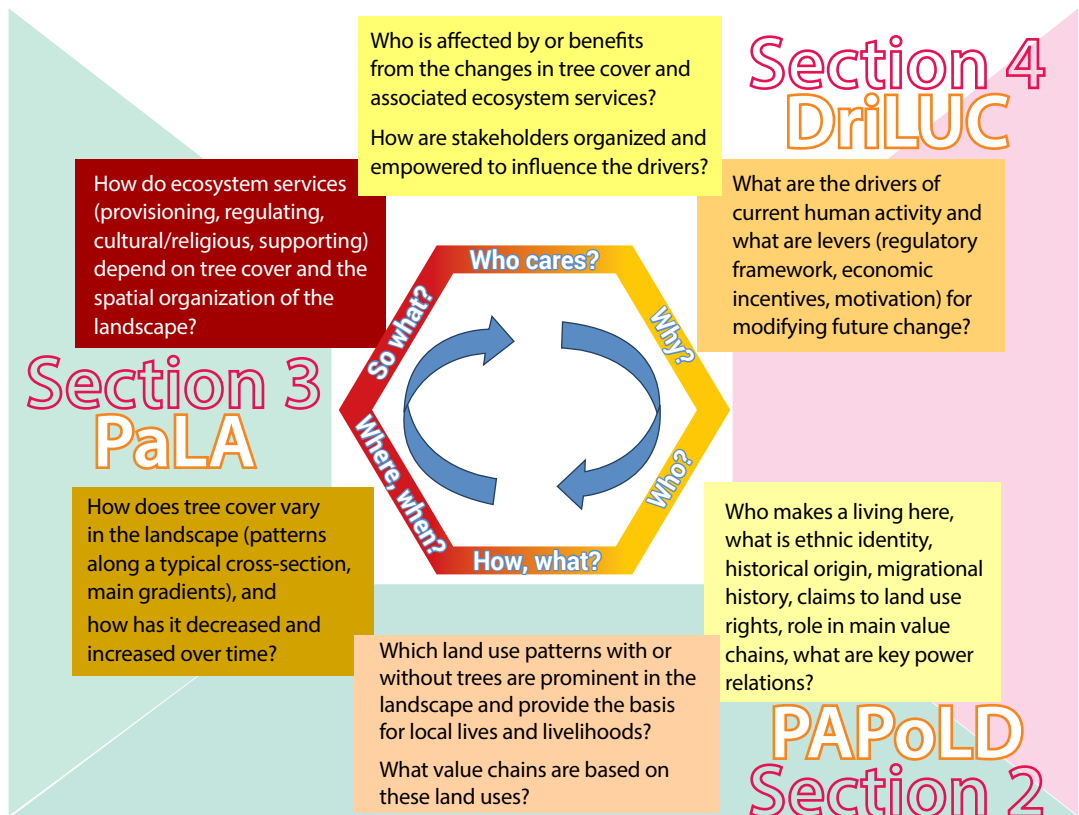


SECTION 04

Transformations: governance, rights



37 | Rapid land tenure assessment (RaTA): understanding land tenure conflicts

Gamma Galudra, Martua Sirait and Ujjwal Pradhan

Rapid Land Tenure Assessment (RaTA) delves deeply into the nature of competing claims over land-use rights and access among stakeholders who hold different rights and interests. RaTA clarifies the institutions and rules governing the management of natural resources and analyses the links between various claims and customary land laws and policies. RaTA seeks policy options and interventions to resolve land conflicts.

■ Introduction: land access: rights, conflicts and cooperation

Deforestation, forest fire, illegal logging and land conflicts with indigenous people are often major problems in forest management. These problems are associated with land tenure, mostly stemming from a lack of clarity, legitimacy and legality of land tenure policies (Box 37.1), which leads to competing claims of access to, and use rights over, forests. 'Legality' refers to alignment with constitutional rights and principles while 'legitimacy' refers to the full involvement of stakeholders in discussions and legal reform. Land tenure conflicts often arise from the different understanding that people have about their rights over forestland and resources; these claims of rights often arise from the evolution of land tenure policies.

We have identified ten sources of competing claims over land tenure.

- 1 The historical transformation of governance from local communities to colonial rule, which mixed support for local rulers and external control of the economic and political interests of the state, to integration in a unified state with formal law, which has left a patchwork of claimants to rights over various part of the landscape.
- 2 The duality of tenure systems between formal state laws (incompletely understood and implemented) versus informal or customary claims, which are largely unresolved.
- 3 Lack of recognition of customary and informal rights in government development projects.
- 4 Unclear land registry records leading to multiple possession of titles for the same land.
- 5 Land border disputes owing to unclear ownership or management status or different understandings of land ownership.
- 6 Overlapping rights of different parties over the same land owing to differing objectives, interests and jurisdictions of various government departments or under different legal regimes.
- 7 Increased commercial agricultural and extensive land use leading to competition over land access.
- 8 Inequality in land access, associated with extreme poverty and vanishing opportunities, causing fierce competition for land.

- 9 Migration to areas with established communities and land tenure systems, leading to conflict and misunderstanding over the rules of access to land and exposure to local entrepreneurs who sell non-legitimate claims to land.
- 10 Displacement and return of populations caused by conflicts, war or forced resettlement by governments.

RaTA engages with a range of such issues.

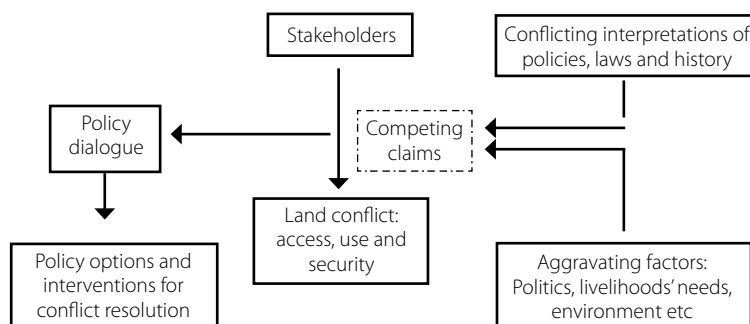


Figure 37.1. Analytical framework for RaTA

Objectives

RaTA aims to reveal the competing historical and legal land tenure claims among stakeholders holding different rights and interests. Five actions are required to resolve land tenure conflicts: 1) exploring the reasons for the conflict; 2) stakeholder analysis; 3) addressing various forms of perceived historical and legal claims; 4) linking these claims to policy and (customary) land laws; and 5) adopting mechanisms for conflict resolution (see Table 37.1).

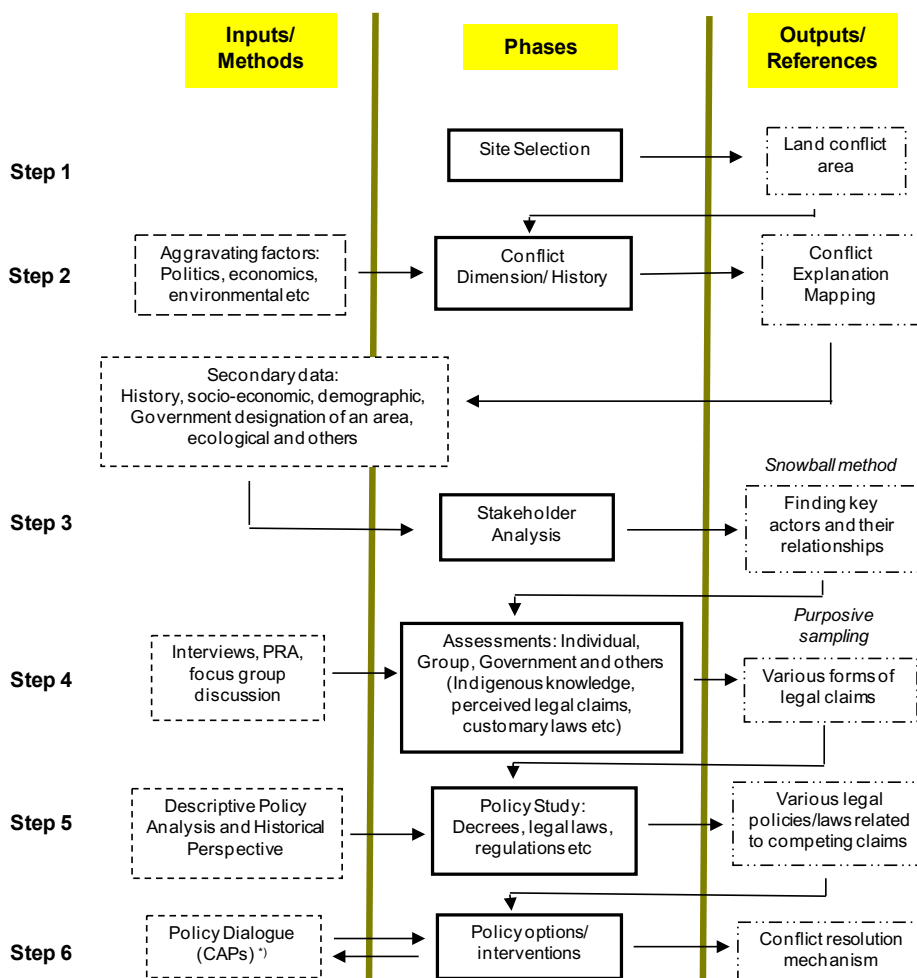
Table 37.1 Aims and questions in the various steps of RaTA

	Aims	Questions
Step 1	Explore the reasons for the land conflict and their links to the political, economic and environmental context.	Where are the main conflicts? When did these conflicts begin? How did they begin? What are the driving factors that led to the conflicts?
Step 2	Identify and analyse stakeholders.	Which actors are directly involved or have influence in this conflict? How do these stakeholders interact and relate to each other? What are the land tenure conflicts genuinely about?
Step 3	Identify perceived historical and legal claims by stakeholders.	What types of evidence do stakeholders use or are considered acceptable to prove their claims? Do they believe their land interests and rights are enforceable? Do they know of any legal organizations that are protecting their interests?
Step 4	Identify the institutions and rules governing the management of natural resources and analyse the links between various claims and customary land laws and policies.	What are the customary laws and policies governing land and property matters? Do rights holders have the support of existing policies? Are there any contradictory policies and legislation?

	Aims	Questions
Step 5	Determine policy options and interventions for conflict resolution.	Are there any existing policies governing the management or resolution of land disputes? What types of conflict need to be addressed? What level of intervention is required?

As an analytical framework (see Figure 37.1), RaTA offers guidance on the important things that policy-makers/mediators need to consider when developing conflict-resolution mechanisms. RaTA consists of six steps (see Figure 37.2). Different techniques, participatory rural appraisal, stakeholder analysis and the establishment of legal policies and laws are among the methods that have been taken account of in the different phases of RaTA.

Steps



*) CAPs: Collaborative Analytical, Problem-Solving Process or Approach

■ Case study: RaTA in the misty mountain of Halimun Salak: a confusion of legal rights from multiple historic claims

An area covering 113 357 hectares on Mount Halimun-Salak in Indonesia was declared a national park in 2003 owing to the richness of its forest ecosystems and hydrological functions. Signposts for the national park were placed near its boundaries, which caused much concern among the people who claimed to have traditional access rights to the land. The dispute was not only between the national park authorities and the local communities but also with the district government of Lebak, which claimed about 15 000 hectares of national park land for mining operations, estate-crop plantations and infrastructure development.

According to interviews, legal documents and policy analyses, the claims by the national park authority were based on gazettal and delineation processes during the Dutch colonial period and the 1950s, 1970s and 1980s. Only 11 000 hectares of 128 000 hectares of designated land had not yet been gazetted and delineated; the rest was legally protected.

Nevertheless, local people had claims to the land based on history, livelihoods and traditional legality. Starting in the 1920s, the designated land was used by local people for shifting cultivation until the Dutch colonial government declared it state land. Since that time, the government had rejected local claims over the land.

In addition to historical claims, some people also had land ownership certificates, which were issued by the National Land Agency in the 1960s as part of national land reform. Others viewed their dependence on the land for livelihoods as proof of their legal claim. To understand the conflicting claims, RaTA used participatory rural appraisal tools in four villages in the national park area. It found that a very large proportion (70%) of the livelihoods of local people depended upon their access to the national park, a reason why they defended their claims so strongly.

The district government of Lebak also had claims to the area based on historic and legal interpretations. The area had been controlled by a state mining company since 1958 under Government Regulation no. 91 of 1961. This law did not mention a state forest zone and, therefore, it was considered that the land was under the control of the state but not as a state forest zone. Based on RaTA's findings, it seemed clear that unless these differences in both claims and policy interpretation were resolved and the needs and interests of all stakeholders were accommodated, conflicts were likely that would jeopardize the rich biodiversity in the park.

■ Key reference

Galudra G, Sirait MT, Pasya G, Fay CC, Suyanto S, van Noordwijk M, Pradhan U. 2010. *RaTA: a rapid land tenure assessment manual for identifying the nature of land tenure conflicts*. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program.

38 | Why No Tree? (WNoTree) Analysis of agroforestry constraints

Meine van Noordwijk, Endri Martini and Suyanto

A Why No Tree? (WNoTree) analysis examines five constraints to a re-greening revolution based on agroforestry.

- 1 Property rights linked to land tenure and land-use restrictions.
- 2 Lack of access to high quality planting material of proven suitability.
- 3 Inadequate management skills and information often constrain production for high market values.
- 4 Over-regulation often restricts access to markets for farmer-grown timber and tree products, partly due to rules intended to curb illegal logging in natural forests or government plantations.
- 5 Lack of reward mechanisms for the environmental services provided by agroforestry and/or high discount rate and lack of investment.

■ Introduction

Agroforestry provides productive and protective forest functions, such as sheltering biological diversity, keeping ecosystems healthy, protecting soil and water resources and storing carbon. Yet, the trees planted in agroforestry systems are excluded from formal definitions of 'forest' and are often overlooked in legal and institutional frameworks for sustainable forest management.

The relationship between agroforestry and plantation forestry can be complementary, neutral or competitive depending on the effectiveness of policies supporting forest functions. Substantial government subsidies favouring large-scale plantations reduces the capacity of agroforestry to provide ecological benefits and services (Figure 38.1).

■ Objectives

WNoTree surveys generally have three objectives.

- 1 To identify the most significant constraints to tree management and domestication (including planting and harvesting) in the local context through focus-group discussions with farmers and local government agencies.
- 2 To test the hypotheses that emerge from these consultations, in combination with spatial analyses of actual tree presence in the landscape, through follow-up surveys.
- 3 To address the primary constraints and test the preceding analysis by engaging in action research with local communities and governments.

■ Steps

1: Checklist of issues to pursue in focus-group discussions

LAND TENURE AND LAND-USE RESTRICTIONS

- Physical or economic access to land for tree planting is linked to use rights over tree products; a lack of clarity on future use rights stops farmers from planting trees.
- Conflicts over land may enhance the use of fire in the landscape and/or create a reluctance to protect trees that are not bringing direct benefits.

LACK OF ACCESS TO HIGH QUALITY PLANTING MATERIAL OF PROVEN SUITABILITY

- Inadequate high-quality planting stock adapted to soil, climate, pests and disease, intercropping systems, local preferences and markets.
- Poor delivery mechanisms for high-quality planting material.

MANAGEMENT SKILL AND INFORMATION OFTEN CONSTRAIN PRODUCTION FOR HIGH MARKET VALUES

- Underperforming trees due to drought, floods, grazing animals, pests, diseases, suboptimal thinning and pruning.
- Lack of knowledge, labour or inputs for managing tree growth in intercropping or on monoculture plantations.

OVER-REGULATION OFTEN RESTRICTS ACCESS TO MARKETS FOR FARMER-GROWN TIMBER AND TREE PRODUCTS, partly due to rules intended to curb illegal logging from natural forests or government plantations

- Lack of local demand and/or physical and institutional access to markets for tree products.
- High transaction costs (permits, formal and informal taxes) for harvesting trees and tree products.

LACK OF REWARD MECHANISMS FOR THE ENVIRONMENTAL SERVICES PROVIDED BY AGROFORESTRY

- Lack of perception and appreciation of non-economic or cultural benefits.
- High opportunity costs: treeless land-use options are more profitable than tree-based ones; in fact this may be the only 'economically valid' reason for a lack of trees in a landscape unless high discount rates and lack of investment are the primary hurdles to otherwise profitable tree-based land use.

An example of WNOTree analyses for Indonesia and the Philippines is provided in Roshetko et al 2008 and van Noordwijk et al 2008.

2: Detailed surveys to test hypotheses generated in Step 1

Box 38.1. Analyzing underlying causes of fire

After the 1997/1998 forest fires in Indonesia, a rapid analysis suggested that ‘fire as a tool’ and ‘fire as a weapon’ were major reasons behind the conflagrations (Tomich et al 1998a). Subsequent research tested these hypotheses and documented location-specific causes (Chokkalingam et al 2005, Suyanto 2005). One of the case studies, which studied the fires in Trimulyo, West Lampung (Suyanto et al 2004), found that, even with the use of military force, forest policy and management had largely failed to protect forest resources when local communities were not involved. The burn scar pattern in 1994 was similar to the burn scars in 1997; both scars were very large and contiguous. A major reason for the 1997 fires had been tenure conflicts: fires had been intentionally caused by discontented villagers as revenge for government efforts to relocate them. Since then, the area had been an unproductive grassland (*Imperata cylindrica*) that was prone to annual fires. The analysis suggested that providing more secure land rights through which livelihoods’ expectations could be realized could lead to more sustainable land management by local communities. Subsequent experience has confirmed this hypothesis. Burn scars became small, indicating fire control.

3. Action research engagement to address constraints

Box 38.2. Lessons learnt from national tree-planting campaigns

The Indonesian movement for forest restoration and tree planting, *Gerhan*, has provided substantial funding for tree planting in areas identified as ‘critical land’. Implicit in the program design has been the recognition that the lack of trees derives from a lack of availability of tree seedlings and other planting material. The limited success rate for tree survival and establishment suggests that other reasons for the lack of trees in the landscape are at least as important. The success rate for tree planting under conditions where land tenure and future benefit flows are clear is substantially higher than in conditions where the trees are seen either as public or as a government controlled good on land that has multiple claims of ownership and use rights.

