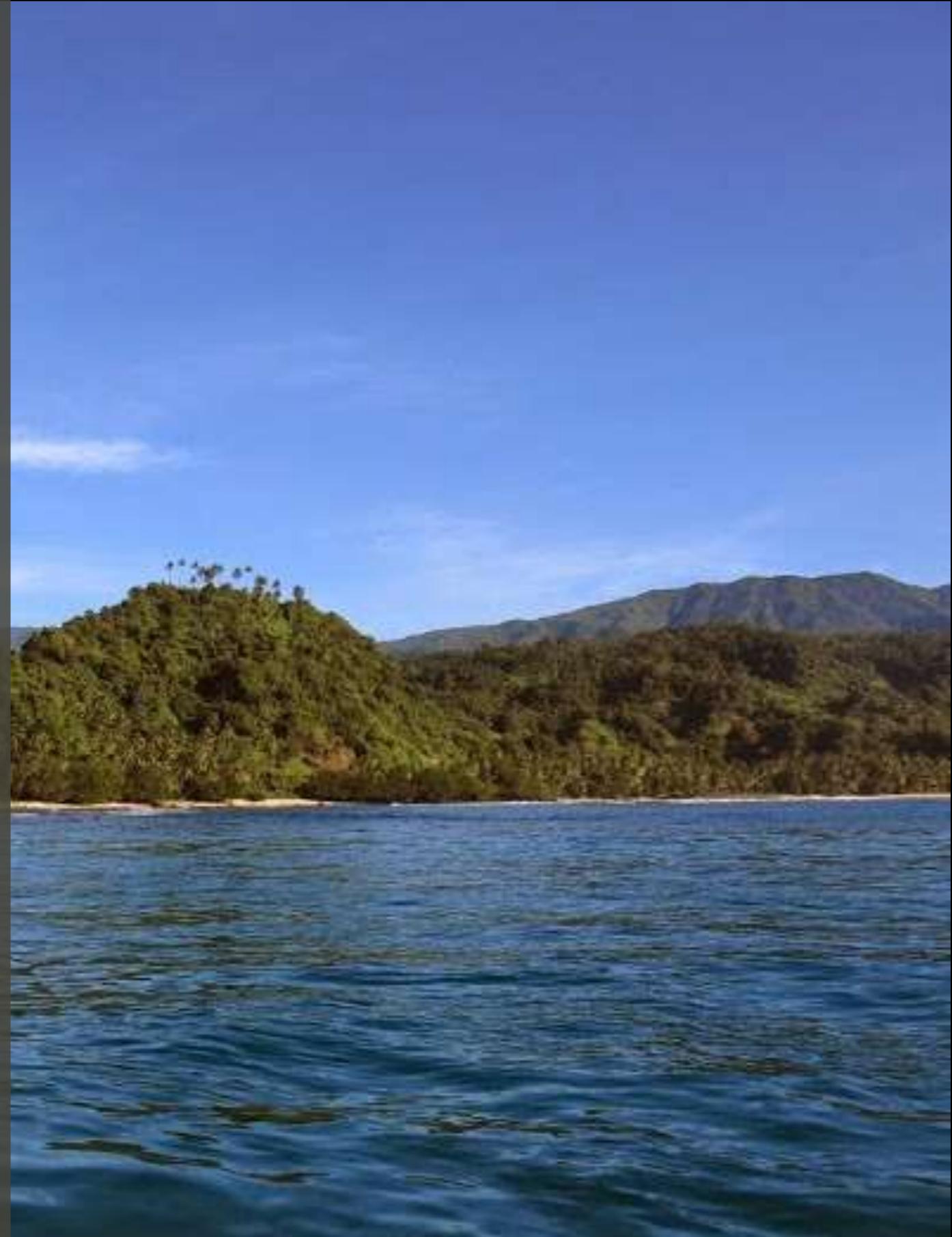


# **Social- ecological indicators of resilience**

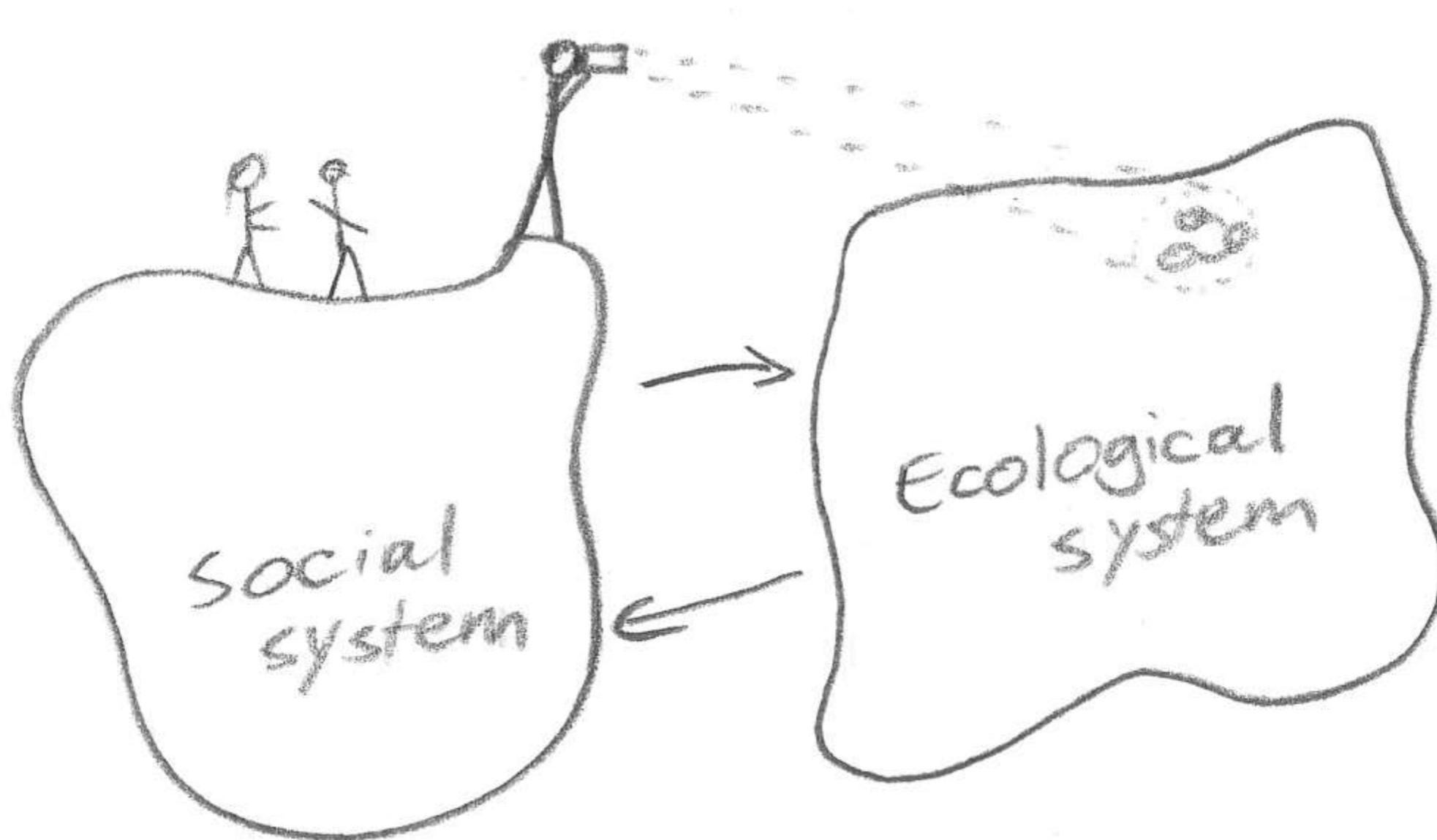


# Currently the framework comprises three main elements

- **Participatory mapping** of land uses/cover, agrobiodiversity and ecosystems services
- **Description of agrobiodiversity** (crops, CWR, animals, pollinators, medicinal and edible plants, soil biodiversity)
- **Social-ecological resilience assessment**

# Conceptual framework

**Social-ecological systems** (linked systems of people and nature) coined by Fikret Berkes and Carl Folke in 1998.



# Conceptual framework

**Social-ecological systems** (linked systems of people and nature) coined by Fikret Berkes and Carl Folke in 1998.

**Resilience** of social-ecological systems can be described as their capacity to **continually change, adapt and transform** in response to external drivers, internal processes and have the opportunity for novelty and innovation (Folke et al. 2010).

