

# Do community seed banks contribute to social-ecological resilience? A case-study from the Western Highlands, Guatemala

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## Research context

The Western Highlands, Guatemala, an area rich in landscapes, crops and indigenous cultures.



Socio-economic and environmental changes leading to agrobiodiversity loss.



Decrease in maize cultivated area, farmers devalue and abandon traditional varieties, loss of traditional maize-related practices and beliefs.

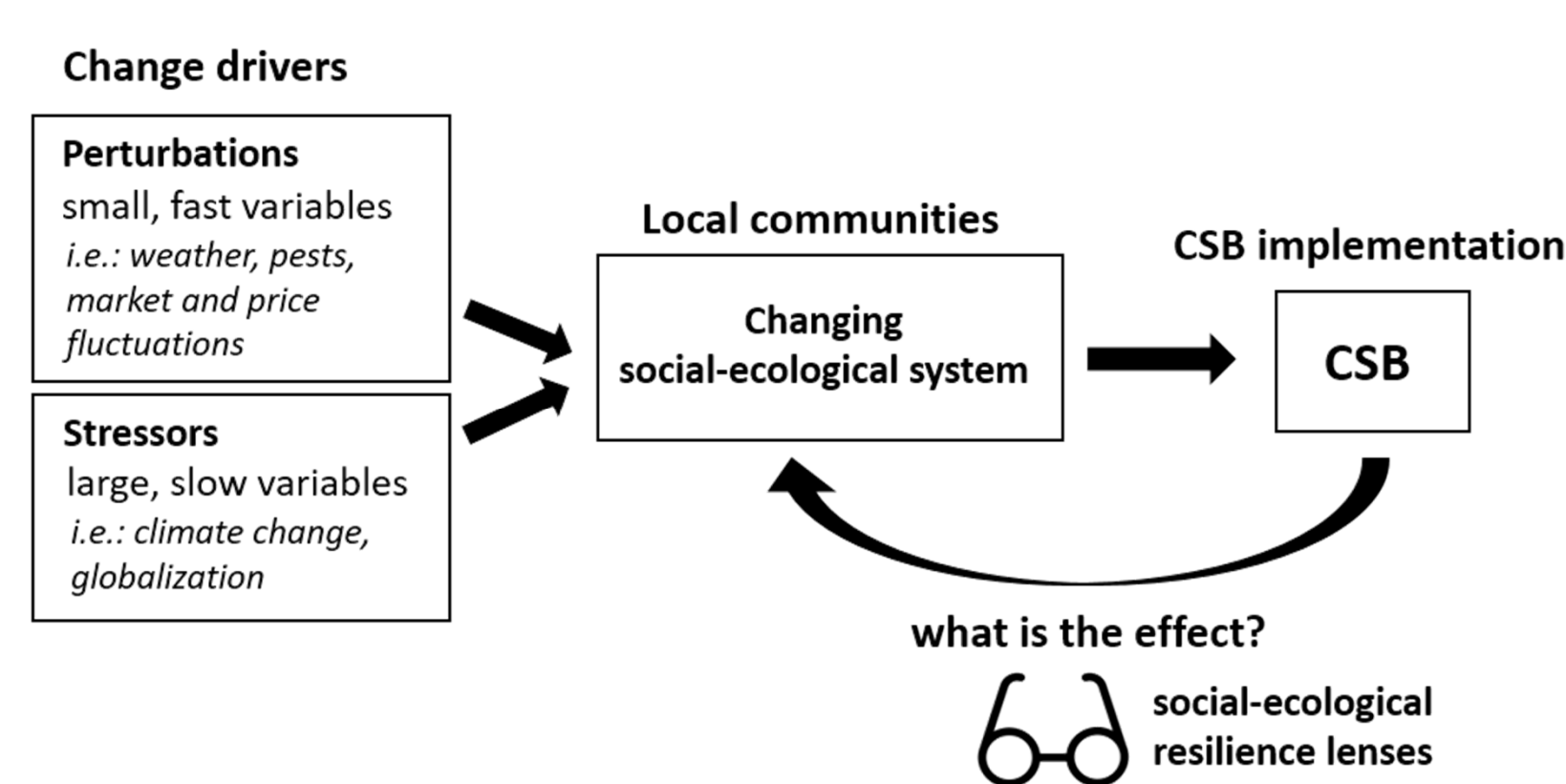
<b>Social factors</b> <ul style="list-style-type: none"> <li>Land-holding fragmentation</li> <li>Migration of youth</li> </ul>	<b>Economic factors</b> <ul style="list-style-type: none"> <li>Household income source diversification</li> <li>Cash-crop orientation</li> </ul>
<b>Natural factors</b> <ul style="list-style-type: none"> <li>Higher pest incidence</li> <li>Higher incidence extreme weather events</li> <li>Changes in temperature and rainfall pattern</li> </ul>	<b>Political factors</b> <ul style="list-style-type: none"> <li>Lack of regulation for low-price maize imports</li> <li>Public sector promotion of high yielding varieties</li> </ul>

