

Table 9. Analysis of stakeholder positions and power at local, regency, provincial and national levels, based on ‘expert opinion’ of those involved in the process. The overall score at each level is calculated with and without expectations of REDD benefits

Scale	Stakeholders	Net benefit	Clout	REDD related?	Open?	Influence on decision			
						With REDD	w/o REDD	Silencing illegal voices	
								With	w/o.REDD
A*B	A*B*(1-C)	A*B*D	A*B*(1-C)*D						
National	Ministry of Forestry (MOF) Pulpwood-supply interests	-1	5	0	0	-5	-5	0	0
	MOF Social-forestry interests	1	2.5	0	1	2.5	2.5	2.5	2.5
	MOF REDD interests	1	3	1	1	3	0	3	0
Provincial	Provincial pulpwood-supply interests	-1	2	0	0	-2	-2	0	0
	Provincial water-flow interests	1	1	0	1	1	1	1	1
	Provincial REDD interests	1	1	1	1	1	0	1	0
Kabupaten	Head	1	5	0	1	0	0	0	0
	Forestry law enforcement unit	1	2	0	1	1	1	1	1
	Opportunity to collect revenue for forest use	2	2	0	1	4	4	4	4
	National park authority	1	2	0	1	2	2	2	2
Village	Village leadership	2	2	0	1	3	3	3	3
	Well-off farmers (foregoing rubber intensification)	0	2	0	1	0	0	0	0
	Local operators of illegal logging	-2	1	0	0	-2	-2	0	0
	Women and children	1	1	0	1	1	1	1	1
	Local hydropower operators and participating households	1	1	0	1	0.5	0.5	0.5	0.5
External	Provincial NGO	1	2	0	1	4	4	4	4

	International research centre	2	1	0	1	2	2	2	2
Totals						0.5	-2.5	5.5	2.5
						0	-1	2	1
						5	5	5	5
						2.5	2.5	4.5	4.5
						8	8	8	8

Role of external agents

External agents had interacted with the local community for over a decade and a detailed attribution of how this influenced the quality of self-organised forest governance is beyond the scope of this analysis. In Bungo district, as mentioned by local government staff, the close interaction of the local community, with NGOs as facilitators, has been very important (Adnan et al. 2008). Community development programs of NGOs provided technical expertise, facilitated information exchange with other rural communities and created a forum for conflict resolution. However, local action also required legal back up in dealing with outside agents (for example, those involved in illegal logging) and to achieve reciprocity with the municipal government. The active roles of the World Agroforestry Centre and KKI-WARSI in the *kabupaten*-level forest learning group and of KKI-WARSI at provincial level helped to build trust in the village community and helped forest officials understand that rubber agroforests combine environmental and productivity functions that are compatible with the watershed protection forest status (Joshi et al. 2003).

E. Relevance for international REDD debate

The designation as Hutan Desa or Village Forest of 84% of Lubuk Beringin's territory can be seen as a step towards similar schemes for neighbouring villages, the whole Rantaupandan valley and/or zones surrounding the national park. The factors that helped make Lubuk Beringin a pioneer in the Hutan Desa agreement and the scrutiny of the forestry institutions who mistrusted any local community make it less likely that the result can be easily extended to other villages. Ongoing efforts test the hypothesis that transaction costs can be reduced once there are a few success stories to point to. Processes of replication have started in Bukit Panjang, Bukit Pohong in Sungai Telang, Bukit Singirik up to Bukit Rantau Bayur in Senamat Ulu village. These contiguous areas are all within the protected forest area of Bukit Panjang-Rantau Bayur, covering 13 529 ha. With previous recognition of small parts (not exceeding 1000 ha) of the forest in Bungo district as 'customary forest' (Endah 2008, Hadi et al. 2008), the current agreements reach one or two orders of magnitude beyond what was achieved before but stay several orders of magnitude below the potential reach and relevance. The replication of the Hutan Desa scheme in these areas can be a model of collective management of forest areas involving various villages under a clear government regulation.

For the villagers of Lubuk Beringin the increased tenure security is a highly valued reward and they are aware that this is subject to performance in forest protection. In as far as the approval of forest authorities has been linked to expectations of REDD funding, the benefits for local communities can, for a change, have preceded benefits at government level. Much of the current REDD debate is about 'benefit sharing' and focussed on financial flows. The key to the success of Lubuk Beringin is

that multiple currencies are involved: the primary benefit to the community is security of rights and opportunities to derive income from their agroforest; the primary benefit for government agencies is that they can meet the preconditions for REDD investment. All at low financial cost.

Programs for forest carbon in Bungo district are now being established and arranged based on regulation No. P.68/Menhut-II/2008 of the Minister of Forestry about allocation of REDD funds and No. P.30/Menhut-II/2009 about REDD in the frame of the climate change convention. In order to be part of national and international REDD allocations, institutions are required that have a clear mechanism of delivery of forest protection and distribution of benefits and are able to monitor performance of a REDD program in Indonesia. The Hutan Desa designation of Lubuk Beringin may well become one of the starting points for such a process. It may also prove to be a key component of the self-funded NAMA commitment by Indonesia to the global community to stabilise national emissions at the 2005 level and to seek a shift to emissions that make more tangible contributions to the national economy.