# Conceptual framework

## **Viewing agricultural landscapes as social-ecological systems.**

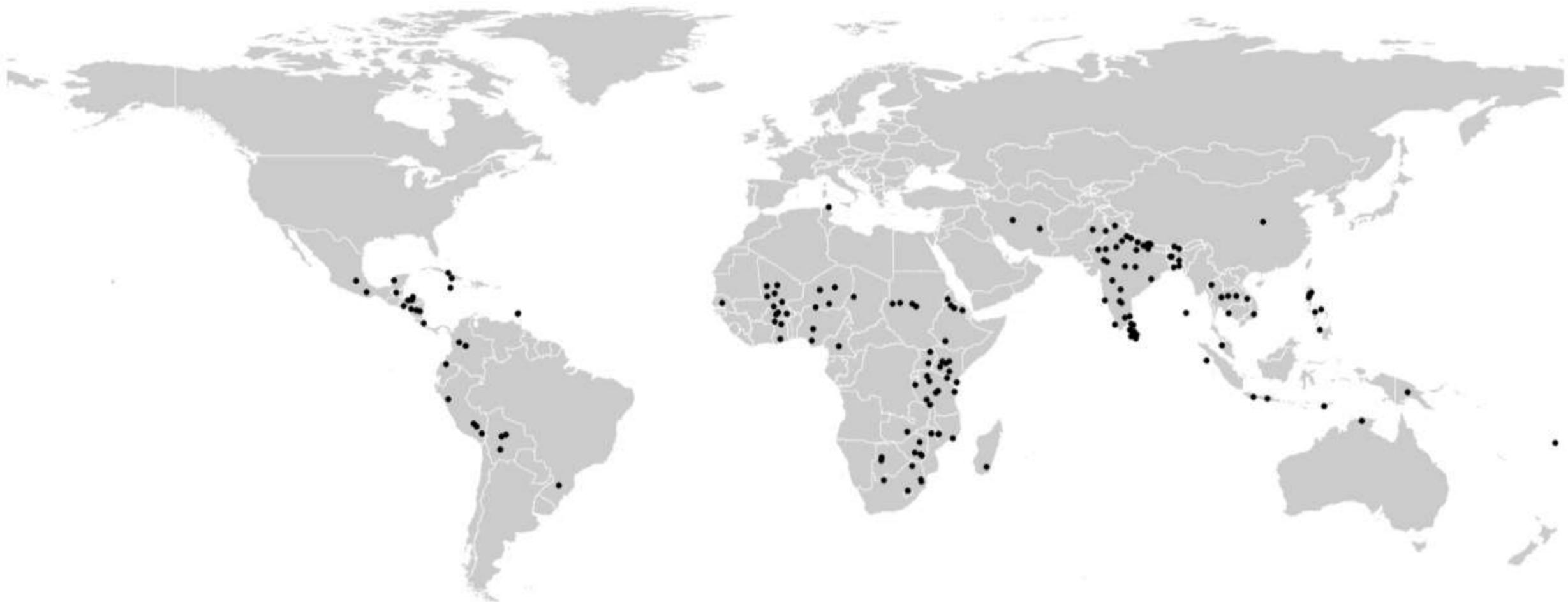
### **“Resilience” approach**

- Maintain adaptation processes
- Strengthen local innovations
- Promote resource regeneration
- Endogenous development
- Local autonomy

# Developing the Social-ecological Resilience indicators

What confers social-ecological resilience in agricultural landscapes?

How to assess and strengthen climate change resilience?



