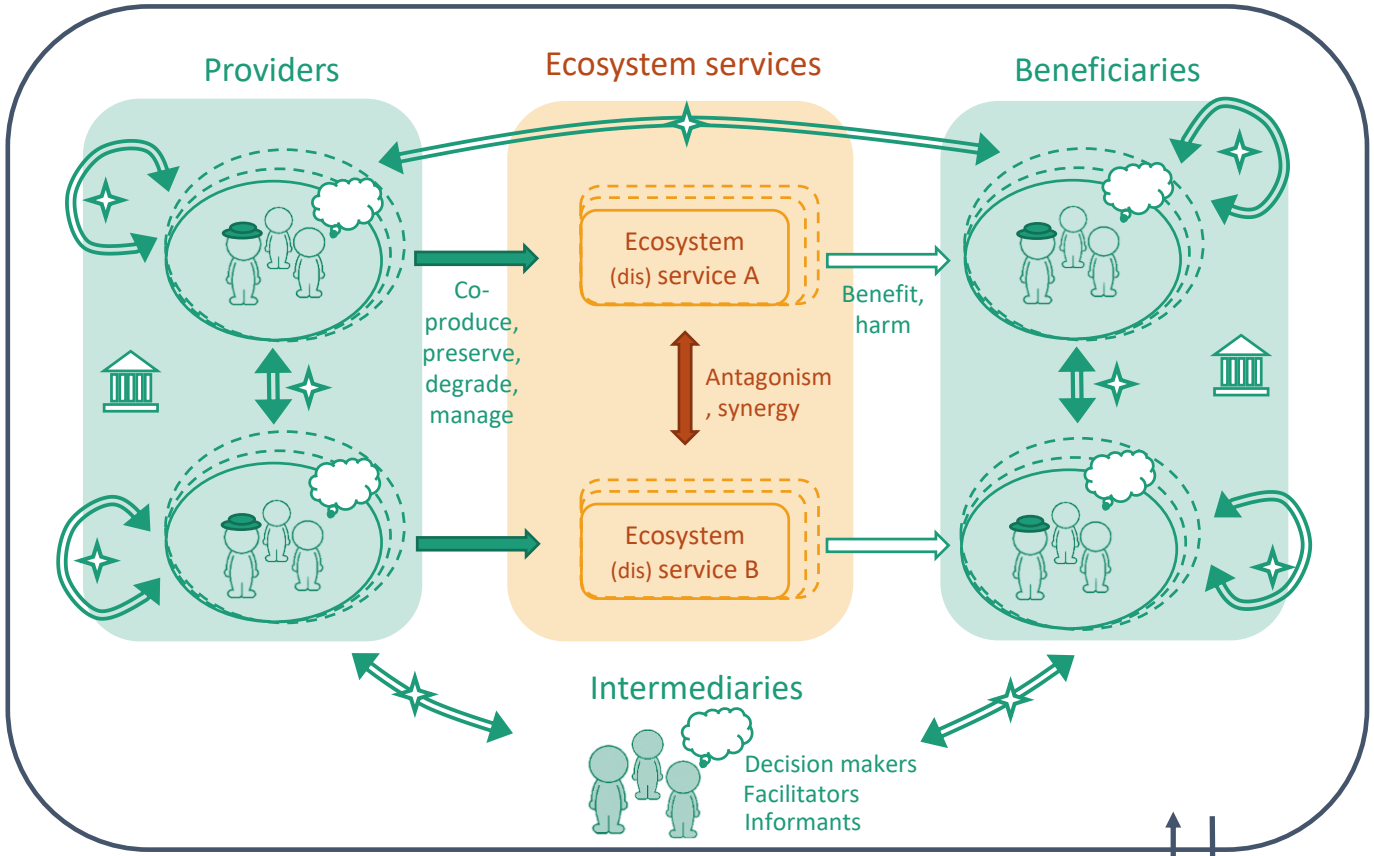
Better diversity and functioning on certified farms

Agroecosystem management

- ***Landscape:*** *planning and management*
- **Farming systems:** shade structure and management

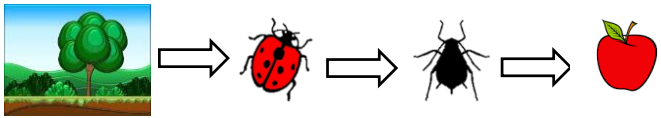
A focus on shade

Fram. 3 : Using an ES lens to highlight social interdependencies and reflect on collective action



Barnaud et al. (submitted) Ecology & Society

Example : **insect pest regulation** at the **landscape** scale



Framing of interdependencies

- Farmers and advisors perceive the landscape mostly as a source of pest

Ecosystem services

Biological pest control services

Pest pressure dis-services

Apple production

Levels of organization

- Mismatch between management (plot level) and ecological process (landscape level)

Providers

Landowners
Farmers

Beneficiaries

Farmers
Consumers

Power

- Integrated vertical supply chains with strict production standards
- Orchard farmers rely heavily on technical advisors

Intermediarie

Vertical supply chain

Supermarket
Cooperatives
Technical advisors

Institutions

- Policies : bans on pesticides

No pre-existing action arena for insect pest regulation at landscape scale

Salliou & Barnaud (2017) Ecology & Society

World café - 3 questions

1. What are the potential and limitations of the ecosystem service framework to support the **understanding** of agroecological transitions?

2. What are the potential and limitations of the ES framework to support the **design and steering** of agroecological transitions?

3. What could we **do concretely** to operationalize these ideas?