Conclusions

The case of the Hutan Desa designation of Lubuk Beringin was presented as a way to reduce transaction costs for the initial phases of REDD mechanisms. Where public policies have inconsistencies and have not reconciled conflicting interests in future forest-use options, imposing a REDD scheme as part of an international regime may face high transaction costs and be unattractive to international investors. In a co-investment paradigm (as in van Noordwijk and Leimona 2010) the options of negotiated tenure, conditional on maintenance of environmental services, on land that ultimately remains under state control, are an important category of 'rewards for environmental services', as well as a precondition for the use of other paradigms. The current level of control by forest authorities through development, approval and implementation of management plans to enhance environmental services may appear excessive for the area, especially in comparison to the lack of accountability by the state authorities where they have been in charge so far, but local sovereignty in managing the environment for local plus external benefits has to be earned in a stepwise fashion. Success of this 'conditional tenure' paradigm in the international REDD context will require further trust-building and reciprocity in redressing the current inequalities and conflicts over Indonesia's forest resources. The Hutan Desa case in Lubuk Beringin features the importance of both 'bonding' (or horizontal) and 'bridging' (or vertical) forms of social capital between actors while addressing the rights of the local people as a means of conflict resolution. Reference to local wisdom and traditions in managing mixed woody vegetation that combines planted trees (in this case rubber) and local plant species that replicate natural forest in a 'protective agroforest' form create a big step forward in developing fair and efficient REDD schemes.

4. Replicable appraisal methods?

4.1 RESFA and its components

The Lamandau study (see section 3.2) was conducted using the framework REDD/REALU Site-level Feasibility Appraisal (RESFA) developed by the World Agroforestry Centre. The framework covers the relevant livelihoods, land-use change, carbon stocks, land-tenure issues, scenario development and testing for carbon emission and livelihood development. It attempts to answer the basic question of whether a REDD+ project can reduce net emissions while addressing the needs of local communities. The framework has five key components: A: Livelihoods; B: Land tenure and policy history; C: Carbon stock; D: Land-use-change analysis; and E: Scenario testing (Figure 5).

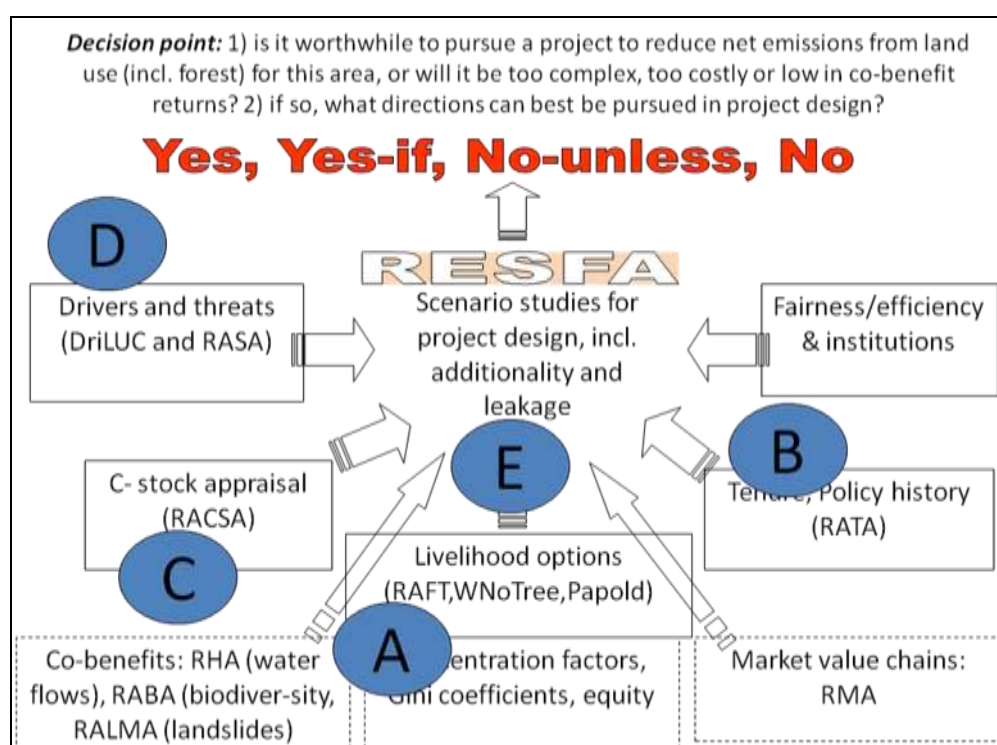


Figure 56. Feasibility study framework¹⁶

The feasibility study was conducted in various (often overlapping) steps.

1. Compiling background information about the site, land use and land-use change, available maps and datasets, socio-economic context, local ecological knowledge and major habitat types.
2. Clarifying project boundaries and potential leakage belts.
3. Quantifying carbon storage and current and projected deforestation rates at the site.
4. Developing a baseline scenario for the site.
5. Describing project scenarios and estimating the emission-reduction benefits from these scenarios over the coming 30 years.
6. Analyzing risks related to permanence, leakage and additionality and providing initial recommendations for how these can be addressed at the site.

¹⁶ <http://www.worldagroforestrycentre.org/SEA/Publications/files/leaflet/LE0155-09.PDF>

7. Summarising conclusions and recommendations on the overall feasibility of the proposed project.

The RESFA method builds on and sequences a number of appraisal tools that were developed by the TUL-SEA project (Trees in Multi-Use Landscapes in Southeast Asia).