Box 38.3. Experience in stability of a forest–village gradient in Batang Toru

Positive incentives for appropriate land management are needed to counter incentives for damaging the landscape. Working with community members and other local partners to develop new ways for them to earn income without disturbing the forest or its inhabitants may provide a win-win solution in the orangutan conservation program in Batang Toru, Indonesia. Results of surveys by the World Agroforestry Centre and Winrock International identified a number of non-timber forest products that were produced in Batang Toru which have the potential to diversify and secure viable livelihoods in a landscape with orangutans and other biodiversity. In all the land-use systems (mixed tree gardens, agroforests and natural forests), planning and management are limited. Improving crop management and developing market links could benefit the productivity, profitability and sustainability of these systems. Community strategies were developed to provide technical approaches that enhanced the productivity and/or profitability of non-timber forest products in agroforestry systems while protecting orangutan habitats and helping the communities to market those products. A series of training events built the farmers’ capacity to manage their agroforests in more productive, market-oriented and environmentally friendly ways (Martini et al 2008, Roshetko et al 2007).

Trees farmers want

Agroforestry at landscape scale



Figure 38.1. Interrelationships in a landscape that bear on farmer's decisions to manage trees or not

■ Barrier analysis

In technical terms the WNoTree protocol clarifies the 'barriers' that an external support project can address in forms of the Clean Development Mechanism of the United Nations. Removing a barrier provides for 'additionality' of landscape carbon stocks.

■ Key reference

Roshetko JM, Snelder DJ, Lasco RD, van Noordwijk M. 2008. Future challenge: a paradigm shift in the forestry sector. In: Snelder DJ, Lasco RD, eds. *Smallholder tree growing for rural development and environmental services*. New York, USA: Springer Science and Business Media. p. 453–485. <http://www.worldagroforestrycentre.org/sea/Publications/searchpub.asp?publishid=2044>.

39 | Fair and efficient REDD value chains allocation (FERVA)

Meine van Noordwijk, Suyanto and Sandra Velarde

Fair and Efficient REDD Value Chains Allocation (FERVA) is based on focus-group discussions with different stakeholder groups to combine efficiency and fairness principles in reducing emissions from deforestation, peat land and forest degradation, and other land-use changes in developing countries.

Reducing emissions from deforestation and forest degradation (REDD) is a United Nations-backed mechanism that uses market incentives to reduce greenhouse gas emissions. Combining efficiency and fairness principles is a major challenge for REDD efforts in developing countries. Successfully reducing emissions while also stimulating the creation of sustainable livelihoods and development pathways requires the right combination of policy instruments and the ability to find a middle ground among stakeholders. The FERVA method was designed to help with this process.

Fairness vs efficiency...

Key arguments for fairness:



Reward well-managed landscapes

Key arguments for efficiency:



Maximize emission reduction per \$ invested



Typical arguments for fairness		Typical arguments for efficiency	
1.	Moral imperative: the people that effectively guard the forests in their landscapes deserve rewards	1.	Maximize CO ₂ emissions reduction per dollar invested; focus on real threats only
2.	Poverty reduction as a key Millennium Development Goal, mandates a pro-poor approach	2.	Markets seek the 'right' price, if protected from monopolies
3.	Avoid perverse emission- enhancing incentives by rewarding forest destruction	3.	We need to show success in emissions reduction to maintain public support
4.	Respect for the traditional practices of local communities	4.	Use local institutions and resources

Figure 39.1. Key arguments for fairness and efficiency

Objectives

- To highlight arguments between fairness and efficiency in reducing emissions from the land-based sector.
- To capture different perceptions from stakeholders of fair and efficient value chains.

Steps

FERVA is based on focus-group discussions with different stakeholder groups. The approach should be adapted to suit the local context.

Participants are given an introduction to climate change and the role of greenhouse gases. Roughly 90% of emissions stem from use of fossil fuels and the remaining 20% from the loss of forest and peatland carbon stocks. Depending on the stakeholders' degree of exposure to carbon markets and their expectations of easy money, the audience may recognise itself in one of the stages of the ignorance/hype/crash/reality cycle (Figure 39.2). At this stage, we do not know for whom the reality stage will have negative, neutral or positive consequences.

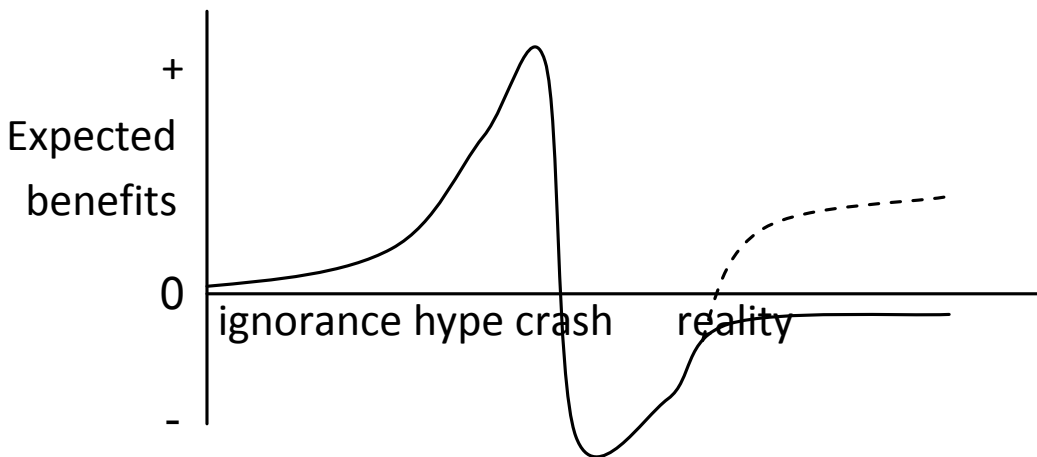


Figure 39.2. Stages of a hope-hype-crash-reality cycle in expected benefits from new options

- 1 Once the local context and data on land-use changes have been clarified, the discussion can focus on opportunities for reducing emissions in areas that have a track record of high emissions as well as on the usefulness of providing positive incentives for long-term forest and peatland conservation. The stakeholders can be split into two groups and a debating club format can be used to tease out the arguments for efficiency and fairness.
- 2 Next, the concept of a value chain can be introduced, using the example of a local agricultural commodity (for example, coffee, rubber or timber). The different steps in the chain add value from the perspective of the end user but the share of the net benefits that they receive may be disproportionate to the effort they put in. We can identify at least eight functions that need to be fulfilled before an end user will be willing to buy a unit of certified emission reduction (named '1 CREDD' or otherwise). Depending on the local context, the discussion can focus on which parts of this value chain already exist.
- 3 A major test of how the fairness plus efficiency issue is handled is how the benefits—the difference in price between legitimate opportunity costs for current CO₂ emitters and the going price for certified emission reductions—will be shared along the value chain. The fourth step of FERVA involves asking participants to allocate 100 units of value over the eight steps of the value chain identified in Step 3 (Table 39.1). This can be done by distributing 100 beans, pebbles or other items into eight bowls. Participants can be asked to do this twice: the first time to show what they expect to happen (based on their experiences with other mechanisms) and the second time to show what they would consider to be a desirable outcome.

Table 39.1. Eight functions required for reducing emissions from deforestation and degradation in developing countries and the way stakeholders see benefits allocated along the value chain

	Current situation: reality	Desirable situation: hope	Difference
1. Actual emission reduction by protecting existing carbon stocks and off-setting legitimate opportunity costs for options foregone voluntarily			
2. Support sustainable livelihoods' pathways with less dependence on land use that results in emissions			
3. Guarding against leakage through integrated natural resource management at the local scale			
4. Securing additionality through clear baselines developed as a result of spatial planning			
5. Certifying credits for emissions reduction by national standards			
6. Setting up conducive regulatory frameworks for multiscale governance			
7. Verifying emissions reduction by international standards			
8. Securing buyers for carbon credits and providing investment when and where needed			
Total	100	100	

■ FERVA sample results

Figure 39.2, below, shows the results obtained during a workshop with environmental NGOs and government agencies interested in developing forest conservation projects within a REDD context.

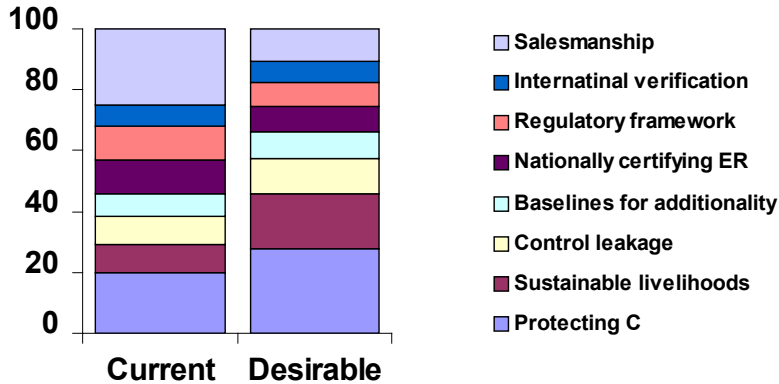


Figure 39.2. Example of result from focus-group discussions with environmental NGOs and government agencies of fair value chains of REDD

In the lead-up to the 13th Conference of Parties of the United Nations Framework Convention on Climate Change in December 2007, in Bali, a group of national and international researchers of the Indonesian Forest Climate Alliance (IFCA) expressed the hope that transaction costs (categories 3–8 listed in Table 39.1) could be kept to less than one-third of the value chain and that the efforts would otherwise be split between direct emission reduction (efficiency) (category 1) and long-term livelihoods' options (fairness) (category 2) (Figure 39.3).

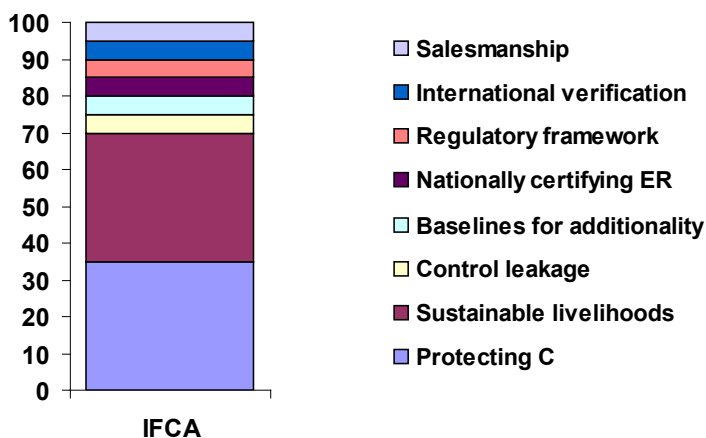


Figure 39.3. Results of the application of FERVA with national and international researchers of IFCA

We are interested in compiling the results of FERVA discussions with different stakeholder groups, and would like to receive reports on FERVA exercises carried out in different countries and contexts.

■ Key references

Van Noordwijk M, Dewi S, Swallow BM, Purnomo H, Murdiyarso D. 2007. *Avoided deforestation with sustainable benefits (ADSB) in Indonesia*. 1. Policy research brief. Avoided. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program.

40 | Rapid assessment of institutional strengths, networks and actors (RISNA)

Retno Maryani, Gamma Galudra, Reny Juita and Ujjwal Pradhan

Rapid Assessment of Institutional Strengths, Networks and Actors (RISNA) assesses the capacity of local institutions to respond to changes and opportunities in their external environment, including policy changes at higher levels. Identification of authorities to make decisions to adapt and change, and of existing modifiable rules for benefit distribution and conflict resolution are particular foci of RISNA.

■ Introduction

The ongoing degradation of natural resources cannot be solved by a purely technical approach. Efficient and fair governance is a prerequisite for sustainable natural resource management. Assessment of institutional capacity offers a comprehensive and holistic perspective on likely achievement of Sustainable Development Goals.

There are success stories of sustainable resource management by adaptive traditional rules, as well as evidence of landscape degradation when external exploitation overrides local institutions. Under globalized economies, local institutions face challenges from outside (exogenous) as well as from within the institution itself (endogenous). Changes in the political, economic and social contexts influence institutional strategies in the use of natural resources. Broad and dynamic social networks have been built by actors through coalition or cooperation with various parties for exploitation of natural resources.

It is imperative for institutions that are in charge of natural resource management to be responsive and adaptive to the changing environment and needs. To analyze the capacity to respond and adapt, it is necessary to understand institutional structures and components, the locus of decision-making authority regarding the use of natural resources, benefit distribution and conflict resolution. Furthermore, strategies of the institutions to deal with the dynamic environment need to be identified and assessed.

■ Objectives

- 1 Identify strengths and weaknesses of existing local institutions in charge of natural resource management to face policies and environmental changes;
- 2 Identify particular structures and components within the institutions that should be strengthened to increase agilities in conserving and managing natural resources;
- 3 Provide tools for policy-makers that can be used to determine the capacity of an institution

■ Steps

- 1 Rapid assessment of changes in the landscape and environmental services (water, biodiversity, forest and land) and the drivers of changes. Choice of tools: RHA, RABA, DriLUC.

- 2 Rapid assessment of existing rules and regulations of utilization of natural resources, particularly in
 - a. ownership and rights of use;
 - b. sharing and distribution of benefits; and
 - c. transfer of rights and ownership of the resources.
- 3 Gaps between formal and informal rules, as well as competing claims and conflicts over lands. RaTA method can be used here.
- 4 Rapid assessment of actors who use the natural resources in order to find out the role of the actors in terms of
 - a. planning and using natural resources, including
 - i. implementation and utilization of resources
 - ii. processes in formulation and enforcing rules; and
 - b. methods: stakeholder analysis, power analysis.
- 5 Rapid assessment of network development, in terms of cooperation and capacity building.
- 6 Analysis of institutional capacity to adapt and adjust to the changing environment.

■ Case study: RISNA in Indonesia

The village of Lubuk Beringin in Jambi province, Indonesia, is situated at the edge of the Kerinci Seblat National Park and its buffer zone. Road access was only recently developed. The main sources of livelihoods are traditional rubber agroforestry and rice production. The very first permit for a 'Hutan Desa' (village forest agreement) in Indonesia was given over a forested area of 3517 hectares of Lubuk Beringin in 2009. Under this permit, the community has the right to manage the area (Akiefnawati et al 2010), demonstrating the institutional capacity of the village, with support from NGOs and local government, to handle the administrative procedures, among other things. Since then, the Hutan Desa at Lubuk Beringin has become a showcase for various types of community-based forest management, including efforts to reduce deforestation and forest degradation (REDD).

Conflicting local and formal rules, local and formal institutions

However, the formal recognition, which aimed to strengthen and empower local institutions, appears to have undermined the informal rules and arrangements that guided local practices in managing natural resources. The rules of the Hutan Desa permit impose numerous formal procedures that are not familiar to the villagers nor are they manageable under local conditions.

The risks and benefits associated with such interventions will benefit from an analysis of institutional strengths, network and actors. Application of RISNA aimed to increase understanding of the local institutional capacity. In so doing, it was clear that there was a complex network of customary and formal government rules at work, as outlined below.

The 'rio' (local title for the head of the village) played an important role in regulating the use of land, water and fish since customary rules were still followed by the people of the village. Disputes which resulted in the death of humans and livestock would be settled according to custom. There were 12 types of cases that were resolved under customary rule, including stabbing, killing or poisoning cattle. Law enforcement was carried out through the rio with reference to customary rules as applicable. Punishments included slaughtering a buffalo slaughter and forgiveness, all of which were entered into the village records.

A Kelembagaan Hutan Desa (KHD/Village Forest Institution) was established through mutual agreement between the Consultative Agency of Lubuk Beringin and the village. The sub-district government approved the institution and members were directly elected by all citizens of the village. Stewardship by the chair, secretary and treasurer was exercised for 1) village forest protection; and 2) use of the village forest. Stewardship of the institution itself was under the Village Board of Trustees, which governed the use of village assets. Stewardship was valid for a period of three years, after which an open election was held.

Even though the customary institution played an important role related to social interaction and use of natural resources, the KHD still needed to increase capacity, such as through introducing an administrative model to deal with the process of forest management from planning until profit distribution. Involvement of the KHD in discussions both at the national and regional levels was necessary to increase individual capacity as well as institutional networking. Documentation and administration will be needed, especially in the negotiation process with other parties, such as other levels of government, companies, NGOs and neighbouring communities.

No later than two years after the establishment of a Hutan Desa agreement, a Village Forest Working Plan (RKHD) and Annual Plan of Forest Village (RTHD) had to be submitted in the form of documents endorsed by the district government. RKHD includes aspects of regional governance, institutional governance, business management and human resources management while the RTHD includes a boundary work plan, planting plan, maintenance, utilization and protection.

However, RISNA revealed that the boundary work plans could not be fully implemented owing to the rules on the use of government funds for boundary activity, which stated they could only be used for determining the outer boundary, which separates the non-forest area from forest. Further, it seemed that in the protected areas, the budget for works would be the responsibility of the organization that has the permit, which must be financed from the rights holders (KHD). Clarification by the Ministry of Forestry was requested by the district forestry office, however, at the time of writing there had been no concrete suggestions from the central government to resolve the problem.

■ Conclusion

- 1 Rapid assessment of the strength and weaknesses of the village forest institution provided information on the gap between the formal provisions of village forest management and its implementation.
- 2 The forest management regulations are unclear and give rise to debate that impedes implementation.
- 3 The right to manage the forest given to community is treated equally with the rights granted to large investors. It is feared that these requirements would impede the village forest scheme of achieving its intended goal of forest protection.
- 4 Through rapid analysis of institutional resistance, RISNA, structural problems that exist in the field can be identified.