# Resilience-strengthening practices

Ecosystem protection and restoration

Adaptation through diversification and innovation

Maintenance and access to diversity

Landscape

1

Farming system

2

Species/variety



A multiscale landscape approach

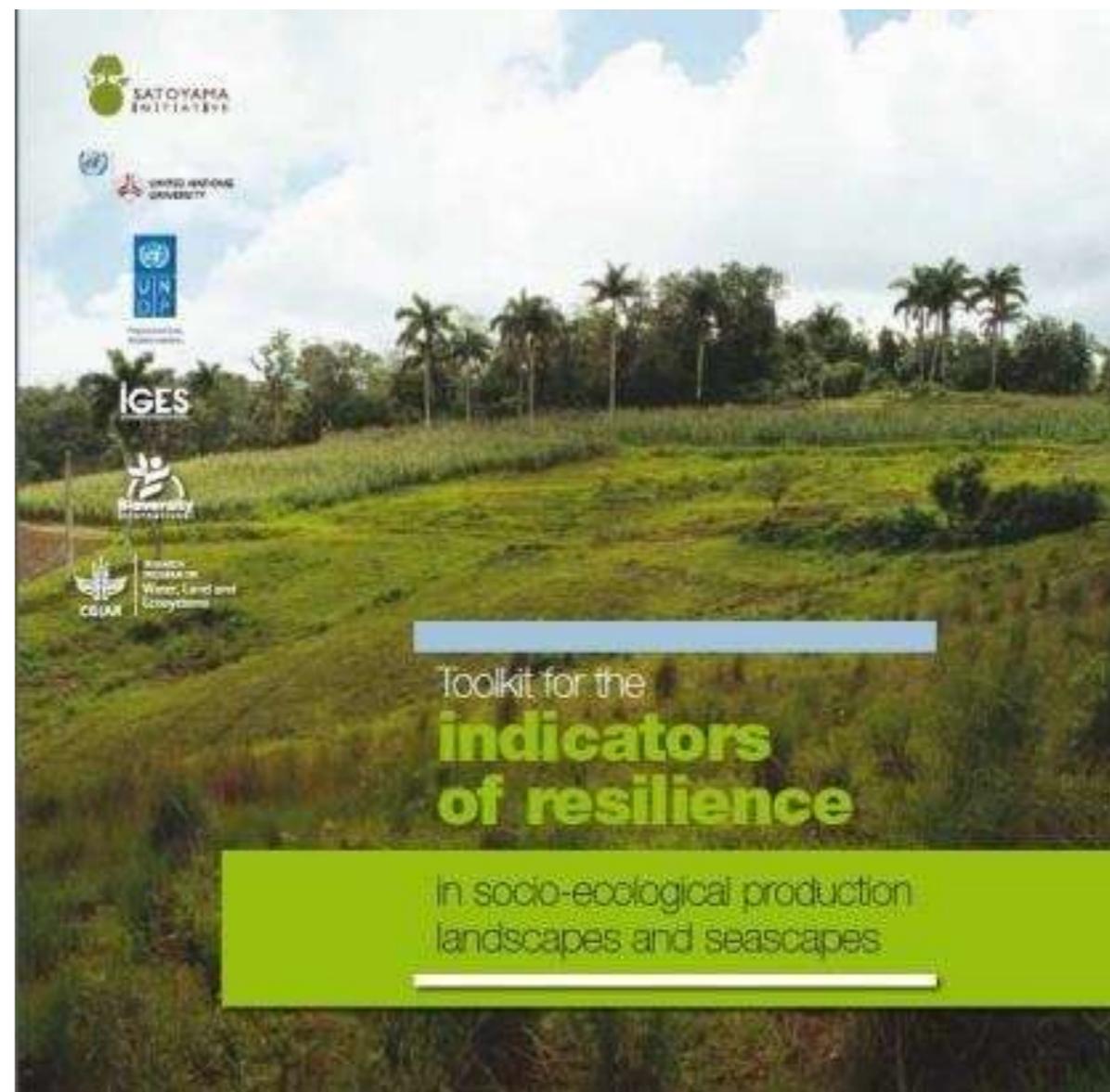
Photos Yasuki Morimoto

# Developing the Social-ecological Resilience indicators

Field-tested by Bioversity International in Cuba, Bolivia, Kenya, Nepal, Fiji, Mongolia, Tanzania and Uganda and used in 20 countries participating in the COMDEKS Project.

Revised based on the above experiences (2014)

Development of a **toolkit** to provide practical guidance for using the indicators **(in press)**



# Social-ecological resilience indicators

## Developing strategies for

- Conserving agrobiodiversity at various scales (from genetic to landscape level).
- Sustaining adaptation processes that maintain and generate diversity.
- Empowering local communities and strengthening their role as innovators and custodians of biodiversity (Participatory research tool/approach).