Establishment of community seed banks (CSBs) to strengthen the capacities of local communities to manage their own agrobiodiversity in the face of change.



## Objective & framework

To explore whether CSBs contribute to social-ecological resilience, or in other words, whether they support the capacity of the local communities to cope with and adapt to changing conditions.



## Methods

Time-span:			
	Phase I Exploratory	Phase II Comparative case-study	Phase III Validation
Objective:	Explore CSB implementation	Identify CSB-induced changes	Validate the results obtained in Phases I, II
Methods data collection:	Focus group discussions (FGD)	Semi-structured interviews	Validation workshops with indicator set
Sample size	n=10; 4-8 participants/FGD	n=86; 26-30 farmers/community; 3 case-study communities	n=3; 10-15 participants/workshop
Sampling	Purposive sampling: CSB management committee and CSB members	Purposive sampling: Considering CSB membership, gender, age, ethnicity and dedication to farming	Purposive sampling: CSB members
Methods data analysis	Qualitative content analysis, mix of deductive and inductive coding	Qualitative content analysis, univariate and bivariate statistical methods (Lilliefors-test, Mann-Whitney-Wilcoxon test)	Qualitative content analysis, univariate statistics

## The way forward: what role will CSBs play in the future in the Western Highlands?

- Findings highlight CSBs potential to build resilience in the face of change by sustaining agrobiodiversity and its associated knowledge, improving technical and organizational capacities, and contributing to more dynamic and effective networking.
- To realize this potential, there is need to make the CSB concept more attractive to local communities and to support them to take over the lead. CSB actors will have to redefine the concept to integrate with the larger change processes taking place in the region.
- We suggest: (i) including in the CSBs a wider range of crops important for income or nutrition; (ii) generating economic incentives for both, the members and the organization – e.g. by selling seed of local varieties or enhancing market channels for produce of traditional varieties.

## Key findings

### Phase I, CSB implementation

- CSBs are embedded in a social-ecological system undergoing rapid change. The socio-economic transformation is changing the foundations of agriculture and livelihood strategies. This context has challenged not only CSB implementation but also their function and scope.
- CSBs take a similar shape regarding infrastructure, organization and management, and seed management methods. However, CSBs have different implementation levels and vary in size, agrobiodiversity preserved and services offered to the community.
- The main challenges CSBs face are the dependency on external support and the difficulty to mobilize social and human capital in the local communities.

### Phases II and III, CSB-induced changes – implications for social-ecological resilience

- CSBs affected seed management practices and local seed dynamics by promoting new selection and storage methods, fostering seed exchange, and providing access to new varieties. Other effects were greater information and knowledge exchange, and changes in gender roles and organizational skills.
- The magnitude of the changes was dependent on the implementation level of the CSB and the socio-economic situation in the local communities (see Fig. 1).
- CSBs support social-ecological resilience by increasing farmers' portfolio of risk-spreading strategies in case of seed loss and by revitalizing traditional practices with a certain degree of innovation.



Figure 1: Farmers' perception of the magnitude of CSB-induced changes grouped per area of change in the three case-study communities. Results based on the data collected in the validation workshops (Phase III). Magnitude of change: low [1]-medium [2]-high [3].

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