PALA, PAPOLD and DRILUC jointly form an initial appraisal of the landscape, poverty and drivers of change.

PALA = Participatory landscape appraisal

PALA was created by packaging Rapid Rural Appraisal/ Participatory Rural Appraisal (RRA/PRA) methods with agro-ecological analyses in order to capture local knowledge at temporal and spatial scales. PALA is a useful tool for scoping studies, awareness raising among community members on problems and issues connected with ecological and administrative boundaries. We use it in order to:

1. study farmers' perceptions of the lateral flows and internal filter functions in the landscape, as well as to understand farmer's management options and the actual choices made; and
2. understand landscape composition, unit and interaction between landscape units.

Thereafter, issues such as concerns in water, soil erosion and biodiversity can be defined in a participatory manner.

PAPOLD = Participatory analysis of poverty, livelihoods and environmental dynamics

Poverty, people's livelihood strategies and the natural environment are interlinked in both space and time. Some of the links are distinctly spatial phenomena, which can be measured using household surveys and remote-sensing technologies and mapped using geographic information systems, while other links are more context-specific and difficult to observe. The Participatory Analysis of Poverty, Livelihoods and Environment Dynamics method was developed to capture locally specific issues.

DRILUC = Rapid appraisal of drivers of land-use change¹⁷

Land use is dynamic. It is the result of decisions and choices made by many actors and agents. At an early stage of involvement in integrated natural resource management, the key features of the resultant 'system' need to be mapped and understood. Looking at a dynamic landscape as a system implies assessing both the internal and external drivers of change (even though the system boundary is fluid). The system is subject to pressure and has response options, time lags and feedback mechanisms that allow learning and internal adjustment. A view of the political ecology of the multiple interests and stakeholders in a landscape can help to form a platform for discussion and negotiations. The objective of DRILUC is to provide a system-level understanding of the way local drivers of land-use change in a landscape relate to external conditions and the types of local/regional/national feedback that have an impact on livelihoods and the provision of goods and services.

RAFT, RMA and WNoTree focus on tree-based livelihood options with market potential.

¹⁷ <http://www.worldagroforestry.org/sea/Publications/currentpub.asp?publishid=1976>

RAFT = Rapid appraisal of agroforestry practices, systems and technology

Agroforestry is an umbrella term for a wide range of practices and situations in which trees are allowed to grow or are deliberately planted on farms and agricultural landscapes. Specific terms for specific forms of agroforestry are needed before we can understand the strengths and weaknesses of the use of woody perennials as providers of goods and services and appreciate the opportunities for, and threats to, their further enhancement. The RAFT framework provides guidelines for the description and analysis of the ways trees are used, and are of use to, rural livelihoods.

The RAFT tool has a number of functions.

- 1) It provides clarity on terminology for agroforestry practices, systems and technology appropriate for local use and open to global comparison.
- 2) It describes the relationship between domestication of trees as biological resources, control over access to resources and knowledge/belief systems.
- 3) It has detailed data collection on input and output streams in various phases of the lifecycle of an agroforestry system.
- 4) It appraises strengths, weaknesses, opportunities and threats jointly with the main stakeholders to plan for applied research and development support.

RMA = Rapid marketing appraisal

RMA is a tool to understand how a product or commodity flows to end users and to understand how a commodity system is organised and operates. RMA helps us to realise the value of market information. It inspires farmers to learn and develop new ideas about commodities they produce and test their marketability by asking customers what they think of these commodities. Smallholder farmers are able to see why it is important to listen to customers and to carefully research their markets.

WNoTree = Barrier analysis for tree enhancement¹⁸

Relationships between agroforestry and plantation forestry are perceived to be complementary, neutral or competitive, depending on the ability of (inter)national policy frameworks to provide a level playing field for the provision of productive and protective forest functions. In conditions where large-scale plantations operate with substantial government subsidies (direct or indirect, partly justified by environmental service functions), in contrast to non-existent or minimal subsidies for agroforestry, the potential to produce wood and simultaneously provide for many forest benefits and ecological services with agroforestry is placed at a disadvantage.

WNoTree surveys have three stages.

- 1) The most significant constraints to tree management and domestication in the local context identified through focus groups with farmers and local government agencies.
- 2) Follow-up surveys test the hypotheses that emerge from the focus groups, in conjunction with spatial analysis of actual tree presence in the landscape.
- 3) Action research engagement with local communities and governments to address the primary constraints and provide a direct test of the analysis.

The RATA method is focussed on understanding stakeholder claims of tenurial rights.

¹⁸ <http://www.worldagroforestry.org/sea/Publications/currentpub.asp?publishid=1990>

RATA = Rapid tenure claim assessment

Land-tenure conflicts are common in many developing countries where traditional land rights are often not codified, leaving local populations defenceless against a change in the legal status of their traditional lands. The RATA approach can explore in depth the nature of the competing claims. It can reveal the competing claims among stakeholders who hold different rights and interests. Analysing the roles of policies in land conflicts and competing claims, RATA can provide policy options and interventions as an alternative to conflict. This method provides key results for both 'fairness' and 'efficiency' because as it clarifies the rights of various stakeholders and the nature of current conflicts that may need to be reduced (if not resolved) before emission reduction can be achieved.