■ Key reference

Akiefnawati R, Villamor GB, Zulfikar F, Budisetiawan I, Mulyoutami E, Ayat A, van Noordwijk M. 2010. Stewardship agreement to reduce emissions from deforestation and degradation (REDD): case study from Lubuk Beringin's Hutan Desa, Jambi Province, Sumatra, Indonesia. *International Forestry Review* 12:349–360.

41 | REDD/REALU site-level feasibility appraisal (RESFA)

Laxman Joshi, Meine van Noordwijk and Janudianto

REDD/REALU Site-level Feasibility Appraisal (RESFA) assesses the feasibility of dealing with the direct drivers of land-use change that reduce carbon storage and supporting sustainable livelihoods' options that are compatible with high carbon-stock landscapes with trees that provide goods and services as any of them can become a bottleneck when full project design, approval and implementation are attempted, which is a process that costs considerable time and investment and needs to have a reasonable probability of success to justify such investments.

■ **Introduction: would a targeted effort to reduce emissions bring local livelihoods' benefits?**

Land-use and land-cover changes are a relevant part (about 15%) of the total human-induced emissions of greenhouse gasses that lead to global climate change. While most of the attention has so far gone to reductions in the other 85% that relate to fossil fuels (and some other industrial processes), no opportunity to reduce emissions can be left ignored if targets are to be met, such as keeping global warming below 2 °C. Reducing land-based emissions usually requires two things: 1) dealing with the direct drivers of land-use change that reduce carbon storage, for example, through forests or conversion; and 2) supporting sustainable livelihoods' options that are compatible with high carbon-stock landscapes with trees that provide goods and services.

To get such efforts recognized, a further set of steps is needed, which we group here under monitoring, evaluation and transaction costs. Since the discussion on 'carbon markets' has started, there are high expectations that engaging in emission reductions and/or enhancing carbon storage can help provide funding for rural development. Much of that hope may be hype but there are opportunities for real benefits if intentions are genuine and projects are designed well. The international rules are still under discussion. Figure 41.1 captures the interlinked process of different actors at different levels and the meaning of CO₂ benefits to each.

Box 41.1. Any design for reducing net emissions of CO₂ and other greenhouse gasses needs to balance between

- a. dealing with the local representations of drivers of land-cover change by protecting high carbon-stock density areas (effectiveness and, when expressed per unit investment, efficiency); and
- b. promoting sustainable development pathways that provide livelihoods (welfare and wellbeing) at reduced net emission levels (fairness);

while linking opportunities to reduce emissions locally with those at other scales, through the concepts:

- C1. Additionality (How do 'with project' emissions differ from 'without project' ones?)
- C2. Leakage (How do 'within project' actions relate to 'out-of-project' emissions?)
- C3. Permanence (What is the expected emissions trajectory after the project ends?)
- C4. Accounting rules (How will emission reductions be quantified and verified?)
- C5. Rights to co-invest and share in future net benefits, within national sovereignty to set rules
- C6. Certification (clarifying local emissions reductions as part of national-scale achievements)

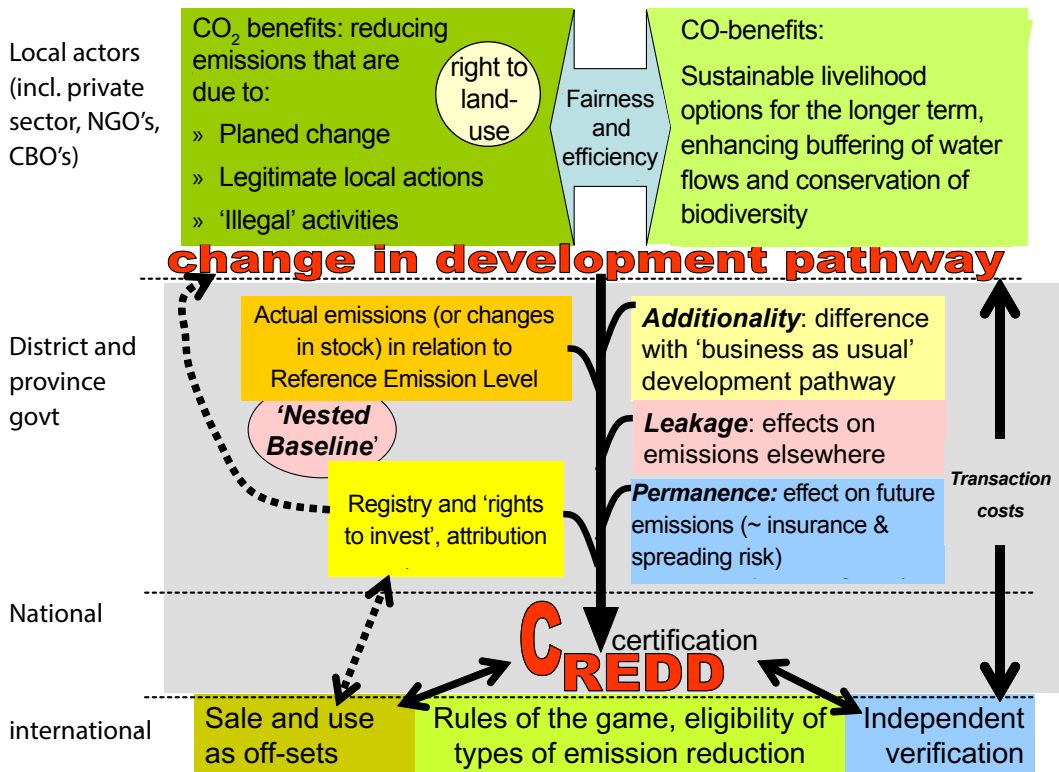


Figure 41.1. Interlinked process of multiple actors at multiple levels with multiple views of reduced CO₂ emission

■ Objective

RESFA integrates a number of negotiation-support tools to lead to a decision point for local communities and proponents of activities under the mechanisms for reducing emissions from deforestation and forest degradation (REDD) and reducing emissions from all land uses (REALU), answering 1) Is it worthwhile to pursue a project to reduce net emissions from land use (including forest) for this area or will it be too complex, too costly or low in co-benefit returns? 2) If so, what directions can best be pursued in project design?

■ Steps, key questions and tools in the assessment

- 1 What is the current carbon stock of the system? What other environmental services does the system provide?
- 2 RaCSA to provide protocols for carbon-stock assessment in the landscape
What are the driving factors and threats that lead to reduction in carbon stocks (increase in carbon emissions)?
- 3 DriLUC to analyze the local drivers of land-use change, linked to analysis of actual time-series of land cover (ALUCT)
- 4 What is the dependency of local people on the system?
- 5 WNoTree, RAFT and PAPoLD can be combined to explore current land-use options within a livelihoods' perspective (which includes in- and out-migration and off-farm employment)
- 6 How clear are the tenure arrangements?
- 7 RaTA to analyze the tenure claims and history of policies that gave rise to claims and conflicts about them
- 8 What are the possible scenarios and what is the potential carbon stock increase or decrease under these scenarios?
- 9 Scenario models (either TALaS based on FALLOW or LUWES using ABACUS can explore business-as-usual trends and scenarios that are within (or just beyond) the 'plausible' domain for with/without project developments
- 10 What are the implications of these scenarios on livelihoods, institutions and equity? What are the opportunity costs, both financial and social? What about additionality, leakage and permanence issues?
- 11 How can the benefits of REDD/REALU be shared or distributed equitably? Who will benefit and who will suffer?
- 12 FERVA can analyze the perceptions on fairness and efficiency, within the institutional setting and emerging rules for investment in emission reduction ('carbon markets')

Decision point: 1) is it worthwhile to pursue a project to reduce net emissions from land use (incl. forest) for this area, or will it be too complex, too costly or low in co-benefit returns? **2)** if so, what directions can best be pursued in project design?

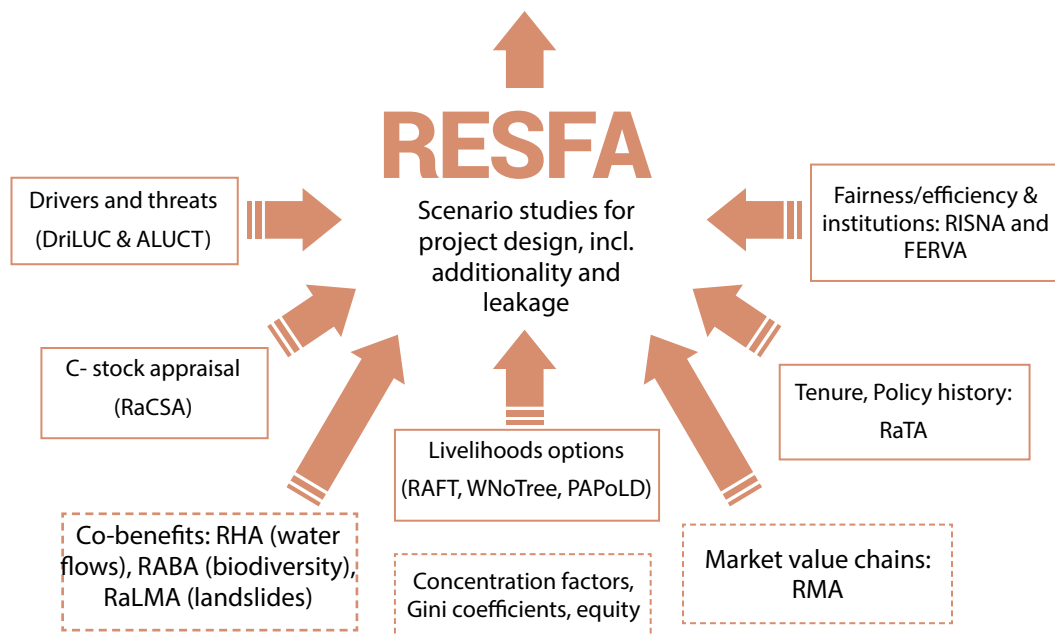


Figure 41.2. RESFA scheme, comprised of steps and applications of available tools

■ For example of application see:

Joshi L, Janudianto, van Noordwijk M, Pradhan UP. 2010. *Investment in carbon stocks in the eastern buffer zone of Lamandau River Wildlife Reserve, Central Kalimantan province, Indonesia: a REDD+ feasibility study*. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program. http://worldagroforestrycentre.org/regions/southeast_asia/publications?do=view_pub_detail&pub_no=RP0268-11.

Janudianto, Mulyoutami E, Joshi L, Wardle DA, van Noordwijk M. 2011. Recognizing traditional tree tenure as part of conservation and REDD+ strategy: feasibility study for a buffer zone between a wildlife reserve and the Lamandau River in Indonesia's REDD+ pilot province. ASB Policybrief 22. Nairobi: ASB Partnership for the Tropical Forest Margins.

42 | Trade-off analysis for land-use scenarios (TALaS)

Rachmat Mulia, Betha Lusiana and Meine van Noordwijk

Trade-off Analysis for Land-use Scenarios (TALaS) is based on a suite of tools that carry out ex-ante analysis of the impact of development strategies on the trade-offs between livelihoods and ecosystem services. The tool combines the use of a spatially explicit land-use-change model, a land-use profitability analysis tool as well as other tools that aim to quantify ecosystem services, that is, biodiversity, carbon and hydrological functions. TALaS is useful for exploring suitable development strategies that can balance growth in the economy and livelihoods while maintaining or enhancing ecosystem services.

Introduction

Development strategies sometimes need to consider both economics/livelihoods and ecological aspects. Very often, development strategies were planned solely for economic benefits without concern for the negative impact they might have on the ecological values of the landscape.

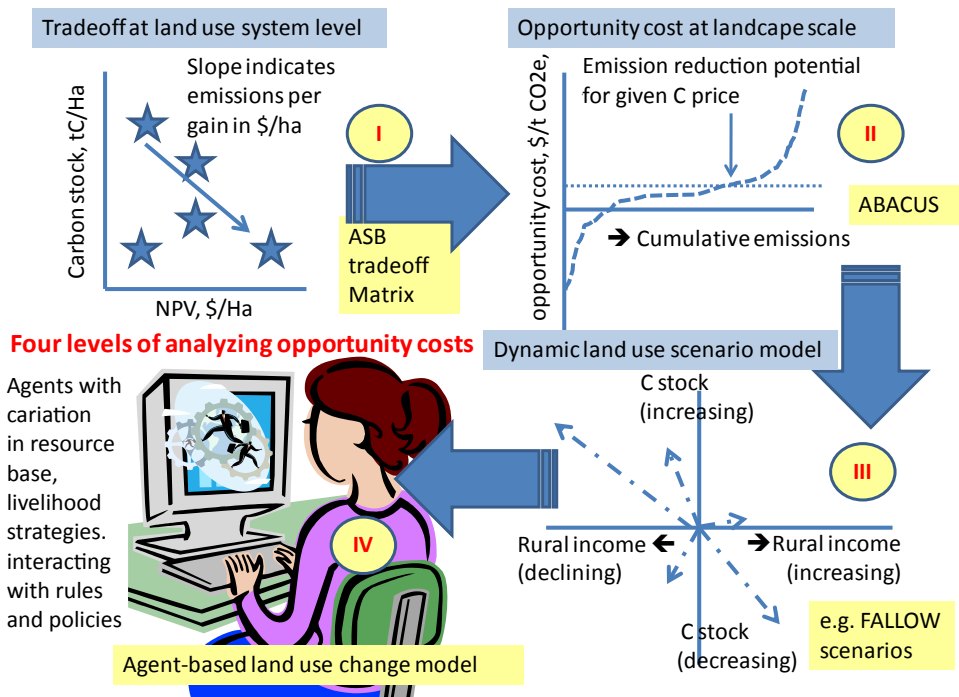


Figure 42.1. Four levels of complexity in analyzing trade-offs: TALaS (a type III method) builds on tools of type I (trade-off matrix) and type II (Abacus), making use of the FALLOW model

There are four possible directions where implementation of a land-use strategy can lead (Figure 42.1). For example, emphasizing the economic aspect will lead the future of the landscape to have better economic aspects relative to the baseline but most likely will bring a decline in ecologic values ('red development' strategy). An ideal development strategy should bring improvement both in economic and ecologic aspects ('green development').

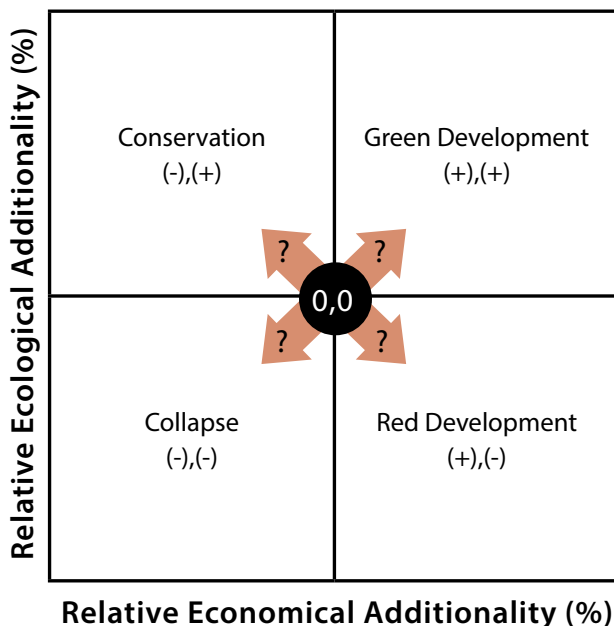


Figure 42.2. Conceptual diagram depicting plausible impact of development strategies

Note: Economic (X axis) and ecological value (Y axis) relative to the initial condition before implementing the strategies (baseline, central point of the diagram)

An ex-ante analysis of several plausible development strategies will help policy makers and natural resource managers understand the impact of their strategies on the landscape. Such an analysis could support the establishment of 'green' development strategies. TALaS was developed for that purpose. It is based on a spatially explicit, land-use-change model (FALLOW), an ex-ante analysis based on scenarios of development strategies (that can be derived from LUWES activities) and combined with land-use profitability analysis (LUPA) and ecological values of the various land-use systems (see RaCSA, QBSur and RHA).

■ Objectives and steps

TALaS offers a suite of tools that can be used to assess the impact of development on trade-offs between livelihoods and ecosystem services. Steps involved in carrying out each tool are available within each section of the tool.

■ Example of application

Ex-ante analysis was carried out in Tanjung Jabung Barat district, Jambi province (Mulia et al 2013). The development strategies explored are listed in Table 42.1. The district is located in the eastern part of Sumatra with total area of about 500 000 hectares. The landscape is complex, with peat and mineral soils, the Bukit 30 National Park, former Kesatuan Pengusahaan Hutan Produksi (KPHP/ production forests), industrial forest plantations with acacia trees and large-scale oil-palm plantations (Figure 42.3a). For agricultural crops, smallholders in the district cultivate maize and rice as staples as well as soy beans, cassava, groundnut and other vegetables. Different types of tree-based systems also exist, consisting mainly of rubber (*Hevea brasiliensis*) agroforests. Other important tree-based systems include coffee and coconut agroforests and oil-palm plantations, which was the new commodity introduced into the landscape that quickly drew attention owing to its higher economic returns. Product diversification in the landscape could help to maintain the income of smallholding farmers when they are faced with a harvesting or marketing problem in relation to one specific commodity. Coconut and betel nut are common multipurpose tree species that are often introduced into the system, either as important products or as a 'live fence' or marker of land tenure.

