Negotiation-support toolkit for learning landscapes

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44 Capacity-strengthening approach to vulnerability assessment (CaSAVA)

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The Capacity-Strengthening Approach to Vulnerability Assessment (CaSAVA) synthesizes local and scientific knowledge to identify existing livelihoods' assets (human, social, financial, physical and natural capital) and deficits at multiple landscape scales. The information for the synthesis comes from multiple stakeholders (for example, farmers, government officers and scientists) and is designed to enable local stakeholders (female and male farmers) to buffer and adapt to both economic (that is, fluctuating prices) and climate-related (for example, extreme weather events) shocks and hazards. CaSAVA is tailored for participatory approaches to collect information disaggregated by gender and, most importantly, to strengthen farmers' awareness of, and capacity for thinking about and articulating, otherwise latent problems. CaSAVA further facilitates the assessment results to develop conservation and livelihoods' strategies to increase farmers' resilience to shocks and hazards.

Introduction

An agro-socio-ecological landscape might experience shocks and hazards[1] that act as stressors to the landscape and its inhabitants. The stimuli are mostly external and are beyond the control of landscape managers. There are two types of shocks and hazards: biophysical, caused by natural processes; and those that are socio-economic and political. The biophysical shocks and hazards can be in the form of extreme rainfall, prolonged drought, pests and diseases, hurricanes, fire, earthquakes or volcanic eruptions. The socio-economic and political shocks and hazards encompass sudden price changes, market uncertainty and tenure regulation.

In most tropical countries, rural livelihoods are vulnerable to climate-related shocks and hazards, which are often intertwined with socio-economic and political ones. Fluctuations in the prices of agricultural products and climate-related events that affect productivity are the two most likely shocks and hazards that will increase farmers' vulnerability. As elaborated in van Noordwijk et al (2011), buffering and filter functions of landscapes and institutions shield people from the direct impact of such shocks and hazards, with complementary roles for buffering across the various assets (capitals) and some opportunity for substitution. Vulnerability is due to both shortfalls in buffering and the intensity of a shock or hazard that exceeds the buffering but the buffering part is potentially under the control of local people while the shock or hazard is not.

[1] A 'shock' is defined herein as a sudden, dangerous event and a 'hazard' as an unavoidable dangerous event that might or might not be sudden.

There are several key questions regarding buffering, filtering and resilience.

- Which households and communities are more vulnerable than others? Why?
- Which tree species, crops, farming systems, forest management practices are contributing to buffering and resiliency?
- Are the buffering and filtering capacities of the landscape decreasing? If so, what is degrading them?
- Can barriers to buffering and filter functions be identified and removed to promote enabling conditions for enhanced resilience?
- What are the capacity deficits that restrict actions and strategies to increase resilience? How to overcome them?

Figure 44.1 shows the flows of a vulnerability assessment, featuring some of the causal links that shape an agro-socio-economic landscape in respect to resilience. The assessment requires landscape-level capital (human, social, financial, physical and natural) to be identified and ecosystem services measured and development of the links between the two to the buffering and filtering processes. Constraints and limitations to taking more aggressive responses are also identified. The roles of trees—particularly, tree diversity—and land-use management are studied as part of natural capital and livelihoods' strategies and as responses that can reduce vulnerability and increase adaptive capacity.