The consequences of current land use for carbon stocks is appraised with RACSA and land-use-change scenarios with FALLOW.

RACSA = Rapid carbon stock appraisal

One of the main technical issues in REDD and similar schemes is the availability of a standard set of methods and procedures to assess carbon stocks and sequestration in current and potential land uses and management. RACSA focuses on assessing the status of carbon stocks in a given geographical area and can generate scenarios of carbon sequestration or restoration resulting from potential land-use and management changes. RACSA integrates processes for creating land-use scenarios that can model enhancing carbon sequestration, preventing land degradation, promoting sustainable land productivity and increasing people's livelihoods.

FALLOW = Forest, agroforest, low-value landscape or wasteland?

The main issues in creating development strategies for rural agroforestry landscapes in developing countries are mostly related to

- 1) non-linear baseline trajectories;
- 2) trade-offs between economical utilities; and
- 3) environmental services and additionality.

The FALLOW model examines strategies that may create losses in both economic and ecological values (collapse of an ecosystem and its associated livelihoods); gain in economic value but loss in ecological value (so-called 'red development'); gain in ecological value but loss in economic value ('conservation'); or gains in both economic and ecological values ('green development'). FALLOW allows quantification of baselines and alternative scenarios¹⁹.

4.2 Fairness and efficiency

Fair and efficient REDD value chain allocation (FERVA)

In attempting to reduce emissions from deforestation, peatland and forest degradation and other land-use changes in developing countries, a major challenge is how to combine efficiency and fairness. A middle ground and combination of policy instruments is needed to actually reduce emissions and also stimulate sustainable livelihood options and development pathways. Fair and efficient REDD value chain allocation (FERVA) is based on focus groups with different stakeholders. Details and examples have to be adjusted to local context.

¹⁹ For an example of such model in the field see Suyanto et al. 2009. For more analyses from Indonesia and Peru see Velarde et al. 2009.

Table 10. Typical arguments for either ‘fairness’ or ‘efficiency’ listed in FERVA discussions

Typical arguments for efficiency	Typical arguments for fairness
1. Those managing carbon stocks effectively in their landscapes deserve reward as a moral imperative.	1. Maximising carbon-dioxide-emission reduction per scarce dollar invested requires a tight focus on real threats.
2. Poverty reduction is the primary millennium development goal and mandates a pro-poor approach.	2. Markets adequately protected from manipulation seek the 'right' price, which is also the fair price.
3. Rewarding only active and credible threats is a perverse incentive to enhance emissions.	3. Maintaining public support for emission reduction requires demonstrable success.
4. The traditional practices of local communities must be respected.	4. Despite being outsiders, experts provide the most reliable and credible information.

FERVA engages stakeholders in focus groups, the details of which must be adjusted to fit the local context. The following is the usual sequence.

- 1) After a basic explanation of climate change and the role of greenhouse gases, including the 15% or so derived from carbon stocks lost from forests and peatland, participants are exposed to the issues of fairness and efficiency in REDD. The issue is introduced by acknowledging that global REDD interest in Indonesia may be efficient, while asking if it is also fair. What about allocation within Indonesia? Should attention focus solely on the provinces with the largest threatened carbon stocks? Should countries and provinces with stable forests be ignored?
- 2) According to their affinity for either the fairness or the efficiency side of the argument, participants form two groups to strengthen the case for their point of view being essential to the success of REDD schemes.
- 3) Using a debating club format, a representative from each group summarises the arguments, followed by a discussion on how the two perspectives can be reconciled.
- 4) The concept of a value chain is introduced at this point, using a local agricultural commodity (for example, coffee, rubber or timber) and discussion of how well or poorly farm-gate, processed and end-user prices reward effort along the chain.
- 5) The concept of a value chain is then applied to the REDD carbon market for certified emission reductions (CERs).
- 6) At least eight functions are required before an end user buys a CER. Working in groups, participants allocate shares of benefits to the ‘value chain’ of these eight functions under two scenarios: (A) the currently expected situation; and (B) a desirable future situation.
- 7) The differences in perspectives between groups are analysed and debated to illuminate what it would take to bring ‘hope’ and ‘reality’ closer together.
- 8) The results are summarised and compiled for future reference. If REDD implementation makes progress, divergence in stakeholders’ perspectives will likely narrow, as will the gap between hope and reality.

4.3 Rights, authorities and power in relation to REDD: unpacking ‘carbon rights’

The expectation of financial incentives for emission reduction has led to the concept of ‘carbon rights’, a new arena for contest and cooperation. The concept of ‘carbon rights’, however, is not easily understood in relation to existing or emerging rights, authorities and power over land-use decisions. We will analyze the ‘value chain’ between effective changes in land use in the landscape and the possibility to get a share of the incentives. At the current stage of international negotiations

that will shape the rules, we will refer to concepts such as additionality, leakage, permanence and baselines in a generic rather than fully operational sense.