Table 42.1. Four land-use scenarios for FALLOW model simulation that consider the present and future of the rural landscape in Tanjung Jabung Barat, Jambi province

No.	Scenario	Description	Remarks
1	Business as usual	No protection for trees outside the Bukit 30 National Park (BTNP); for conversion into smallholding plots Illegal conversion of protected peat forest (Hutan Lindung Gambut/HLG) into smallholding plots Six types of tree-based system and two types of agricultural crops simulated as livelihoods' options for local people	No new concessions for oil, coal and natural gas exploration are assumed for 30-year simulation No change in road and settlement distribution and market price is assumed during 30-year simulation
2	Protected peat forest	Protection of the HLG No protection for trees outside the legally protected forests (HLG and BTNP); for conversion into smallholding plots	Other conditions are the same as business as usual
3	REALU	Protection of rubber and coffee systems: no conversion is allowed to other livelihoods' options. Post-production rubber and coffee systems are rejuvenated Protection for trees inside HLG, BTNP and ex-KPHP	Supporting low carbon emission development and product diversification Other conditions are the same as business as usual
4	Green REALU	Similar to REALU scenario, plus: New oil-palm plantations can only be established in non-productive non-peat soils (that is, shrub or grass lands on non-peat soils) Post-production rubber systems are not rejuvenated but are instead allowed to naturally develop into secondary forest	Oil palm is introduced on shrub or grass lands to increase profitability and carbon stock Other conditions are the same as business as usual

The FALLOW model was run for 30 years. The land-use profitability data was based on Sofiyuddin et al (2012). Simulation results showed that implementation of three development scenarios that considered protection of remaining peat forest and/or local agroforestry resulted in lower economic levels relative to the baseline scenario (Figure 42.3b). The baseline scenario allowed conversion of remaining peat/mineral forests and agroforestry plots into smallholding oil-palm plantations that give higher economic returns. Scenarios that considered a larger protection area to prevent conversion into oil-palm plantations resulted in lower economic levels compared to the baseline. On the other hand, carbon stock levels in the baseline scenario were the lowest because of massive conversion of remaining peat/mineral forests and local agroforests to oil palm.

Other examples of TALaS application are given by Suyamto et al (2005), van Noordwijk et al (2008), Lusiana et al (2012) and Tata et al (2013).

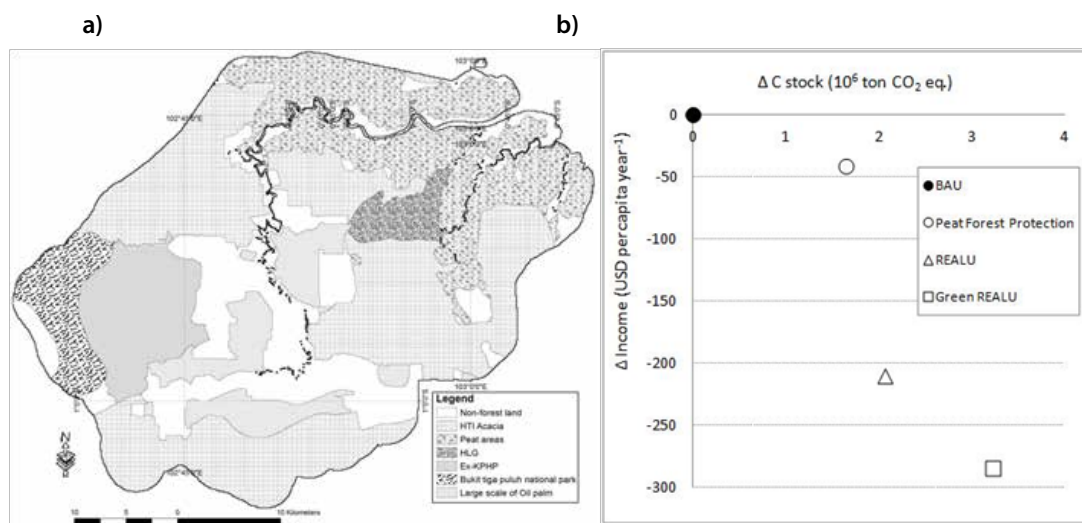


Figure 42.3. a) Area boundaries in the district; and b) impact of each scenario application relative to the baseline scenario

Note: Ecological impact is represented by standing carbon stock in the landscape and economic impact by income per capita measured as the average over the 30-year simulation

■ Key references

- Lusiana B, van Noordwijk M, Cadisch G. 2012. Land sparing or sharing? Exploring livestock fodder options in combination with land use zoning and consequences for livelihoods and net carbon stocks using the FALLOW model. *Agriculture, Ecosystems and Environment* 159: 145–160.
- Mulia R, Lusiana B, Suyamto D. 2013. *Manual of FALLOW model*. Version 2.1. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program.
- Mulia R, Widayati A, Suyanto, Agung P, Zulkarnain MT. 2013. Low carbon emission development strategies for Jambi, Indonesia: simulation and trade-off analysis using the FALLOW model. *Mitigation and Adaptation Strategies for Global Change*. doi: 10.1007/s11027-013-9485-8.

43 | Scenario tools: land-use planning for low-emissions development strategies (LUWES)

Sonya Dewi, Feri Johana and Andree Ekadinata

Land-based actions to mitigate climate change, which are 'pro-poor' and oriented towards 'green' development, need spatially explicit land-use planning processes that are inclusive, informed and integrative. Bringing multi-stakeholder processes to life, beyond rhetoric, needs a breakthrough in political willingness, multi-stakeholder buy-in and technical capacities that allows negotiation platforms to operate. Land-use Planning for Low-emissions Development Strategies (LUWES) provides a mechanism for this.

■ Introduction

At the national level, common but differentiated responsibility for climate-change mitigation has been agreed among parties within the United Nations Framework Convention on Climate Change. The implementation of climate-change mitigation should recognize the specificities of local needs and circumstances.

Because land-use planning is pivotal between local (sustainable development) and global (in this case, land-based, climate-change mitigation) agendas, there is a huge need for a tool that can support a negotiation process that promotes inclusive, integrated and informed land-use planning. Figure 43.1 illustrates the links between development and land-use planning with land-based climate-change mitigation actions at the local level.

The LUWES framework takes a landscape approach rather than a project-based one. A sustainable development plan at the local level, especially in rural areas where the land-based sector is a primary source of revenue, income and livelihoods, is a reflection of past land uses and land-use changes, as well as existing needs and constraints. This plan, without prejudice against early mitigation actions or intervention in climate change, can be taken as the baseline or business-as-usual scenario. A development plan should detail the number of people involved and economic growth; it should be linked to land-use planning that details the respective size of areas and the location of specific, planned activities. The projected emissions (in CO₂-eq) using the baseline scenario on current land use and cover is the Reference Emission Level (REL, used for gross emissions) and the Reference Level (RL, used for net emissions). For areas in the forest margins where a mechanism to reduce deforestation and forest degradation plus conservation (REDD+) is more applicable and profitable, REL is usually more important as sequestration is generally low.

When planning for lower emissions development, an analysis of the portfolio of land-use changes

that drive the projected emissions, the emission shares and the opportunity costs of the reduction is required. Strategies and targets for reducing emissions can be developed and simulated to ascertain ex ante emissions. These strategies are formulated to note the size of affected areas, locations and standard practices, all of which can eventually be used to estimate how many people will be affected, the costs of compensation for those people and the means of implementing that compensation, the effects on tenure, and what environmental services can be delivered.

An action plan and revised development and land-use plans can then be established. From the global perspective, with its emissions-reduction agenda, the performance or success of climate-change mitigation action is measured relative to the reduction of future CO₂-eq emissions from the REL, using a transparent and acceptable method. Depending on the modalities and strategies, the costs of reducing emissions (comprised of transaction, opportunity and implementation costs) can either come from the national level, multilateral funds or the private sector, as in carbon markets.

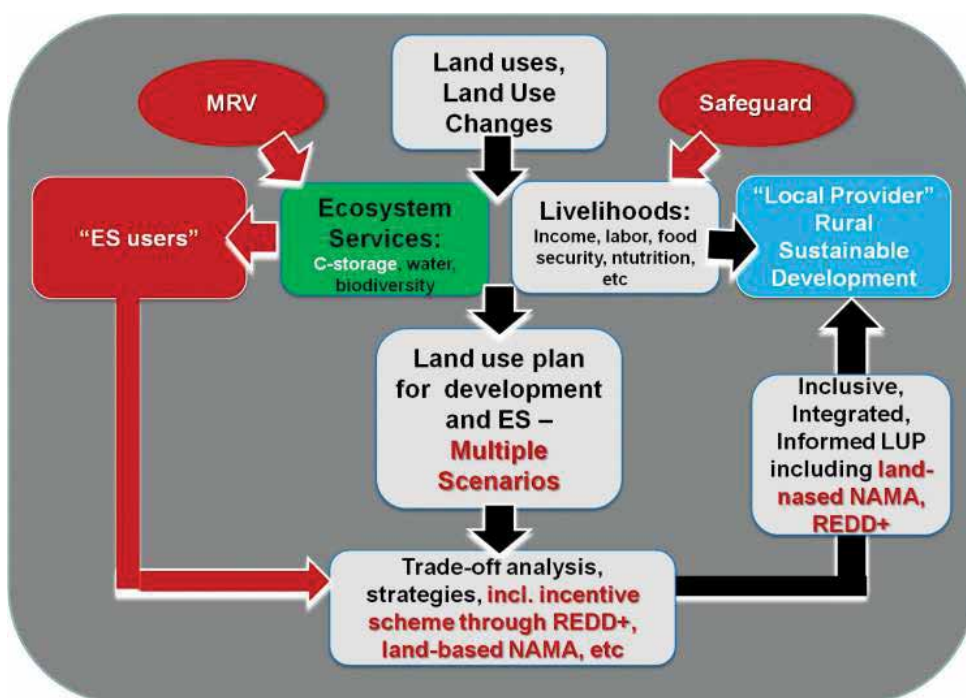


Figure 43.1. Aligning conservation and development issues and internalizing the externalities through land-use planning for low-emissions development strategies

■ Objectives

- Provide a framework, guided steps and tools for local stakeholders to negotiate a low-emissions development strategy through land-use planning based on formal and informal allocations and actual biophysical status.
- Accommodate ‘what if’ scenarios and trade-off analyses as a basis for negotiations over best scenarios for climate-change mitigation.

- Assist the formulation of action planning to achieve low-emissions development targets.
- Serve as educational tools for concepts and applications of reducing emissions from land-based sectors at the local level.

■ **LUWES in six steps**

- 1 Develop planning units that reconcile current socio-economic conditions, development and spatial plans, biophysical and functional zones and multiple views of land tenure and management.
- 2 Estimate historical land-use changes and their consequences for carbon storage.
- 3 Develop a baseline scenario for future land-use and –cover changes and project the reference levels of emissions.
- 4 Develop mitigation scenarios and projected emissions.
- 5 Conduct a trade-off analysis between mitigation and economic goals, financial and other benefits to inform the negotiation process.
- 6 Formulate action plans, including necessary instruments for implementation.

Steps 2-5 are assisted by the REDD Abacus SP tool described elsewhere in this book.

■ **Case study: LUWES in Indonesia**

The tool has been applied in several districts in Indonesia. A subset of LUWES (steps 2–4) has been applied in most provinces to develop the provincial, land-based, local action plan for reducing greenhouse gas emissions, which is a requirement of sub-national operationalization toward the National Action Plan for Reducing Greenhouse Gas Emissions. At the project level, training and workshop activities for LUWES have been conducted in Cameroon, Viet Nam and Peru. The concepts and tools are relatively easy for practitioners and academics to grasp. Application is illustrated using the case of Tanjung Jabung Barat district, Jambi province (Johana et al 2013).

Step 1. Develop planning units

Heterogeneity within a landscape reflects existing land uses and users under formal land allocation, tenure regimes, pluralities of social settings, local and regional economic strategies and varying biophysical characteristics. Overlap of land-use permits may occur as a result of lack of transparency and poor coordination of issuance processes.

LUWES does not aim to solve land tenure problems per se but rather to clarify planning units that allow specific policy interventions to be applied and feasible action plans to be implemented. Reconciliation of plans with existing conditions that link to land managers provides a basis for developing planning units that address consequences and potentialities of zone-specific mitigation activities. This zonation is conducted on the basis of discussions with stakeholders about land-use plans and allocation maps. Figure 43.2 presents the reconciled planning units from several data layers in Tanjung Jabung Barat district.

Developing the zone is a very appropriate way to integrate all existing planning documents into single template. A planning unit is defined as a 'zone' where any land-use-change process was recorded and the zone contains factors affecting the activity and preparation in developing appropriate mitigation actions. The zone is developed based on spatial-based integration between various planning documents such as the District Spatial Plan (RTRW), Long-term Regional Development Plan (RPJP)/ Medium-term Regional Development Plan (RPJMD), forestry land status, land-use permits and bio-physical elements (peat).

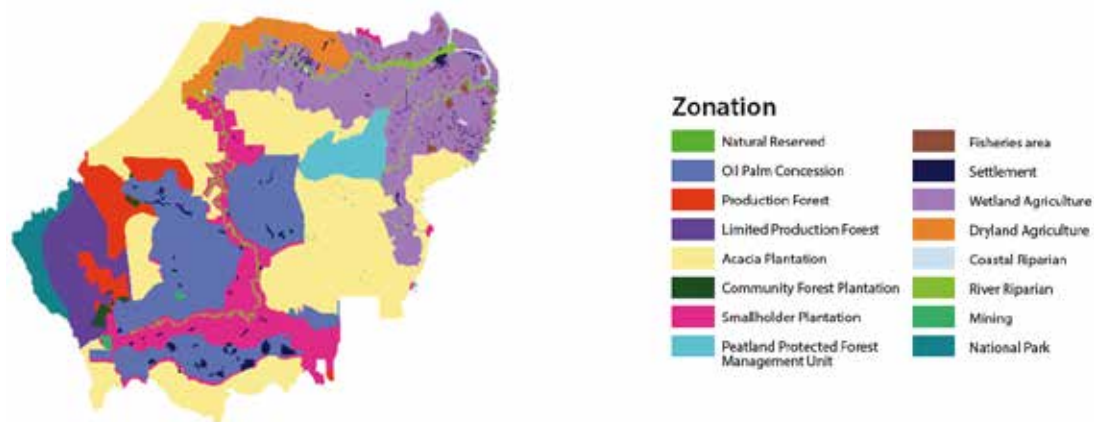


Figure 43.2. Planning units as a result of a reconciliation process of data layers and stakeholder discussions

Step 2. Estimate historical emissions

The stock-difference method is used to estimate emissions (Figure 43.3). Using activity data, which in this case is land-use and land-cover maps of 2005 and 2010 of Tanjung Jabung Barat (Figure 43.4) and the emission factors of Tier 2 of the United Nations Framework Convention on Climate Change, provided by the Ministry of Forestry, the historical emissions for each planning unit listed in Figure 43.2 can be calculated (Figure 43.5).

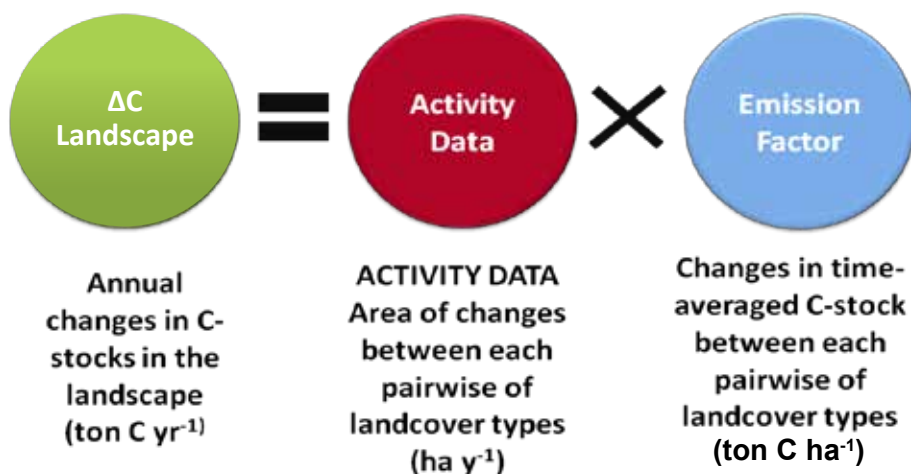


Figure 43.3. Stock-difference method

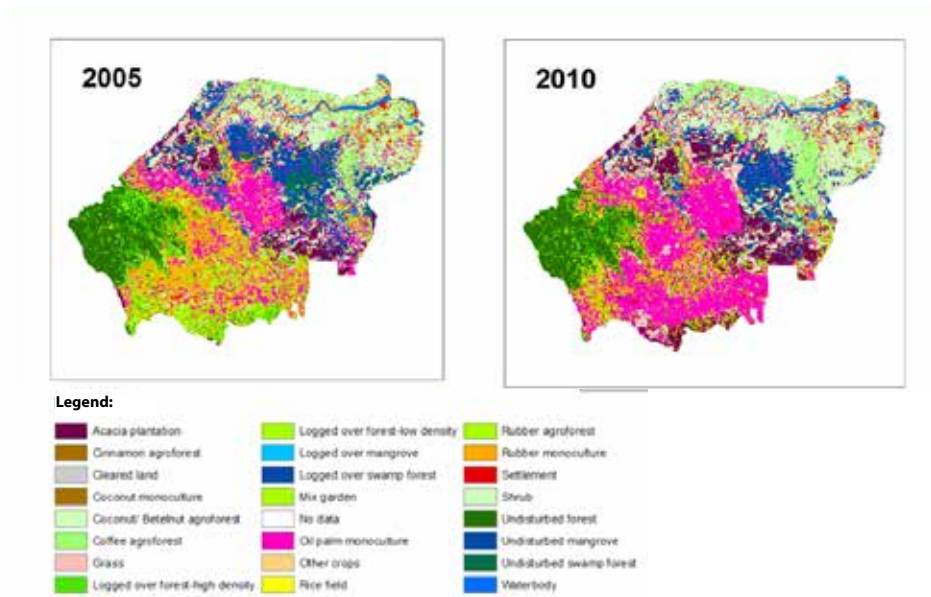


Figure 43.4. Land-use and land-cover maps of 2005 and 2010, Tanjung Jabung Barat district

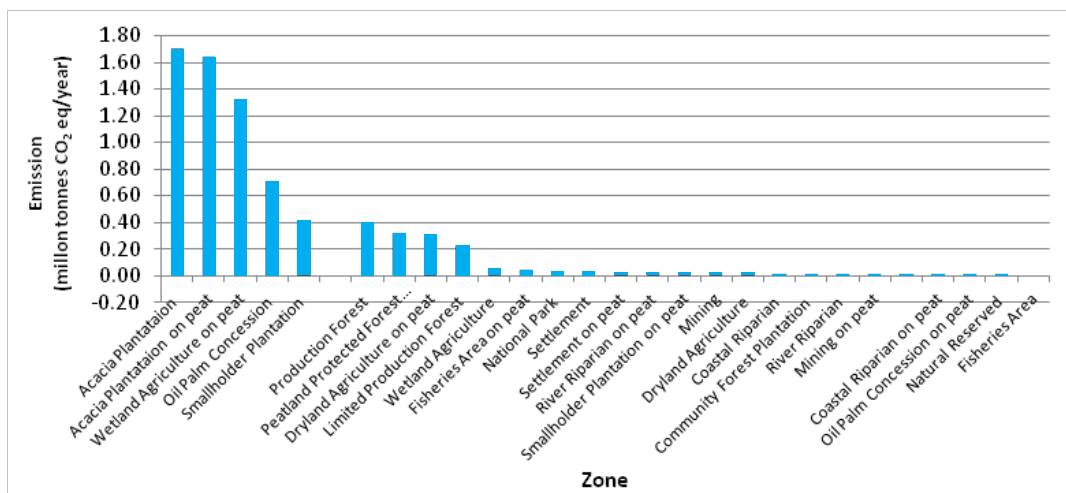


Figure 43.5. Mean annual emissions from each planning unit of Tanjung Jabung Barat, 2005–2010

Step 3. Develop baseline scenario

The REL is the projected emissions in the future if there were to be no mitigation actions. The annual historical emission rate in the district for 2005–2010 was around 14.8 tonnes CO₂ eq/ha/year. Since rates of future emissions are projected based on the rate of land-use change from the historical period, the annual emission rate for 2010–2015 was estimated to be 9.6 tonnes CO₂ eq/ha/year and the emission rate for 2015–2020 was about 8 tonnes CO₂ eq/ha/year (Figure 43.6).