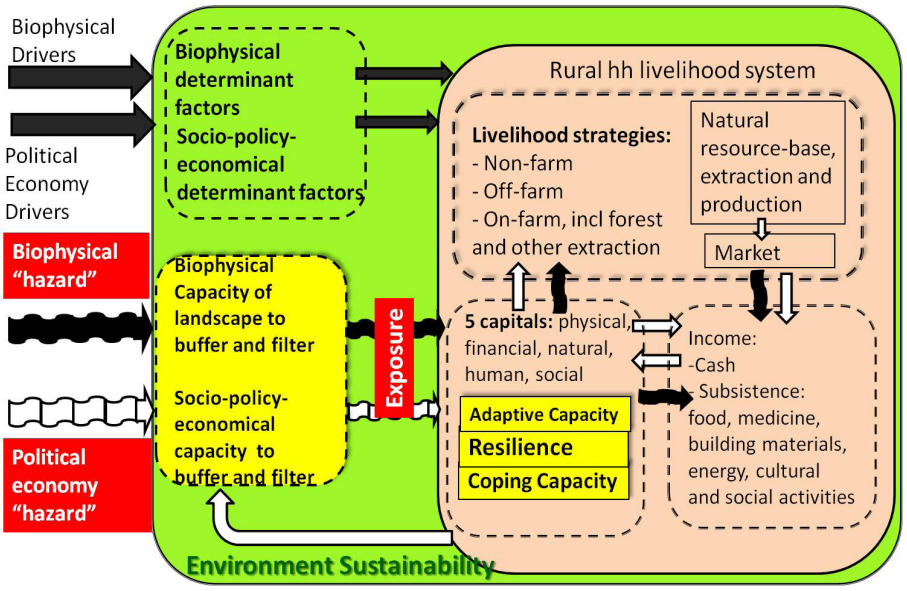


Figure 44.1. Conceptual framework of vulnerability assessment

Note: Rural livelihoods are vulnerable to hazards caused by external biophysical factors and political economy and to changes to a household's internal capital, which affects their agroecosystem's productivity and profits.
Source: modified from van Noordwijk et al 2012

Objectives

CaSAVA aims to:

- understand the multiple-scale causalities and decision-making processes in agro-socio-ecological landscapes that shape land use, presence of trees and associated buffer and filter functions;
- unearth the local knowledge that can be the basis of adaption and reducing vulnerability;
- assess, in a participatory manner, the landscape, societal and human capacities to cope with, and adapt to, environmental and socio-economic and political changes; and
- strengthen the capacity of local people to develop strategies and manage their landscape sustainably.

Steps

To build scientific knowledge, CaSAVA draws on other tools described earlier. There are five main steps of CaSAVA (Figure 44.2).

1. Conduct a vulnerability assessment of landscape changes in buffering capacity against shocks due to climate- and market-related factors, exposures and impacts of shocks on communities and farmers, responses to reduce impacts and gaps in capacity to reduce immediate and long-term impacts and increase resilience (local knowledge assessment disaggregated by gender) .
2. Disseminate the results of the vulnerability assessment to communities; conduct a participatory analysis of strengths, weaknesses, opportunities and threats for conservation and livelihoods issues; and conduct interviews with local government agencies to identify resources and government programs that potentially bring opportunities to increase the resilience of farmers.
3. Build consensus among multiple stakeholders (including farmers, government officers, the private sector and researchers) on common, specific objectives for conservation and livelihoods to increase farmers' resilience.
4. Develop a participatory strategy to reach specific objectives for conservation and livelihoods using outcome mapping through identification of outcome challenges and progress markers.
5. Conduct participatory action planning to implement the strategies through a joint process to identify resources, working groups, institutions and policies that can support the plan.

There are two main methods used to assess vulnerability.

» Scientific assessment of land-use and land-cover changes (ALUCT) and the impact on the buffering capacity of the watershed (GenRiver and FlowPer), carbon-stock dynamics (RaCSA) and biodiversity (QBSur).

» Local knowledge assessment at the household and community levels.

- Roles of the five capitals (assets) in livelihoods' strategies under shock and hazard conditions: availability of water quality and quantity; direct use and market value of local biodiversity; aligning expenditures and income.
- The resilience of tree and farming systems to shocks (Treesilience)
- Immediate responses (coping) and long-term responses (adapting) to the impacts of shocks and capacity deficits in coping and adapting (Treesilience).
- Selecting farming systems and tree species (G-TreeFarm).

Steps 2–5 largely use a facilitation process through workshops, training and discussions. Ideally, a formalized working group is developed after or during Step 3. CaSAVA combines the outcome mapping method and logical framework analysis in participatory strategy development with boundary partners mainly due to the complex nature of the problems. Behavioral changes of boundary partners defined as outcome challenges are developed into progress markers and, together with other indicators of successes, are included in the monitoring and evaluation system. Toward Step 5, champions within the working group or other boundary partners should be more dominant than CaSAVA facilitators.