Reducing emissions from deforestation and (forest and peatland) degradation in developing countries is at least as complex as the set of actors and agents that interact during the process that starts with a natural forest and ends with a landscape with few trees and low carbon stock. In some case the transformation is quick and involves only a few, usually state-sanctioned, agents ('deforestation'), in others there is a more gradual process, normally starting with logging, increasing physical access to the landscape, further logging followed by conversion to tree-based or non-tree-based forms of agriculture or plantation forestry or further steps towards urbanisation. Along this process many actors and agents have *de jure* and *de facto* rights, power and authority and all are stakeholders based on the benefits currently derived from 'business as usual'. Changing the local course of history requires changes in the balance of power, with formal rights only effective where these can be enforced.

Much attention has been given to 'rights to land', with contests between the state, state-sanctioned concessionaires and local communities with historical claims preceding the state. Clarifying the legal basis of the contesting claims often stumbles on contradictions between laws, multiple interpretations of the constitution and of international treaties on human rights and rights of indigenous people. For example, in Indonesia only 11% of the total land area has completed the legal gazettelement procedures to be called state forest (Kawasan Hutan Negara), while a further 52% of the country falls under a 'forest management' regime, without clarity of land ownership. Given the long history of this debate and the stakes involved, it is unlikely that a comprehensive settlement within the state's own legal framework can be achieved quickly. In the context of 'legal pluralism', regulatory frameworks other than the state, such as *adat* (customary law) and international conventions, are also important and are used as moral 'legitimisation' of actions that oppose or enhance change in the condition of forests and woody vegetation in the landscape.

The debate on REDD has opened the door for 'incentive'-based approaches to change the behaviour of actors and agents who are jointly responsible for 'business as usual'. To the degree that formal rights are only relevant where they can lead to actions that provide benefits (or prevent others from doing harm) for current or future generations, through goods and services derived from the landscape, incentives may interact with current contests over rights. The expectation of incentives can both increase contest and conflict or be a basis for a 'new deal' that provides net benefits to all over the contested status quo. Such a 'new deal' can only work if all agents of 'business as usual' have sufficient reason to change their behaviour, either voluntarily or through enforcement of new standards and rules.

Implementation modes being discussed for REDD in Indonesia involve the risk of selectively empowering parts of the status quo without providing benefits for local stakeholders. This may enhance conflict and lead to 'sabotage' as the ultimate way for local agents to make their point, ensuring that no one can win. In the short term, the challenge is to combine 'efficiency' (actions that focus on measurable emission reduction) and 'fairness' (rewarding the protectors of terrestrial carbon stocks that do not provide an immediate threat). This challenge is felt at the international level, as countries other than the two that are responsible for more than half of the land-based emissions of the previous decade (Brazil and Indonesia) will have to have reasons to support internationally negotiated agreements based on expectations of net benefits (either through reduced negative consequences of climate change or through a share in the incentives). The fairness versus efficiency challenge also exists within each country, as the threats to forests are localised in 'hot spots' with substantial emission potential elsewhere.

The fairness versus efficiency dilemma changes in character when longer time periods are considered, when more of the 'emission potential' can be actualised and when larger areas, with

more diluted 'hot spots', are used as the basis for the incentive mechanism. Long-term consistency of carbon accounting and a clear expectation that international negotiations will insist on consistency across accounting periods can reduce the risks of 'strategic behaviour' that maximises short-term gains for some of the stakeholders at the expense of collective benefits.

'Carbon rights' can be interpreted as the 'right to pollute', the 'right to live in a pollution-free world' and many things in between. It can mean the 'right to claim the reductions of CO₂ (and other greenhouse gas) emissions from an area' or the 'right to derive incentives from emission reduction'. All incentive systems require specification of 'minimal accepted behaviour' or agreed baseline and ways to quantify achievements as a basis for a share in incentives. Generically, incentives for emission reduction will be based on:

- actual emissions based on land use and land-use change;
- agreed baseline emissions, relative to a 'business as usual' scenario;
- external impacts ('leakage');
- long-term consequences ('permanence'); and
- integrity of the accounting system.

Each of these steps involves rights, authorities and power. Jointly they determine 'carbon rights'. Some of the steps involve existing rights and regulations on land use and land-use change while other elements are new.

4.4 Capacity strengthening needs

A workshop in Malang reviewed progress on the rapid appraisal tools and assessed the next steps needed in capacity strengthening to get local universities and NGOs involved in cost-effective and timely studies of the local context of natural resource management issues. Figure 37 summarises the findings of the workshop.