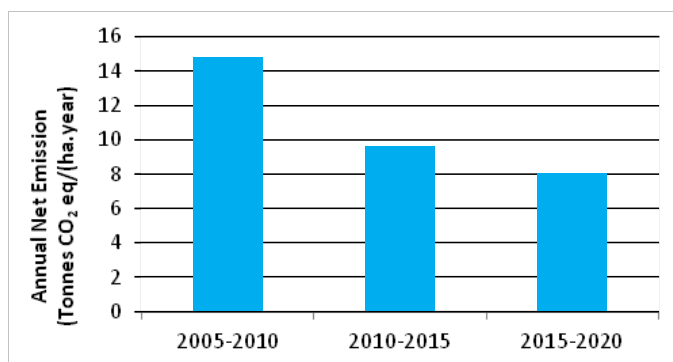


Figure 43.6. Projected reference emission levels based on historical projections of land-use and land-cover changes using 2005–2010 as the base period

Step 4. Developing mitigation scenarios

Figure 43.7 presents scenarios for six planning units, including avoiding loss of carbon stock and enhancing it. The projected emissions reductions are presented in Figure 43.8.

Zone	Scenarios	Planned Activities
Acacia Plantations (S1-AP)	<ol style="list-style-type: none"> (1) Avoid conversion of primary forest to acacia (2) Maintain existing smallholders' tree-based systems (3) Expedite planting acacia in bush fallow and grassland areas within the concession zone 	<ul style="list-style-type: none"> • Persuade concession holders to maintain primary forest by promoting HTI and HCVF (High Conservation Value Forest) spatial regulation • Implement results of agreement between the district government, community and concession holders on forest boundaries • Implement moratorium on use of wood from natural forests for pulp and paper industries
Oil Palm Concession (S2-OPC)	Prohibit conversion of forest to oil palm (± 8759 ha)	<ul style="list-style-type: none"> • Persuade concession holders not to convert high-density forests and primary forests to oil palm systems in support of the Government's commitment to reduce emissions by 26%
Peatland Protected Forest Management Unit (S3-PPFMU)	<ol style="list-style-type: none"> (1) Maintain existing forest area (2) Establish systems with jelutung (<i>Dyera</i> sp) to rehabilitated oil palm area. 	<ul style="list-style-type: none"> • Promote the concept of Conservation/Protected areas and their purpose to communities around the KPHLG. • Request more Forest Police from the Ministry of Forestry. • Establish relevant local institutions to support KPHLG. • Promote the value of jelutung (<i>Dyera</i> sp) to the local community and explore access to its national and international markets
Production Forest (S4-PF)	<ol style="list-style-type: none"> (1) Maintain primary forest area (2) Establish rubber systems in non-forested areas 	<ul style="list-style-type: none"> • Promote the concept of Conservation/Protected areas and their purpose to communities around the KPHLG • Provide rubber seedlings to establish rubber systems in the area
Limited Production Forest (S5-LPF)	<ol style="list-style-type: none"> (1) Maintain primary forest area (2) Establish rubber systems in non-forested areas 	<ul style="list-style-type: none"> • Promote the concept of Conservation/Protected areas and their purpose to communities around the KPHLG • Provide rubber seedlings to establish rubber systems in the area
Wetland Agriculture on Peat (S6-WA_OP)	Preserving existing forest	<ul style="list-style-type: none"> • Issuing recommendation and prioritized agriculture activities in non-forested land

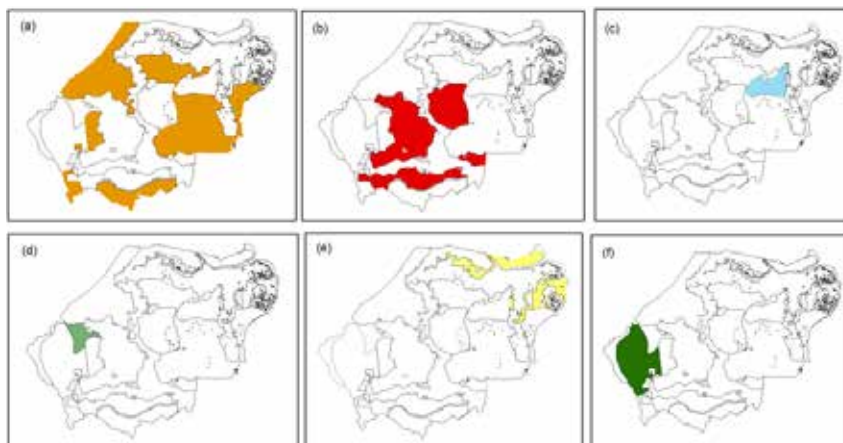


Figure 43.7. Planning unit-specific scenarios: (a) S1-AP; (b) S2-OPC; (c) S3-PPFMU; (d) S4-PF; (e) S5-LPF; (f) S6-WA_OP

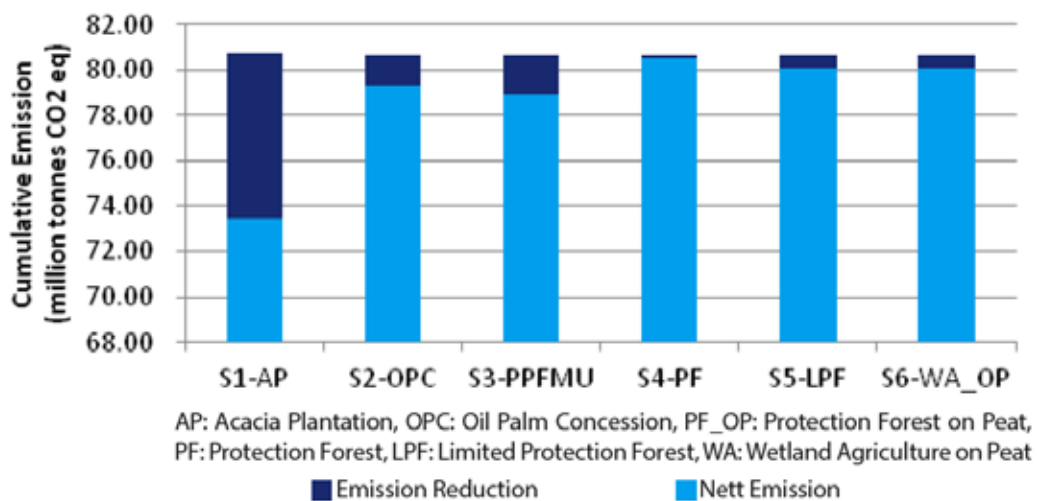


Figure 43.8. Projected emissions reduction from the mitigation scenarios

Step 5. Trade-off analysis

Land and forest-based activities that generate economic benefits and produce food often cause carbon loss from the landscape. Halting these activities to reduce emissions by conserving carbon stock can potentially have a negative impact on economic growth and food security if it is not properly planned (Figure 43.9). Regional economies, livelihoods and food securities, and land-use profitability can serve as indicators of benefits from land uses and land-use changes within a trade-off analysis in planning for low-emissions development.

Identification of potential scenarios for low-emissions development strategies include:

- 1 identification of types of land uses and land-use changes that associate with low emissions–low economic benefits, low emissions–high economic benefits, high emissions–low economic benefits, high emissions–high economic benefits and those that associate with low removal–low economic benefits, low removal–high economic benefits, high removal–low economic benefits, high removal–high economic benefits; and
- 2 prioritization of emissions reduction and carbon–stock enhancement in suitable planning units through reducing high emissions–low economic benefits land uses and land-use changes that have been contributing a lot in the past and will potentially be dominant sources of emissions in the future and promoting high removal–high economic benefits land uses and land-use changes that are biophysically and socio–culturally suitable for the area.

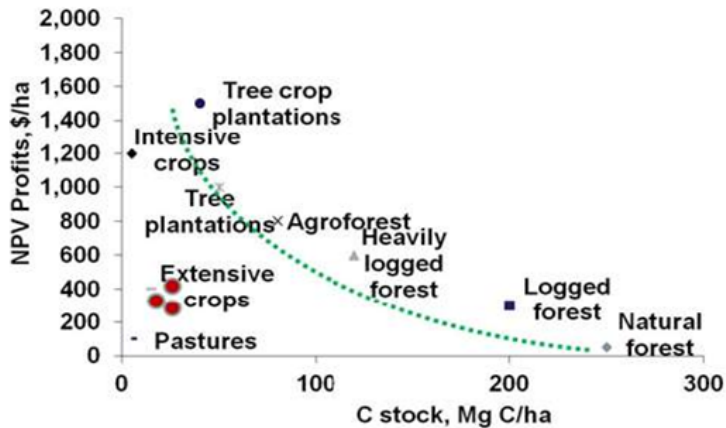


Figure 43.9. Trade-offs between conserving carbon stock and making benefits from low carbon-stock land uses

Source: adapted from White et al 2010

Step 6. Formulate action plans

In Tanjung Jabung Barat, three major actions were identified.

- 1 Reducing emissions in the oil-palm sector would require commitment from concession holders to optimize the use of abandoned and degraded land rather than opening land with high carbon stock. A land-swap policy would be needed.
- 2 On peat land, the local government and communities must work together to restore and maintain the protection function. Conversion of oil palm to jelutung (native tree species that produces resin and can grow well without any drainage system) systems could increase carbon stocks. However, commodity conversion needs careful consideration because it has an impact on farmers' income.
- 3 Communities need clear legal status and tenurial access in order to effectively manage the land. The local government should consider providing 'village forest' permits for community forests or other forms of cooperation that could strengthen the collaboration between the government and communities.

■ Key reference

Dewi S, Ekadinata A, Galudra G, Agung P, Johana F. 2011. *LUWES: Land-use planning for low emission development strategy*. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program.

44 | Capacity-strengthening approach to vulnerability assessment (CaSAVA)

Sonya Dewi, Ni'matul Khasanah and Atiek Widayati

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 hazards¹ 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.

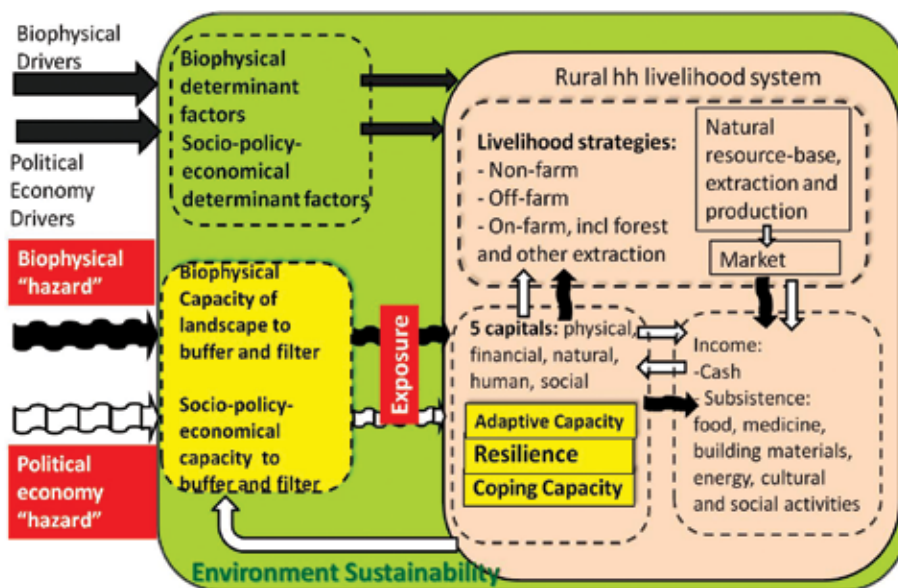


Figure 44.1. Conceptual framework of vulnerability assessment

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.

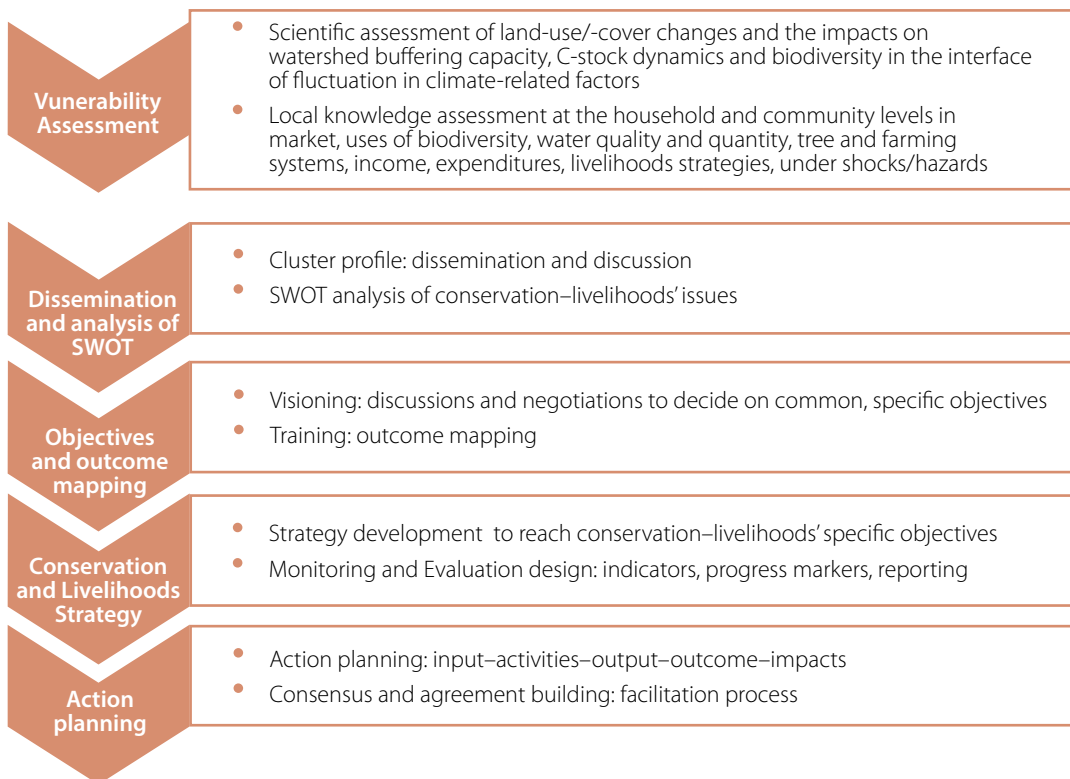
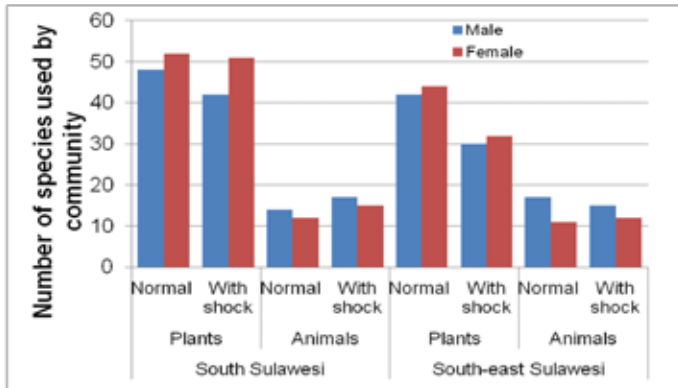


Figure 44.2. The five steps of CaSAVA to develop capacities of farmers to increase their resilience to shocks and hazards

■ 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.