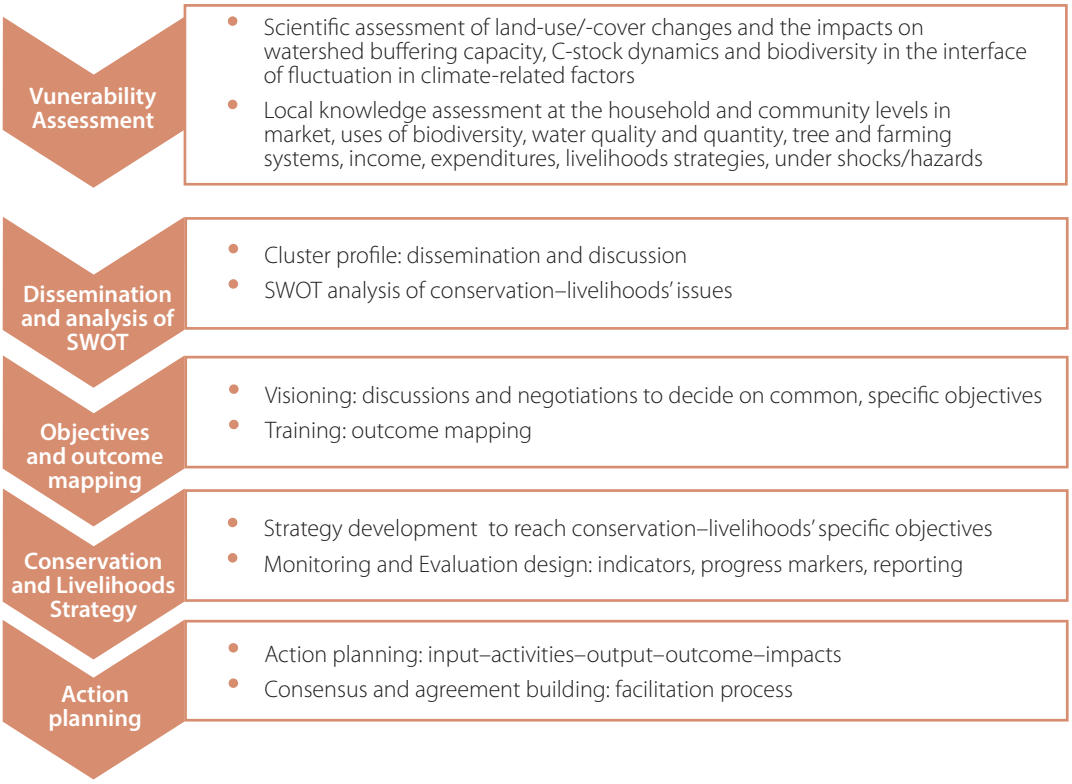
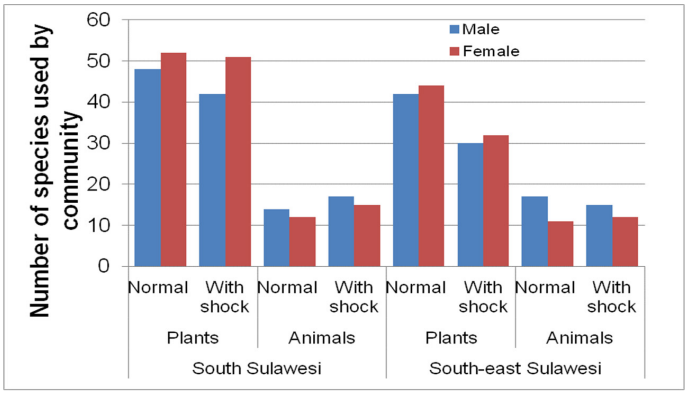


Figure 44.2. The five steps of CaSAVA to develop capacities of farmers to increase their resilience to shocks and hazards

Case study: CaSAVA in Indonesia

At the time of writing, CaSAVA is being developed in South and Southeast Sulawesi provinces, Indonesia. Steps 1 (vulnerability assessment) and 2 (dissemination of results to communities) have been successfully implemented but the results are yet to be published. Application is approaching Step 3.