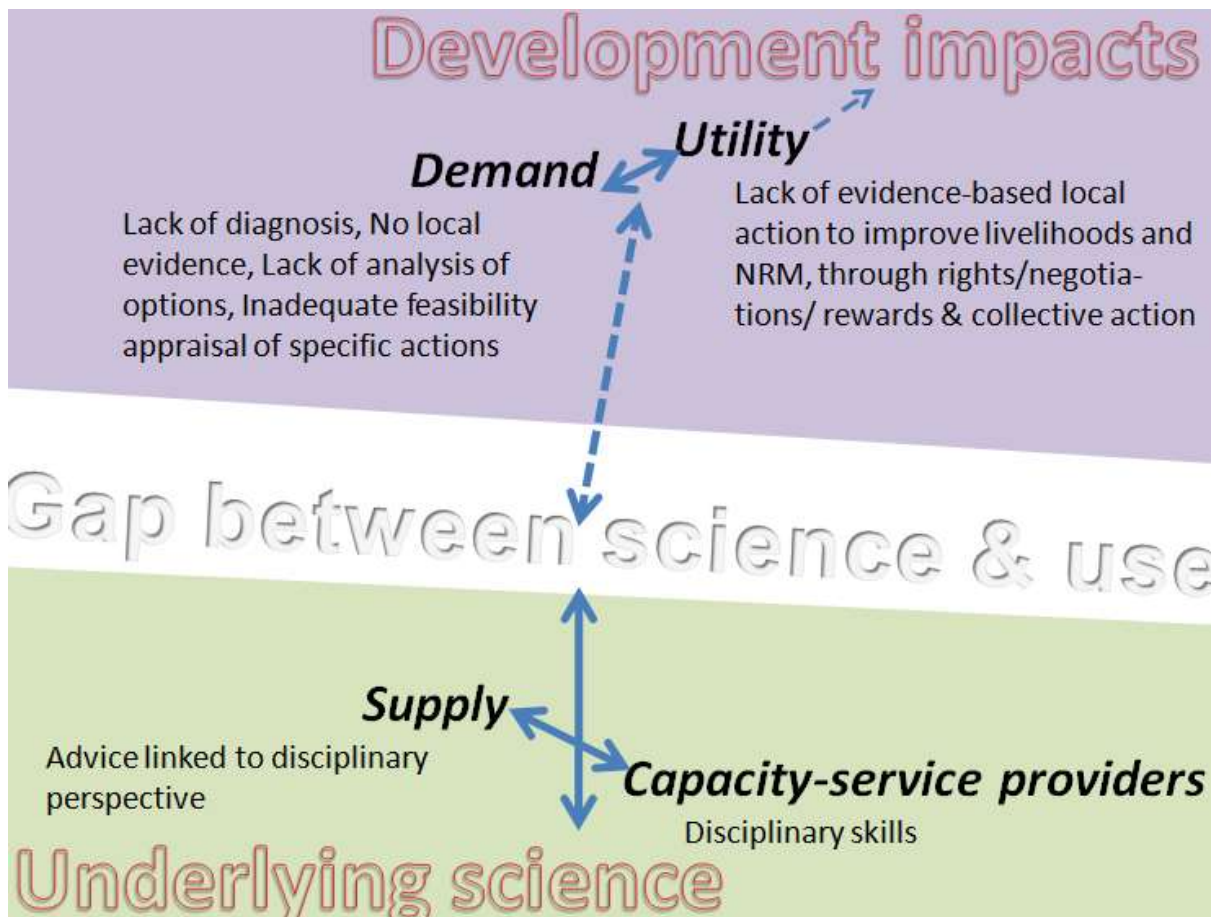


Figure 37 A. Problem identification as gap between 'underlying science' and 'development impacts'