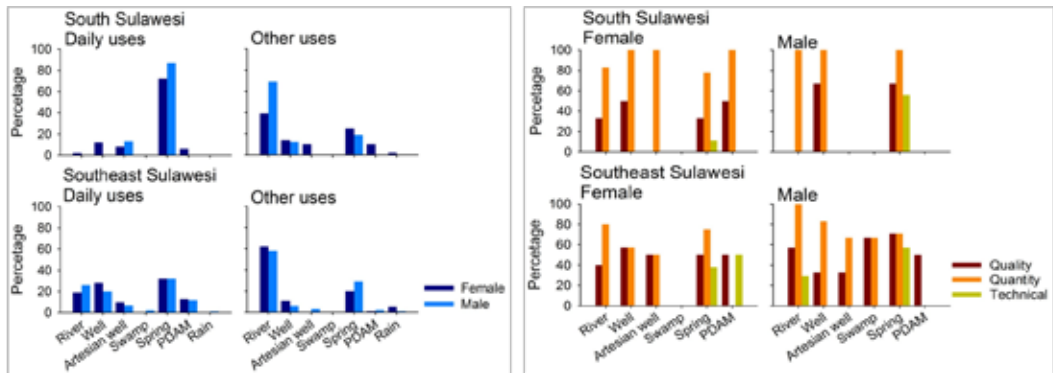
Figure 44.3 shows results from Step 1’s focus-group discussions on biodiversity uses, which were conducted at several sites in Sulawesi. Figure 44.4 shows results from Step 1’s focus-group discussions on water sources, quality and quantity. Other results from Step 1 are presented as examples with the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



- ❖ Females tend to use more plant species and less 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

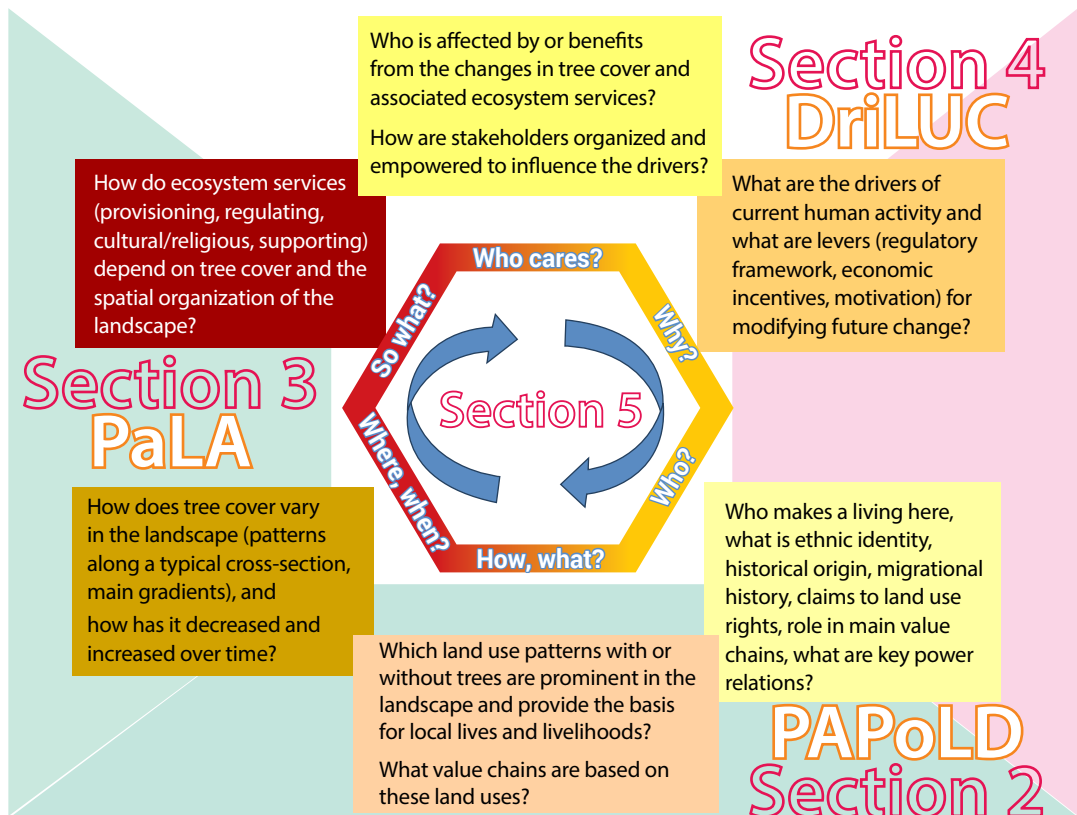
- ❖ The main sources of water for daily uses in Southeast Sulawesi vary, while that in South Sulawesi is mainly spring
- ❖ For other uses main sources of water are river and well, both in South and Southeast Sulawesi
- ❖ Quality and quantity are the two main problems encountered in almost all sources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

SECTION 05

Negotiation support as process



45 | Assessing and adopting social safeguards in all planned programs (AASSAPP)

Sébastien de Royer, Gamma Galudra and Ujjwal Pradhan

‘Social safeguards’ are procedures that ensure that projects take into consideration people’s rights, aspirations and the ‘do no harm’ principle. The concept of ‘safeguards’ encompasses free, prior and informed consent; participation; resolution of land conflict; clarifying land and natural resource use-rights; livelihoods and food security; and poverty alleviation. Free, prior and informed consent as part of social safeguards is defined as protecting the right of local and indigenous communities to negotiate the terms of externally imposed policies and projects. This applies to ‘development’ as well as to ‘conservation’ projects.

■ Introduction

In the last few decades, countries such as Indonesia have experienced increasing pressure on community lands from commercial entrepreneurs and investors, which has led to marginalization and dispossession of local and indigenous communities. The land-use planning process has often prioritized powerful interest groups who benefit financially from land and resource. The role of provincial and district governments is crucial because their land-use policies can favour these interest groups or local communities. Applying social safeguards to the process of land-use planning includes transparency and accountability at district and provincial government levels.

The effective use of social safeguards in a land-use planning process represents a fair approach beyond compliance, which aims to reconcile the different perspectives. Safeguards help to change the paradigm from top–down, state-driven planning to a more participative, bottom–up, grass-roots, rights-based approach that takes into account the aspirations of multiple stakeholders. Incorporating safeguards is a practical way of minimizing social exclusion and maximizing social equity in planning for low-carbon development. This requires new ways of thinking about land use and how to plan.

Much of the work around social safeguards is about land tenure since a lack of clarity over the right to land is often the source of conflicts between local communities, indigenous people, governments and businesses. Another issue is ‘indigeneity and indigenous rights’, that is, identifying who is and who is not ‘indigenous’ and, therefore, entitled to articulate traditional rights over land.

The acknowledgement of self-identification as contained in the United Nations declarations of the Rights of Indigenous Peoples and Human Rights can lead to conflicts and competing claims among stakeholders.

Both issues of indigeneity and land tenure are the main challenges to be addressed during the assessment and adoption of social safeguards. Even at the level of the United Nations Framework

Convention on Climate Change, negotiations to add safeguards as an obligation slow and complicate implementation on the ground, especially in the context of REDD+. These are complex situations in which various people are developing different sets of principles and criteria in line with their political agendas and own interests. A more comprehensive approach to land use is needed.

■ Objectives

The Assessing and Adopting Social Safeguards in All Planned Programs (AASSAPP) tool is meant to help local governments and communities go beyond compliance mechanisms and integrate social safeguards into the broader architecture of landscape management. The primary objective is to assess land-use planning and implementation based on the principles, criteria and indicators appropriate for social safeguards. The second objective is to adopt the appropriate principles, criteria and indicators in the mechanisms and regulations.

■ Steps

AASSAPP uses a participative approach, which includes all groups of people involved with a landscape. In order to safeguard social attributes in land-use plans, a 'principles, criteria and indicator' approach is used that covers all major social concerns that might be undermined during the process.

This approach helps achieve high social standards during land-use planning. 'Principles' provide the main objectives that define performance to meet social standards; 'criteria' define the delivery of the principles; and 'indicators' are quantitative and qualitative information that show progress in achieving the criteria. There are five major principles, 18 criteria and 60 indicators.

- 1 Participation of rights holders and stakeholders
- 2 Respect and strengthening of rights to land, territories and natural resources
- 3 Respect and strengthening of rights to traditional knowledge, culture and local practices
- 4 Promotion of poverty alleviation and security of livelihoods
- 5 Promotion of reconciliation of various conflicting interests over land and resources

■ The AASSAPP method consists of five steps

- 1 The participative identification of specific principles, criteria and indicators of social safeguards by the stakeholder groups through a series of workshops. In these workshops, the principles are encouraged to be respected by local governments who commit to adopt social safeguards in their land-use planning. Criteria and indicators are used as guidelines that are adapted to local circumstances.
- 2 Identification of enabling conditions based on rules and regulations; and institutions and mechanism to adopt the safeguards. These identifications are used for formulating protocols to integrate safeguards into land-use planning, implementation, monitoring and evaluation. They are also used to assess hindrances to adoption.
- 3 Determine implementing stakeholders for adopting safeguards, based on Step 2. The governance structure to support the implementation and monitoring of the safeguards should be defined before implementation.
- 4 Organize a series of workshops to formulate a work plan.
- 5 Gathering information to evaluate and assess performance.

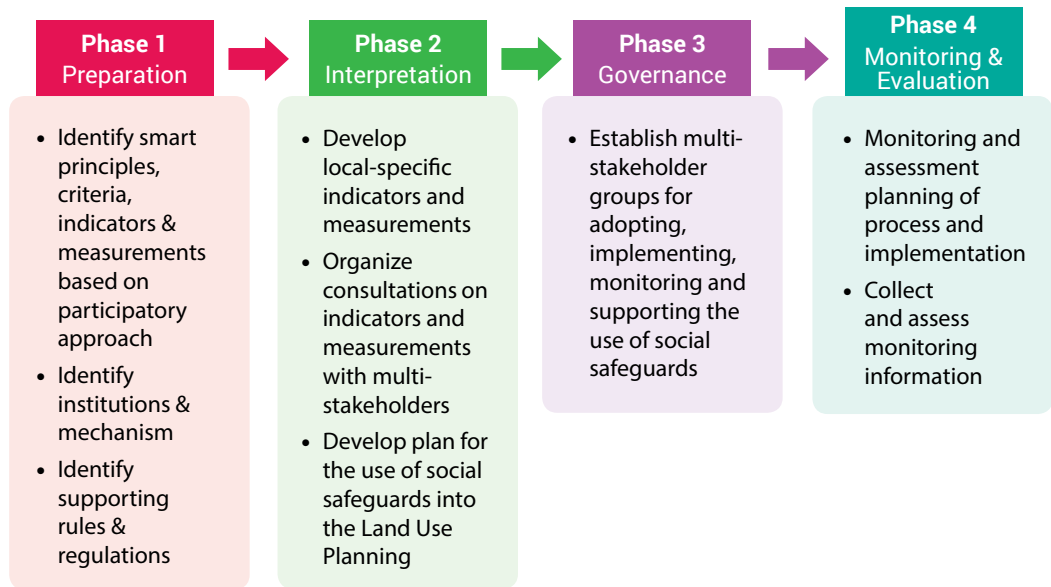


Figure 40.1. Steps involved in assessing and adopting social safeguards in all planned programs

■ Example of application

At the time of writing, the use of social safeguards in land-use planning is being tested in the province of Papua in Indonesia, with assistance from the European Union. The governor of the province has recognized that land-use planning can support the government's commitment to conserve biological and cultural diversity. Including local communities in planning has been acknowledged as central to a more just approach to resources management.

We used AASSAPP to assess the application of social safeguards in land-use planning in Jayapura district in the province of Papua. A one-day workshop was conducted, to which we invited various stakeholders, such as representatives of central and local government authorities, business enterprises, local communities and indigenous people. The objective of the workshop was to raise awareness of social safeguards and the importance of integrating them into land-use planning. During the workshop, we were able to develop participative, locally appropriate principles, criteria and indicators; identify the enabling conditions based on rules and regulations; and examined the implementation mechanisms and the changes needed to support adoption of the safeguards (see Table 40.1). The process is still underway and results so far are restricted to Step 2.

Table 45.1. Mechanism for adopting social safeguards in land-use planning in Jayapura district, Papua province, Indonesia

Principles	Enabling conditions	Implementation mechanism	Changes
Participation of rights holders and stakeholders	Participation of community in land-use planning	Discussion of planning and development at village level	Transparency Capacity building
Respect and strengthening of rights to land, territories and natural resources	Recognition and security of communities' rights over land, including conflict resolution	Mapping of customary rights and territories through a decree of the district head	
Transparency and right to information	Information dissemination about land-use planning	Raising awareness of the district land-use plan	Mechanism of dispute resolution for reaching agreement on development plans
Promotion of reconciliation of various conflicting interests over land and resources	Reconciliation of various conflicting interests	Customary reconciliation mechanism	

Box 45.1. List of existing guidelines

- Asian Development Bank. 2009. *Safeguards policy statement*. Manila: Asian Development Bank.
- Bonfante TM, Voivodic M, Meneses Filho L. 2010. *Developing social and environmental safeguards for REDD+: a guide for a bottom-up approach*. Piracicaba, Brazil: Institute for Forest and Agriculture Management and Certification.
- Convention on Biological Diversity. 1992. *Convention on Biological Diversity*. New York, USA: United Nations.
- Climate, Community and Biodiversity Alliance; CARE International. 2012. *REDD+ social and environmental standards*. Version 2. Arlington, VA: Climate, Community & Biodiversity Alliance; London: CARE International.
- Climate, Community and Biodiversity Alliance. 2008. *Climate, community and biodiversity project design standards*. Second Edition. Arlington, VA: Climate, Community and Biodiversity Alliance.
- Food and Agriculture Organization of the United Nations; United Nations Environment Programme. 1999. *The future of our land. Facing the challenge: guidelines for integrated planning for sustainable management of land resources*. Rome: Food and Agriculture Organization of the United Nations.
- Forest Stewardship Council. 1996. *Principles and criteria for forest stewardship*. Version 4. Bonn, Germany: Forest Stewardship Council.
- Global Environmental Facility. 2011. *Policies on environmental and social safeguards and gender mainstreaming*. Washington, DC: Global Environmental Facility.
- Deutsche Gesellschaft für Internationale Zusammenarbeit. 2011. *Land-use planning: concept, tools and application*. Eschborn, Germany: Deutsche Gesellschaft für Internationale Zusammenarbeit.
- Deutsche Gesellschaft für Technische Zusammenarbeit. 1999. *Land-use planning: methods, strategies and tools*. Eschborn, Germany: Deutsche Gesellschaft für Technische Zusammenarbeit.

- Perkumpulan untuk Pembaharuan Hukum Berbasis Masyarakat dan Ekologis. 2010. *Beyond carbon: rights-based safeguards principles in law*. Jakarta: Perkumpulan untuk Pembaharuan Hukum Berbasis Masyarakat dan Ekologis.
- International Finance Corporation. 2012. *IFC performance standards on environmental and social sustainability*. Washington, DC: International Finance Corporation.
- Roundtable on Sustainable Biofuels. 2010. *RSB principles & criteria for sustainable biofuel production*. Version 2. Geneva, Switzerland: Roundtable on Sustainable Biofuels.
- United Nations Framework Convention on Climate Change. 2011. *Decision 1/CP.16. The Cancun Agreements: outcome of the work of the Ad Hoc Working Group on Long-term Cooperation Action under the Convention*. Bonn, Germany: United Nations Framework Convention on Climate Change.
- United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries. 2012. *UN-REDD programme social and environmental principles and criteria*. UN-REDD Programme Eight Policy Board Meeting, 25–26 March 2012, Asuncion, Paraguay. Geneva, Switzerland: United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries.
- World Bank. 2011. *Common approach to environmental and social safeguards for multiple delivery partners*. Washington, DC: Forest Carbon Partnership Facility Readiness Fund, World Bank.
- World Bank. 2010. *Terms of reference: strategic environmental and social assessment, Indonesia*. Washington, DC: Forest Carbon Partnership Facility Readiness Fund, World Bank.
- World Bank; United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries. 2012. *Guidelines on stakeholder engagement in REDD+*. Washington, DC: Forest Carbon Partnership Facility, World Bank; Geneva, Switzerland: United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries.

46 | RUPES role-play game (RPG)

Grace B. Villamor, Beria Leimona and Meine van Noordwijk

The Rewarding Upland Poor for Environmental Services (RUPES) project developed a role-play game (RPG) that simulated the options for land-use changes for villages in a tropical forest margin. The game resembles the decision-making process gone through by villagers interacting with external agents. The agents offer opportunities for further logging and conversion of forests to monoculture tree plantations or incentives to protect environmental services. The game shows the complexity of negotiations under time pressure, with limited information about what the 'rules of the game' imply. Primarily meant as a learning tool for those playing, observing and analyzing the game, the results can also be compared between the results achieved in multiple replications of the game.

■ Introduction

Financial incentives can both support and undermine social norms compatible with enhancement of environmental services. External co-investments—for example, through incentives from mechanisms for reducing deforestation and forest degradation (REDD)—need to synergize with local efforts by understanding their dynamics and the conditions for free, prior, informed consent. The RPG can help assess the perceptions and behaviours of local dynamics, which feeds into planning institutionalized rewards' schemes. Such schemes deploy incentives to conserve or enhance environmental services in the landscape but are in competition with mainstream economic development that degrades natural capital. The RPG helps to highlight the issues.

■ Objectives

The RPG aims at providing a schematized but recognizable representation of the decisions that villagers can make about land use, with consequences for food security and income. It is a learning process for those who play, observe and analyze. It also allows data capture for comparison between situations.

■ Steps

- 1 Study the initial game design as reported in Villamor and van Noordwijk (2011) and make adjustments that fit the local conditions of land use and change agents.
- 2 Prepare land-use game boards that represent each village. In application to date, game boards consisted of a village, rice fields (rain-fed rice), monoculture rubber plantations, rubber agroforests and forests.
- 3 Prepare role descriptions for the external agents that reflect the performance standards they have to work against (number of contracts they need to secure).