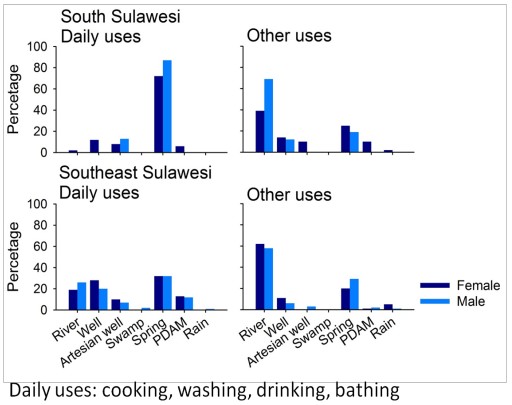
Figure 44.3 shows results from Step 1's focus-group discussions on biodiversity uses, which were conducted at several sites in Sulawesi. Figure 44.4 shows results from Step 1's focus-group discussions on water sources, quality and quantity. Other results from Step 1 are presented as examples with the Treesilience and G-TreeFarm tools.



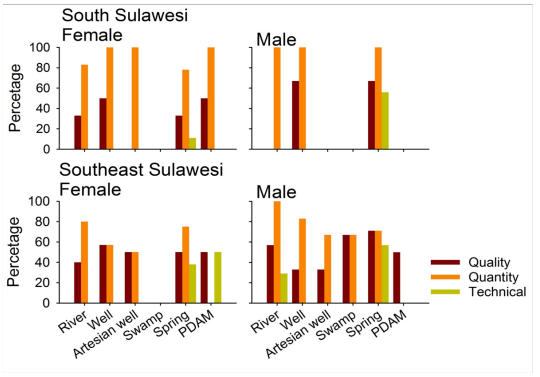
- Females tend to use more plant species and lee animal species than male
- Increased animal use occurred during shock conditions in South Sulawesi
- Number of tree species used during normal years tends to be higher than those during years with shocks

Figure 44.3. Results from focus-group discussions on the uses of biodiversity under normal year and year of shocks for male and female gender groups in South and Southeast Sulawesi.

Source: Khasanah et al 2013



Daily uses: cooking, washing, drinking, bathing
Others uses: agriculture, livestock, micro hydro, transportation, others.



Quality: muddy, contaminated
Quantity: less amount of water in dry season, more amount of water in wet season, flooding
Technical: broken/clogged pipe

- The main sources of water for daily uses in Southeast Sulawesi vary, while that in South Sulawesi is mainly spring
- For other uses main sources of water are river and well, both in South and Southeast Sulawesi
- Quality and quantity are the two main problems encountered in almost all sources of water, with quantity is the main problem across different sources of water, provinces and gender groups

Figure 44.3. Results from focus-group discussions on water sources, water quality and quantity for female and male gender groups in South and Southeast Sulawesi.

Source: Khasanah et al 2013

The landscape scale is a meeting point for bottom–up local initiatives to secure and improve livelihoods from agriculture, agroforestry and forest management, and top–down concerns and incentives related to planetary boundaries to human resource use.

Sustainable development goals require a substantial change of direction from the past when economic growth was usually accompanied by environmental degradation, with the increase of atmospheric greenhouse gasses as a symptom, but also as an issue that needs to be managed as such.

In landscapes around the world, active learning takes place with experiments that involve changes in technology, farming systems, value chains, livelihoods' strategies and institutions. An overarching hypothesis that is being tested is:

> Investment in institutionalising rewards for the environmental services that are provided by multifunctional landscapes with trees is a cost-effective and fair way to reduce vulnerability of rural livelihoods to climate change and to avoid larger costs of specific 'adaptation' while enhancing carbon stocks in the landscape.

Such changes can't come overnight. A complex process of negotiations among stakeholders is usually needed. The divergence of knowledge and claims to knowledge is a major hurdle in the negotiation process.

The collection of tools—methods, approaches and computer models—presented here was shaped by over a decade of involvement in supporting such negotiations in landscapes where a lot is at stake. The tools are meant to support further learning and effectively sharing experience towards smarter landscape management.

World Agroforestry Centre
ASB Partnership for the Tropical Forest Margins
AARD
Federal Ministry for Economic Cooperation and Development
Norad
IFAD Enabling poor rural people to overcome poverty
CGIAR Research Program on Forests, Trees, and Agroforestry