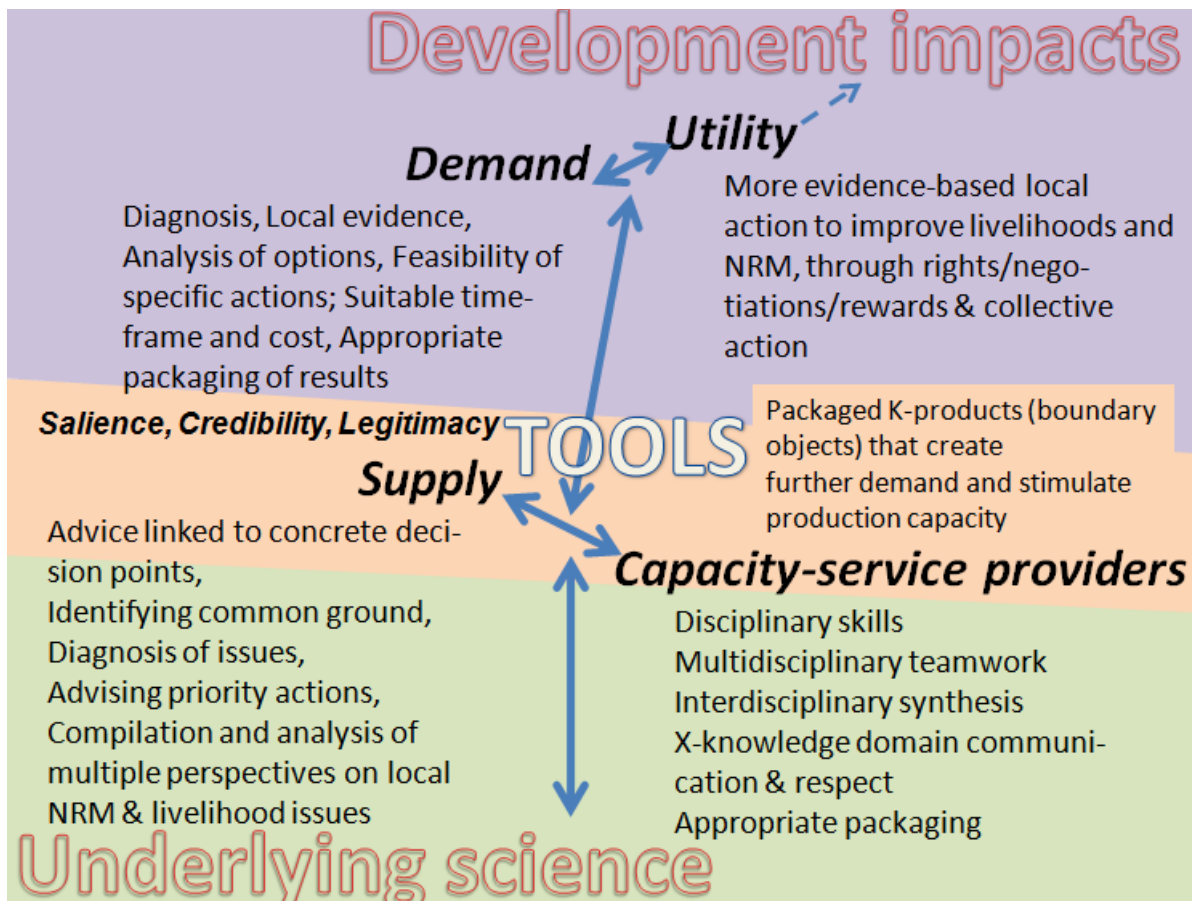


Figure 37 B. Role of tools in linking supply and demand for site-specific information

Supply

Diagnosis of issues,
Advice linked to concrete decision points,
Compilation and analysis of multiple perspectives on local NRM & livelihood issues
Identifying common ground,
Advising priority actions,

Signs that we are on a good track

LEK&PEK methods are appreciated & functioning
Effectively mobilizing local university expertise
Multi-institutional teams
Data mining, re-using existing information
Feedback from (potential) model users highlights relevance of 'transparency' and 'understanding' rather than 'predictions' as such

Important next challenges & steps

MEK – tools need intermediate steps
New ways for Backstopping
Synthesis ~ decision making, next steps
Demand-side dynamics: elections, new events, local politics & staff turnover
Reporting format ~ demand & audience
Scientific rigor needs more time

Utility

More evidence-based local action to improve livelihoods and NRM, through rights/negotiations/rewards & collective action

Signs that we are on a good track

- New knowledge from studies raising local debate, e.g. banana-water use issue in Lantapan, water quality-quantity issues
- Findings provide extra boost (evidence) for action – fresh outsider’s perspective (identifying the elephant in the room)
- Some tools help clarify and appreciate the nature of the problem (e.g. RATA)
- RaCSA generated C-data now being used at higher (national level)
- Findings/data/information are “credible” data provided by local research agents/universities (legitimacy; some are real boundary objects (inter-institutional work), combining salience, credibility, legitimacy)
- Findings can be used directly in action – collaboration of stakeholders in the study

Important next challenges & steps

Potential local conflicts e.g. RATA (how to solve)

Tools do not always provide solutions to problems

Communication of the results remains a challenge for many teams

Demand

Diagnosis, Local evidence, Analysis of options, Feasibility of specific actions; Suitable time-frame and cost, Appropriate packaging of results

Signs that we are on a good track

Expressed demand for RACSA, RHA

Many more trainings, co-funding

Request for further tools, sharper focus

Important next challenges & steps

Further articulation of demand and the way it changes with new issues coming up

New ways of combining tools around further decision points

Capacity-service providers

Disciplinary skills

Multidisciplinary teamwork Interdisciplinary synthesis

X-knowledge domain communication & respect

Appropriate packaging

Signs that we are on a good track

Some teams are confident enough to modify & adapt tools

Teams that engage university, NGO + local government staff are doing well

Important next challenges & steps

Teams get stuck on issues that are beyond disciplinary strength, e.g. modelling

Some of the NGO teams face challenge in providing enough depth

Figure 37 C. Supply, utility and demand of site-specific information and current status of information providers

TOOLS

- Local innovations on the tools: adaptability/ flexibility is sufficient
- Examples of existing tools stimulates emergence of new one
- Findings also indicate areas for new research/science (feedback loop)
- Full manuals needed beyond the 4-pager: operational detail sparks further innovation

Underlying science

- New areas for research are emerging, e.g. linked to climate change adaptation
- The buffering and flow-persistence concepts in hydrology emerge as strong unifiers
- Reconciling the research-development nexus is a valid domain of research
- There is an emerging science of 'boundary objects' that can be recycled and re-used
- We need to better understand the dynamics of demand,
- Climate change science at local level requires new forms of sustainability science

Development impacts

- Development decision politics/dynamics
- Avoiding wrong decisions may have more impact than selecting among reasonable options
- Fostering knowledge-based decisions (K2A: research output promoting forum)
- Learning process – feedback loops – leads to learning and innovations

Figure 37 D. Next steps for research efforts to enhance the tools available for rapid assessments

5. Discussion

5.1 Findings in relation to leading questions

Findings related to the questions raised in the introduction (Table 3) are summarised in Table 11.