F	F	F	F	F	MC	MC	RAF	RAF	RAF
F	RAF	RAF	RAF	F	MC	MC	RAF	RAF	RAF
F	RAF	V	R	F	MC	MC	V	RAF	RAF
F	RAF	RAF	RAF	F	MC	MC	RAF	RAF	RAF
F	F	F	F	F	MC	MC	RAF	RAF	RAF

Figure 46.1. Example of gameboards

Note: The stickers with different colours represent different land uses: V = village, R = ricefield, MC = monoculture tree crops, RAF = rubber agroforest, F = forest

- 1 Assign a game master who will be in charge of the game and one or more assistants who interact with the agents with special roles and/or help villagers with the bookkeeping part of the game. Lack of clarity of the rules of negotiation is an essential part of the game and this learning process must take its due course. Observer roles can be added.
- 2 Bring participants (25–30) to a setting that is conducive to free exchange and give a short account of the purpose, learning opportunities and game procedure. Invite volunteers to leave the room and be instructed on their terms of reference and receive their initial supply of money (tokens). Meanwhile, the other participants are divided into multiple villages (4–6 participants per village board, multiple villages in the space).
- 3 Based on negotiations with other agents, income from either maintaining or changing the land use is accounted for in annual time steps. Negotiations with the external agent are constrained by the time step (15 minutes, 5–10 minutes per year to update the targets and keep the records for the year; total length of the game is announced to be 10 years but the game may stop after seven or eight years). At the end of each simulated year, external agents leave the room (may require gentle persuasion...) and the villagers as well as agents take stock of their performance so far.
- 4 Once the basic routine has been settled, the game master can announce ad hoc changes such as a forest fire, population growth or a sudden change in commodity prices. If external agents do not meet their performance goal they get a warning and may subsequently be taken out of the game owing to bankruptcy.
- 5 Once the game is ended, villagers and external agents are asked to reflect on their roles, explaining why they did what they did, while the game master offers simple observations to further probe what took place. When this stage of learning is reaching saturation, the assumption that this was purely fictitious is brought to the group, allowing participants to express which aspects may actually have some similarity with real life. From the factual land-use representation this can be taken towards the inter-agent dynamics (lack of clarity, trust, misunderstanding, cheating), and the lack of clarity of the 'rules of the game'.

Further description is provided in Villamor and van Noordwijk (2011).



Figure 46.2. Different ways of playing the game: sitting on the floor in a community house or at tables in a school

■ **Case study: RPG: testing for gender differences in response to options to change land uses**

The role-play game was used by Villamor et al (2013) to explore the role of gender as a factor in decision making about alternative land-use options and in responses to new investment opportunities in a forest margin landscape in Jambi, Sumatra, Indonesia.

The RPG was used to assess participants' responses in a simulated social setting of women-only and men-only groups.

When women from either upland or lowland villages played the RPG, external investors proposing logging or conversion of forests to oil palm were approached very positively and the resulting land-use change was more dynamic and extensive than in the equivalent men-only groups. Consequently, women outperformed men in achieving income targets. In lowland areas, gender was strongly associated with land-use change while in the uplands the level of conservation awareness played a more crucial role in the maintenance of rubber agroforests. Based on the data, and contrary to expectations and gender stereotypes, it is expected that the greater involvement of women in landscape-level decision making will increase emissions from deforestation and forest degradation in the area, posing further challenges to efforts to reduce such emissions.

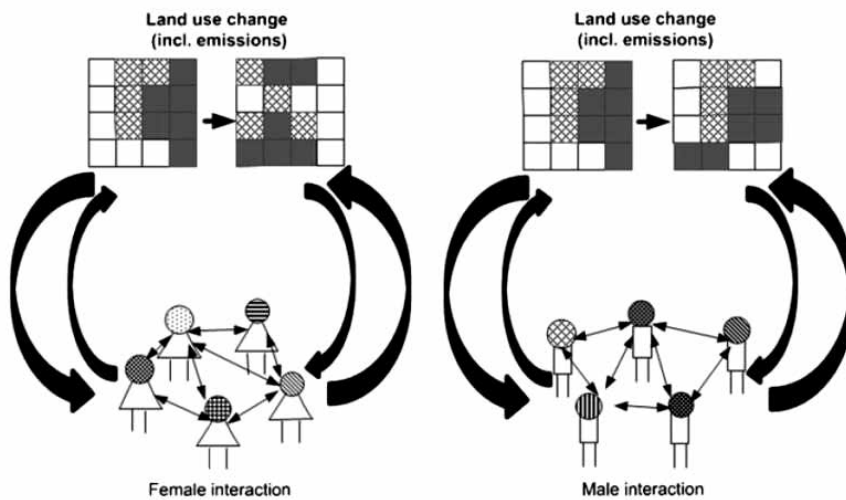


Figure 46.3. Schematic diagram of the use of an RPG to explore the different responses of men and women to proposed changes in their landscape

Source: Villamor et al 2013

■ Key references

- Villamor GB, van Noordwijk M. 2011. Social role-play games vs individual perceptions of conservation and PES agreements for maintaining rubber agroforests in Jambi (Sumatra), Indonesia. *Ecology and Society* 16(3):27.
- Villamor GB, Desrianti F, Akiefnawati R, Amaruzaman S, van Noordwijk M. 2013. Gender influences decisions to change land-use practices in the tropical forest margins of Jambi, Indonesia. *Mitigation and Adaptation Strategies for Global Change* 2013:1–23.

47 | Conservation auction and environmental services enhancement (Con\$erv)

Beria Leimona

Procurement auctions have been designed to efficiently allocate conservation contracts and reveal hidden information on the opportunity costs of supplying environmental services. The Conservation Auction and Environmental Services Enhancement (Con\$erv) uses a step-by-step approach to go beyond an economic interpretation focussed on prices and efficiency to encompass the social dimensions of learning, perceptions and fairness, which also require attention and, in so doing, offers an opportunity for deeper analysis of the motivations of stakeholders.

■ Introduction

Payments for ecosystem services (PES) have become part of the portfolio of policy options to retain, recover or enhance environmental services, including the provision of watershed functions. It assumes voluntary participation by farmers and rural communities in performance-based contracts, with clear conditionality.

An important aspect of implementing a PES scheme is transparency regarding the conditions under which incentives or rewards can be granted. Balanced information and shared power of transaction are the basis for any ecosystem services' agreements, with risks and benefits understood by all parties.

Procurement auctions on conservation contracts have been widely implemented in the USA, Australia and Europe (Stoneham et al 2003). The award of contracts on the basis of competitive bidding is a method frequently used in procuring commodities for which there are no well-established markets (Latacz-Lohmann and van der Hamsvoort 1997, Ferraro 2008), such as in markets for environmental services.

Contract procurement auctions have emerged as an alternative mechanism for deriving information from providers of environmental services on the level of payments or incentives that will cover their expected costs minus co-benefits when joining a conservation program. From experience so far, other perspectives on the interactions before, during and after the auction can add to the understanding of actors' behaviours as well.

■ Objectives

The primary objective of a conservation auction is the efficient allocation of limited funds (for example, those planned for watershed rehabilitation) among prospective PES participants and exposure of hidden information on the opportunity and implementation costs of supplying

environmental services. A secondary objective is to be aware of the learning dimensions of the auction process and its relation to the motivation of actors and the perceived communication between them.

■ Steps

The steps presented here use watershed services as the focus; with some modifications, they can be applied to biodiversity conservation or enhancement of landscape carbon stocks.

- 1 Identify the sample population and potential auction participants at the watershed level, starting from a prior analysis of the issues that need to be tackled and after securing a budgetary envelope for contracts.
- 2 Design the conservation contract to be offered in the auction. For this, basic information is needed.
 - a. What problems would be solved by the conservation project?
 - b. Do local farmers have a shared understanding of the issue and potentially untapped knowledge that can help to solve the key watershed problems in innovative ways? (build on RHA tool)
 - c. What are proven conservation techniques that can serve as a benchmark for performance-based contracts and/or activity-based contracts?
 - d. What are the farmers' preferences for terms of payment, as emerges from a conjoint analysis?
 - e. When should the contract begin? What contract duration is desirable?
- 3 Test and select some elements of the auctions through two types of experiments: a laboratory auction experiment with students and field-framed experiments with farmers.
- 4 Conduct a natural field experiment and monitor the success and completion rate of the contract by farmers who won the auction in the period of the contractual agreement.

Include social scientists and techniques in the process to obtain a broader perspective on motivational aspects and learning curves.

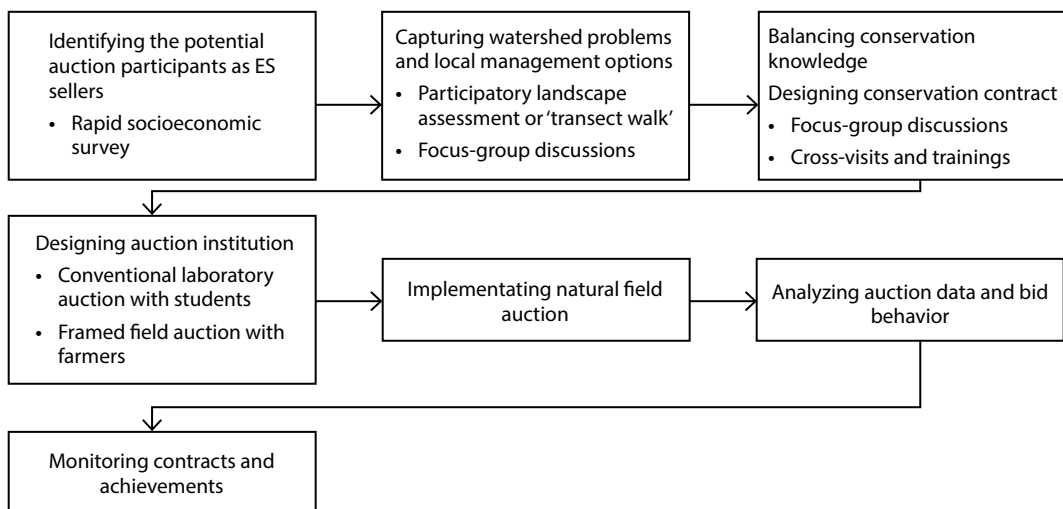


Figure 47.1. Con\$erv research steps

■ Case study: Con\$erv in Indonesia

The setting of this case study was the Sumberjaya watershed in Lampung, Indonesia, where soil erosion had broad implications for on-site and off-site damage. The most direct on-site effect was the loss of top soil from the coffee farmlands that dominated the watershed, resulting in low agricultural productivity. Off-site effects included siltation, water-flow irregularities, a reduction in irrigation, water pollution and agrochemical runoff. The soil sediment reduced the capacity of a reservoir located downstream of the watershed, adversely affecting irrigated agriculture and hydro-electricity generation.

Most of the farmers in the research sites were Sundanese, originating from West Java, and Javanese, originating from Central and East Java. Each farmer owned an average of 1 hectare or less. The farmers' livelihoods depended on coffee farming, either as owners of coffee gardens or as labourers to other farmers.

Based on the hydrological survey of the sub-watershed, we selected two sites, Way Ringkih (Site 1) and Way Lirikan (Site 2), with high sedimentation rates. In addition to this biophysical consideration, we set qualifications for selecting eligible participants for the auction project. The farmers had to own their land and be actively managing it themselves. These stipulations were made in order to avoid conflicts on signature of contract and regarding payment and to ensure that the farmers did not neglect the land after signing the contract. Farmers on private land need incentives to manage their land sustainably.

There were 44 and 45 households eligible in the sub-watersheds respectively. The Way Ringkih sub-watershed consisted of two *talang* (hamlets in the local language): Talang Harapan and Talang Kuningan (Site 1). The Way Lirikan sub-watershed consisted of one talang: Talang Anyar (Site 2). As part of a wider project, World Agroforestry Centre scientists had previously facilitated participatory water-monitoring activities in Way Ringkih and Way Lirikan. These activities gave additional benefits that contributed to the measurement of the study's environmental impact.

Our study resulted in a set of auction rules for determining how limited watershed rehabilitation funds could be allocated. We examined the applicability of such an auction design in an Indonesian rural setting by testing: 1) auction design factors, such as participants' understanding of auction rules, the ease-of-use of these rules, the appropriateness of the participants' bid offered during the auction, and the fairness of the auction process; 2) social factors, such as impact on the relationship between contracted and non-contracted farmers, general interpersonal relationships between communities, and information exchange amongst farmers; and 3) environmental factors, such as awareness of soil and water conservation and the rate of contract completion.

Our results show that a sealed-bid, multiple round, second-price Vickrey auction with a uniform price can be applied in a situation where most of the auction participants have a low education level, low asset endowment, small plot size, and where market-based competitiveness is not common. The auctioneer set a limited budget of USD 2000 (approximately IDR 20 000 000) per auction for a total of USD 4000, which is the average budget provided by the potential buyer, a neighbouring hydropower company, for its annual corporate social responsibility fund. In total, 82 farmers participated in two auctions. Of these, farmers were awarded contracts that provided for soil conservation activities on 25 hectares. The contract price per hectare was USD 172; the mean bid was USD 263.

Our finding was that farmers' bids to be involved in conservation contracts are more dependent on their learning process during the auction than on observable factors such as their socioeconomic background, their awareness of conservation or their status in local social capital. We also found that introducing a procurement auction as a market-based approach to rural communities did not harm their social relationships and was an applicable method in a rural setting such as the one tested here (with ample experience in market interactions in commodity production and without a long history of local rule development, as is common for indigenous groups). Nevertheless, this learning process did not guarantee the successful accomplishment of a conservation contract. The rate of contract accomplishment was moderate and this may be influenced by many other factors, such as the leadership of the farmers' groups and their institutional arrangements for conducting conservation activities.

The implication of the findings is that designing a proper conservation auction method and estimating the 'right' value for contracts form only minimal requirements for the success of any conservation contract.

A further indication that the auctions are not only about establishing a 'right' price was obtained where contracts similar to the ones that emerged from the auction were tested in other locations with similar conditions. High acceptance of such contracts suggested that the price was higher than necessary and lower implementation rates suggested that the process of bidding had shaped motivation.

■ Key references

Leimona B, Jack BK, Lusiana B, Pasha R. 2010. *Designing a procurement auction for reducing sedimentation: a field experiment in Indonesia*. Singapore: Economy and Environment Program for Southeast Asia.

Leimona B, Jack BK. 2010. *Indonesia: a pilot PES auction in the Sumberjaya watershed: paying for biodiversity: enhancing the cost-effectiveness of payments for ecosystem services*. Paris: Organisation for Economic Co-operation and Development. p. 161–178.

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48 | Multi-scale payments-for-environmental services' paradigms (MuScaPES)

Beria Leimona, Sara Namirembe, Meine van Noordwijk and Peter A. Minang

Beyond the umbrella term of 'payments for environmental services', a range of paradigms and associated mechanisms have emerged that differ in articulation and in economic, social and political assumptions. This tool helps clarify the range of possibilities.

■ Introduction

As discussed in volume 1 (van Noordwijk et al 2011), rewards for the continued or enhanced provision of environmental services are an attempt to close the loop and link the concerns of stakeholders who are external to decision making about land use in a certain landscape to those that make the decisions.

'Payments for ecosystem (or environmental) services' (PES) (Swallow et al 2010, Namirembe et al 2014) have been broadly defined as a conditional instrument where environmental stewards are given incentives to maintain or improve the flow of environmental services by those who benefit from these flows. We have identified three main paradigms within this concept: 1) commoditization (also termed commodification); 2) compensation; and 3) co-investment, which use the acronyms CES, COS and CIS (van Noordwijk and Leimona 2010).

Table 48.1. Reward mechanisms under the three paradigms of commodification, compensation and co-investment

Reward mechanism	Sub-category	Performance indicator	Example of source of reward
Commoditisation	Commoditisation of environmental services as such	Delivery of specified services above agreed baseline level	Global regulated or voluntary carbon markets
	'Environmental service' branding of established commodities	Audited compliance with certification standards, with clarified force majeure clauses	Eco-certified coffee, cocoa or tea; Forest Stewardship Council certification of timber
Compensation	Compensation	Adherence to restrictions or proxies for generation of specified services beyond legal requirements	International conservation organisations, wildlife tourism or niche market commodity consumers

Reward mechanism	Sub-category	Performance indicator	Example of source of reward
Co-investment	Payment for effort proven or trusted to generate specified services	Proof of actions known for generation of specified services	Conservation organisations, conservation funds, carbon brokers
	Incentive for a set of efforts for ecosystem management without specifying which services	Achievement of mutually negotiated actions for maintaining or enhancing baseline condition of an ecosystem	International conservation organisations, conservation funds, national governments
	Incentives for private businesses that generate positive ecosystem services' externalities	Maintaining or enhancing baseline condition of ecosystem	National governments

Source: modified from Namirembe et al 2014

PES has often been described as 'internalizing externalities' because it tries to make the micro-economic incentives for farm-level decision making aligned with meso- and macro-economic interests and to reduce the negative impacts of decisions on other stakeholders. Beyond micro- and macro-economies, however, we now recognize the giga-economics of planetary boundaries and also the pico-economic scale of brain-level decision making (van Noordwijk et al 2012). The real internalization can now be seen as touching on the underlying layer of emotions that guides human decisions before they are 'rationalized' as a way of communicating with others. That raises the question where environmental issues sit in a hierarchy of emotions.

Van Noordwijk et al (2013) proposed a 'motivational pyramid' that can be used to discuss the priorities of a local or national government and its concerns for the health and well-being of its citizens, as well as relations to global environmental quality, global commodity trade and development.



Figure 48.1. Motivational pyramid of the concerns of a typical government and its interactions with possible mechanisms to reduce greenhouse gas emissions

Note: NAMA = nationally appropriate mitigation actions; EET = emissions embodied in trade; REDD+ = reducing emissions from deforestation and forest degradation plus conservation

Source: van Noordwijk et al 2013

■ Objectives

Assist local, national and international proponents of PES and PES-like arrangements in choosing a locally appropriate paradigm and understand its relation with underlying motivation.

■ Steps

- ① Conduct focus-group discussions with proponents of PES and PES-like arrangements (local communities, government officials, NGOs and private entities) to understand the paradigms, similarity in goals and differences in ways of achieving them, as well as the positive and negative connotations of the terms used (buyer/seller/intermediary/market versus compensator/compensatee versus co-investors/shared risks and benefits). Make a list of local examples and discuss their clarification according to Table 48.2.
- ② Explore the preconditions, appropriateness of underlying principles and strictness of conditionality (Table 48.2) in the local context in separate discussions and in-depth interviews with key stakeholders.