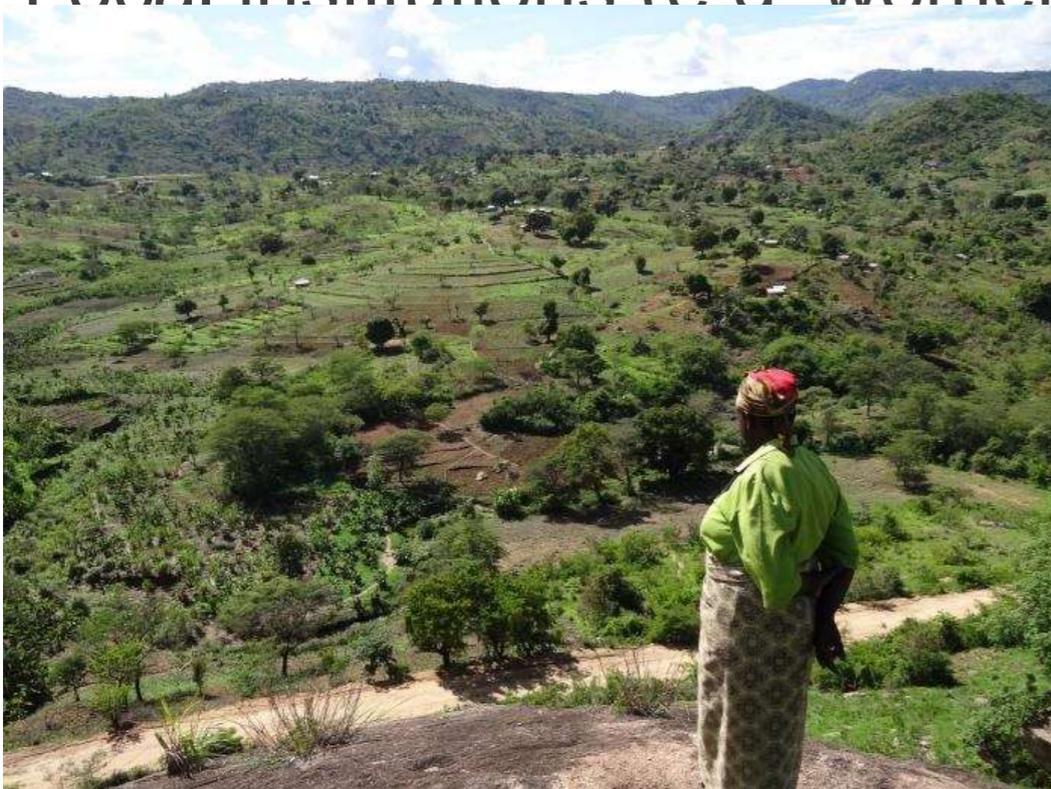


# What do we “measure”?

- **Landscape and ecological characteristics**  
(biodiversity, habitat)
- **Social features** (institutions, networks, education)
- **The links and interactions between the natural and anthropogenic components** (how do humans shape ecological and evolutionary processes)

# Results from Kenya

- Improved access to seeds, particularly drought-resistant crops with high nutritional value (e.g. sorghum, millets, cowpea)
- Wider adoption of sustainable practices (e.g. improved soil and water management; diversification of production systems)
- Reforestation and land restoration (e.g. wild fruit trees)
- Local institutions (e.g. women's groups)



# Resilience-strengthening practices

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A multiscale landscape approach

Photos Yasuki Morimoto

# The case of Fiji

## Example of community-based resource management of ridge to reef area

Natural resources in Fiji, both land and marine, are under a customary resource management regime.

Over 80% of land in Fiji is communally owned *communities*.

These communities also manage marine coastal areas through a traditional system of marine tenure consisting of *i qoliqoli* (traditional fishing grounds).



# Bouma National Heritage Park in Taveuni

- High agricultural productivity in Taveuni is attributable in part to success of the Taveuni Forest Reserve which ensures abundant water supply to the people of Taveuni.
- Communities depend on the sea, agriculture and eco-tourism.
- The 4 communities in Bouma are involved in community-based ecotourism projects.







# Major findings of the SEPLS workshops in Bouma

The indicators of resilience in SEPLS were useful to **community members** to:

- Raise awareness of the interactions between different components of the landscape/seascape and of the influence that human activities inland and along the coast can have on the sea (ridge to reef).
- Remind them of the importance of protecting forests, wetlands and the sea (monitoring is done directly by community members).
- Get a better sense of ownership and responsibility over management processes.
- Understand the importance of better communication and cooperation between the different communities who live in the same area and to unite the efforts to establish a greater MPA which includes fishing grounds in all 4 communities.

# Social-ecological resilience indicators

Twenty indicators in five categories:

1. Landscape/seascape diversity and ecosystem protection
2. Biodiversity (including agricultural biodiversity)
3. Knowledge and innovation
4. Governance and social equity
5. Livelihoods and well-being