Table 48.2. Decision table to identify suitable sub-categories of PES instruments

Preconditions	Type of reward	Principle for establishing reward	Strictness of conditionality	Sub-category
Clarity of property rights over land and trees; compliance with legal requirements for generation of environmental services	Cash or in-kind rewards to individuals or groups. Sometimes with co-benefits	Willingness of buyers to pay for environmental services additional to a baseline status	Payment proportional to quantity of specified, verified and certified environmental services additional to a baseline.	Commoditisation of environmental services as such
Existing commodity markets with interest in enhancement of environmental services	Maintenance of market share (traded volumes) and/or price	Willingness of consumers to pay premium price for quality of production process rather than the product as such	Certification standards and auditing practice are under public scrutiny	'Environmental service' branding of established commodities
Legality of environmental-services reducing practices that are foregone and now compensated	Cash or in-kind rewards to individuals or groups. Sometimes with revenue or benefit sharing	Willingness of sellers to accept compensation for opportunity costs for maintaining or enhancing existing baseline environmental services' status	Payment proportional to opportunity cost of land and/or of adherence to specified restrictions or conservation actions	Compensation

Preconditions	Type of reward	Principle for establishing reward	Strictness of conditionality	Sub-category
Applicable where preconditions for other reward mechanisms are not yet achieved	In-kind to groups. Inputs, for example, seedlings, labour. Sometimes with capacity building and advisory support	Mutual sharing of roles to achieve livelihood and environmental services' outcomes. Ownership of environmental services sometimes distinct from ownership of livelihoods.	Payment proportional to effort (for example, number of trees planted) for achieving environmental services' outcome	Payment for effort proven or trusted to generate specified environmental services
	In-kind: access to or (co-) ownership of resources or land, tree seedlings, support of conservation friendly enterprise, for example, bee keeping. Benefit sharing	Precautionary investment in management plans for meaningful participation of local stakeholders as insurance banking for environmental services without market demand.	Negotiated rewards provided fully and good relations maintained, with continuous negotiation and encouragement of good performance. Rewards can be completely withdrawn but this is rare	Incentive for a set of efforts for ecosystem management without specifying environmental services
	License permits, rights or (co-) ownership of resource to businesses or community organizations	Willingness of buyers to pay for high value commodities or services that may maintain or enhance or unspecified environmental services	Permits upheld provided there are no negative environmental impacts	Incentives for private businesses that generate positive environmental services externalities

- 3 Focus-group discussion: is the motivational pyramid of Figure 47.1 applicable and/or does it need modification to understand local conditions?
- 4 Building on the approach and results of FERVA, consider the opportunities to balance fairness and efficiency at three scale transitions: 1) the international border of a country; 2) the interactions between national government and sub-national/local governments and private sector actors; and 3) the interactions between a local government and/or private sector agent mandated (through a concession) by government and local community members and agencies. Is it feasible (and if so under what conditions) to combine paradigms across scales without compromising on transparency and clarity? Identify examples where such combinations operate.
- 5 Bring the conclusions of preceding steps into local discussions of options for locally appropriate PES arrangements. Identify opportunities and bottlenecks for improvement of existing PES approaches and options to address these. Contribute to the debate on which designs are appropriate at international, national and local scales, bringing in the local experience and evidence.

■ Case study: CES, COS and CIS in Africa

Namirembe et al (2014) classified 50 existing PES applications in Africa according to the CES, COS and CIS framework and found 15, 6 and 29 projects that (predominantly) use the paradigms, respectively. Within CES, which applies exclusively to carbon at this stage, the prices used were subsidized ('compensated for co-benefits') above market levels.

As an example of Step 5, Minang and van Noordwijk (2013) discussed the emerging lessons of the REDD+ discussion (Figure 47.2) and concluded that a multiple paradigm construction is feasible. While it adds complexity at the interfaces, it allows a balance between fairness and efficiency (see FERVA) to be struck at each level, beyond what a single paradigm approach might achieve.

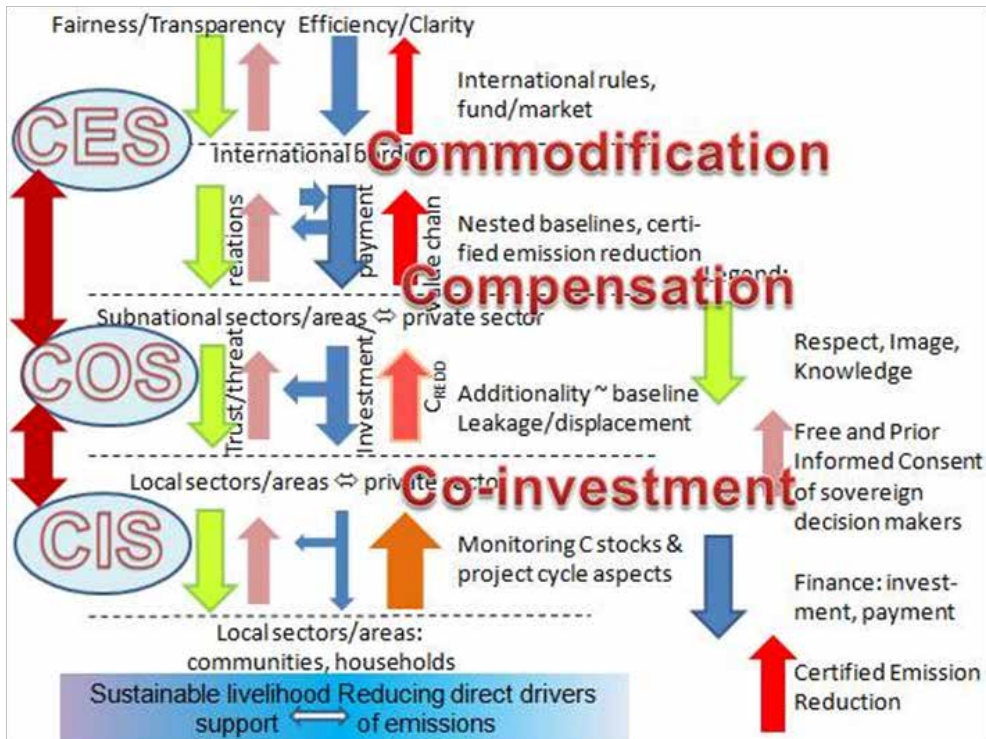


Figure 48.2. Cross-scale relations of the fairness exchange (respect versus commitment) and the efficiency transactions (environmental service enhancement per unit funds invested)

Source: modified from Minang and van Noordwijk 2013

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49 | Integration

Meine van Noordwijk, Beria Leimona, Sonya Dewi, Ujjwal Pradhan, Sara Namirembe, Delia Catacutan, James M. Roshetko and Peter A. Minang

Some guidance is given on how the support of negotiations between stakeholders over crucial landscape issues can be organized in a multidisciplinary, multi-skilled team with awareness of the need for, and challenges of, communication across multiple knowledge systems, attitudes, skills and aspirations.

■ Introduction

In the end, it is all about communication, relationships and fairness. Clark et al (2011) provided the overarching framework of boundary work and boundary objects as the way science, policy and action can be linked in negotiation support systems. Aristotle¹ already knew that it was the combinations of *pathos*, *ethos* and *logos* that conveyed the salience, legitimacy and credibility of a speaker. We can now link that to the public/policy, local and science-based dimensions of the knowledge systems we explored throughout the tools presented here. The default assumption has to be that we deal with the most complex of situations, multiple stakes and multiple knowledge systems (or claims to knowledge), where all 'evidence' is contested as representing a political bias, until proven otherwise. Fairness perceptions and the relevance of relationships, beyond what standard economics deals with, remain hard to grasp (Pagiola et al 2005, Ariely 2008, van Noordwijk et al 2012). Learning can shift knowledge, attitudes, skills and aspirations but generally requires a safe space, shielded from the daily routine and not confined by the trenches that all institutions tend to form around them.

Given the tools that are available, effectively supporting negotiations in learning landscapes requires that the team involved is aware of the complexities and through its own composition crosses the boundaries between disciplines, culture, gender, age and experience. Affinity of team members with the different stakeholders can bring the complexity of the real world into the team itself but can also help in communicating results. If we value diversity for the strength, buffering and filtering it provides in ecological systems, we need to embrace it ourselves.

As stated in the introduction, this volume aims to provide guidance and learning points for the integration and process aspects of negotiation support. A number of steps have been identified but need not necessarily be followed in order. In negotiation systems, the steps become part of an iterative process that is flexible and reflexive, allowing learning to take place at each step.

For a class of problems where the primary stakeholders can see eye to eye, the concept of outcome mapping (Earl et al 2001) within the negotiation process can be used. For each boundary partner, outcome challenges, that is, changes in behaviours that will contribute to the common objectives, are identified. Progress markers are defined to monitor whether the process is getting closer to reaching the outcome, which is mostly non-linear in many ways.

¹ <http://en.wikipedia.org/wiki/Rhetoric>

Objectives

Provide guidance and learning points for the integration and process aspects of negotiation support.

Points to consider

- Form multidisciplinary teams with members who represent a variety of institutional associations, disciplinary backgrounds, cultural roots, gender and experience, language and non-linguistic communication skills but who share a sense of commitment to learning, individually and as team.
- Engage with the various boundary partners at an early stage, while identifying further the strategic partners and nuances within what appeared to be homogenous groups in the process. Listen to concerns, try to unpack the way knowledge, attitudes, skills and aspirations are intertwined with claims to rights and where insecurity blocks change.
- Start with the three exploratory tools of Section 1 and use early results to select which other tools can be used to understand the complexity and priority issues of the area (Figure 49.1).

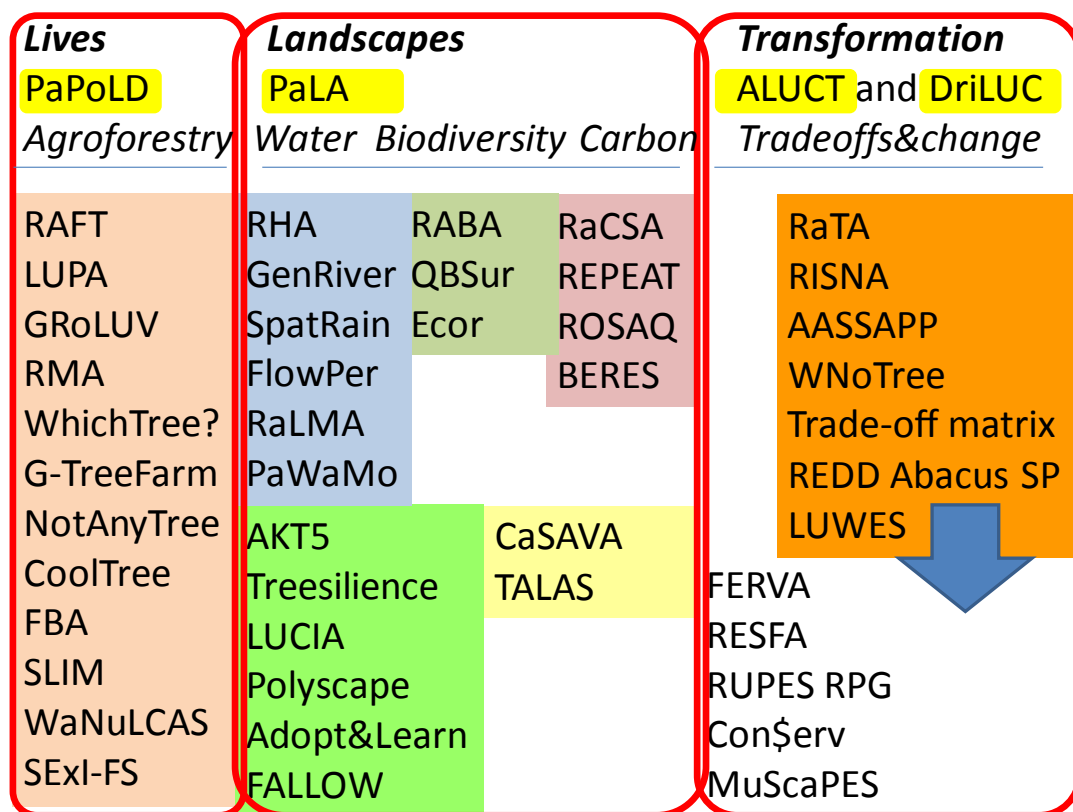


Figure 49.1. Grouping of the tools as a stepped approach to the complexity of the socio-ecological system

- Identify opportunities for some 'early wins' to create confidence and trust before facing the bigger challenges. Remain honest and humble about what these wins can achieve in the face of the bigger issues.
- Create a safe space where emerging knowledge can be criticized, dissected, enriched without undermining confidence and self esteem, celebrating success in relation to the external relations and ensuring that due credit is given for all roles and contributions.
- Have team members immersed in the field, without overly tight deadlines on deliverables, to facilitate the identification of new issues and solutions while engaging with the landscape, the people, its history and the multiple visions, risks, perceptions and aspirations. There always are multiple timescales involved and the typical project operates at only one of these, while real change is a much slower process.
- Protect the team from the tendency of management systems to become more than the support system for internal fairness and efficiency plus external accountability that they are supposed to be.
- Build in quality time points for reflection and internal learning, with key stakeholders of the landscapes and issues of focus, as well as internally. Share emerging lessons widely to get feedback and create new alliances. Don't be shy to challenge existing theories of change in the research or development realm, even those that underpin current funding, when the evidence and experience does not appear to align existing theory and established wisdom.
- Be ready for harsh criticisms and strong blocks generated by competing stakeholders; consider resource limitations that create protracted knowledge and communication that can harm the negotiation process

■ Example of application

None of the above steps are particularly new or innovative. Experience with the ASB Partnership for Tropical Forest Margins was described by Tomich et al (2007). Subsequent experience in projects such as REALU (Bernard et al 2013) have reconfirmed the possibility of working in a nesting of national teams within an international effort to jointly learn and explore new avenues. Many of the steps are also closely linked to outcome mapping, which has been widely applied (<http://www.outcomemapping.ca/>).

Referring to the six leading questions of Figures 0.3 and 0.13, we recently experimented with a new boundary object: a hexagon of six posters which on each side gives highlights of emerging understanding of one of the aspects while allowing team members and others to walk around and notice new connections between what might have been seen as separate issues. Examples of the sets of six posters for ten learning landscapes can be found at <http://worldagroforestry.org/apps/slideshow>.

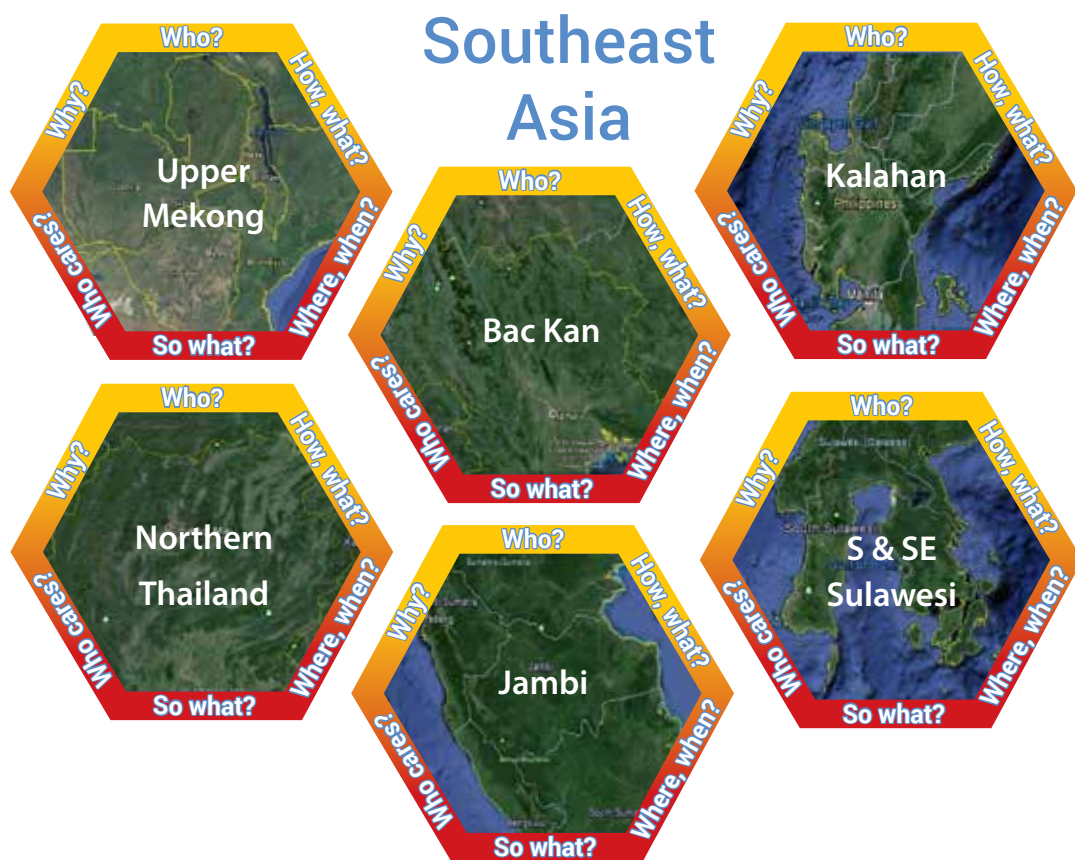


Figure 49.2. Learning landscapes as question-filled hexagons

■ Concluding remarks

Our overarching hypothesis from volume I (van Noordwijk et al 2011) for this tool collection has been:

Investment in institutionalising rewards for the environmental services that are provided in 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.

Through the various tools and discussions herein, the concepts of multifunctionality, environmental services, livelihoods and climate change will hopefully become concrete for any specific context and discussions can progress towards institutional support for work on the ground that reduces human and ecosystem vulnerability. The negotiation support tools presented in this volume offer tremendous opportunities for deriving what is legitimate, credible and salient solutions to complex landscape issues but the tools are only as good as the users’ ability to apply them. A well-trained and committed team is needed. Our toolbox is constantly growing and we welcome contact with all who want to make this a joint effort.

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