Table 11. Synthesis of the ten questions on REDD+ in the context of Indonesia framed in Table 3

Emerging questions on REDD+ in the context of Indonesia	Findings on the potential relationship with a broader 'landscape carbon accounting' approach	Follow-up questions for phase 2
1. What are the historical and projected emission characteristics of forest policy classes with different degrees of current protection? What is the formal (<i>de jure</i>) and actual (<i>de facto</i>) additionality across planned and unplanned, controlled and uncontrolled emissions?	Historical emissions in Indonesia appear to be similar in Indonesia between 'forest' and 'non-forest' categories on a per hectare basis. Empirical analysis of changes in carbon stock and tests of emission displacement should start with all vegetation and land-use types and explore the degree to which forest policy classification by function matters, relative to other 'drivers'.	How can changes in land-use planning and forest-land allocation be readily translated to expected emission patterns?
2. How does current debate on operational international definition of forest as determinant of the scope of REDD+ (and of the types of woody perennial that are considered to be a 'tree' in this context) interact with the data for Indonesia?	The implications of different operational interpretations of 'forest' and associated scope to REDD+ can be assessed from the data, along with consequences for possible emission displacement and leakage. Results and sensitivity to details of forest definition differ between provinces.	How can forest stakeholders outside of the Kawasan Hutan be functionally linked to REDD+ discussions?
3. How can the current mismatch between woody vegetation meeting international 'forest' definition and existing institutions for 'forest' be reduced with regards to issues of 'trees outside forest' and 'forest without trees'?	Changes in woody vegetation on land not classified as 'forest' are salient in the relationship between REDD+ activities and their effectiveness for national emission reduction. The potential consequences for emission displacement of ignoring trees outside Kawasan Hutan are substantial (> 5 years of total business-as-usual emission can be maintained outside the Kawasan Hutan).	Uncertainty in tree biomass estimates outside forest may be higher than that for closed stands, as appropriate allometric equations for freestanding trees are poorly developed.
4. How can the unresolved legality of state ownership claims over Indonesia's forest zone and its consequences for contest between state and local communities (some of which refer to 'indigenous' status) be	Wider application of the Hutan Desa option of the forestry law can be appropriate for watershed protection and production forests. Inclusion of lands outside of the institutionally mandated forest authorities may assist in defining	How can benefit sharing in effective protection of forest carbon stocks be assured and what type of mechanisms and institutional arrangements are sustainable?

Emerging questions on REDD ⁺ in the context of Indonesia	Findings on the potential relationship with a broader 'landscape carbon accounting' approach	Follow-up questions for phase 2
addressed in deriving fair and efficient REDD⁺ mechanisms and benefit-sharing arrangements?	benefit sharing for the contested parts of the forest zone.	
5. How can peatland emissions beyond the scope of 'forest' be integrated in effective REDD⁺ schemes?	The hydrological integrity of peat domes and the consequences for emissions is probably best handled in a whole-landscape context.	How can water and forest management rules be effectively integrated across the relevant government agencies?
6. How does REDD⁺ interact with broader issues of regional development and land-use planning and how can the lack of harmonisation between provincial and national land-use plans, especially for the two provinces with the highest emissions, be addressed?	REDD ⁺ will have to be an integral part of high-carbon-stock/low-carbon-flux development strategies that link land use to livelihoods. Opportunity costs calculations are only a first step towards designing attractive alternative livelihood scenarios.	How can models/strategies go beyond business as usual emissions and meet expectations of increased local income?
7. How can the opportunistic behaviour be controlled of early entrepreneurs and investors interacting with local governments that have limited understanding of the issues and of the emerging and legal cross-scale arrangements on REDD⁺ in Indonesia?	Capacity building for local government and public sector debate needs to balance opportunity and private sector initiative. Providing site-specific quantification can help overcome the hype phase	Are there typical patterns in the learning curve of local stakeholders that can be used to design more effective communication programs?
8. What is the public acceptance of emission displacement via carbon markets, rather than contributions to net global emission reduction via targeted funds?	Transparency on the source of international funding and its relationship to global emissions is needed to maintain moral support by stakeholders who see global emission reduction as urgent. Offsets are seen as displaced emissions, not reducing net emissions. Partial solutions are suspect, as emission displacement can take many forms.	How can international finance be increased beyond current funding levels without the direct link to sale of 'emission rights' to societies and sectors with emissions above a fair share of what the atmosphere can tolerate?
9. How can the lack of trust in the financial management of REDD⁺ funding streams through the Ministry of Forestry be acknowledged and dealt with?	Broad and public debate on financial incentives and transparency is needed beyond the current forest stakeholders to ensure institutional sustainability.	With new steps in Indonesia to develop independent national institutions for managing emission reduction and its financing, the challenge of nesting subnational action remains. How can performance be quantified and trust be built at local levels?
10. What is the relationship between MRV for REDD⁺ and the broader approach to	For the carbon stock and emission accounting a whole-landscape AFOLU approach is mandated for	What will be the role of bundled ecosystem services in financing reduced emission strategies and

Emerging questions on REDD ⁺ in the context of Indonesia	Findings on the potential relationship with a broader 'landscape carbon accounting' approach	Follow-up questions for phase 2
national communications on greenhouse gas emissions?	REDD ⁺ . Monitoring and reporting on incentives and co-benefits needs to be comprehensive and cannot be restricted to 'forest' as such.	low carbon-emission development? Can co-investment formulas be developed that effectively share benefits?

5.2 Flexibility requirements for mechanisms dealing with nested scales

The current debate on REDD⁺ revolves around the start and end of this value chain (Figure 29): part of the constituency that is concerned with the negative impacts of climate change has little trust in steps C6 and C7 and sees REDD as a distraction from dealing with fossil-fuel based emissions (roughly 80% of the total) and development of the clean technology needed to achieve sustainable development; the concerns are about flooding the market with cheap credits of debatable 'permanence' that allow polluters to get off the hook cheaply.

Rights, authority and power along the value chain

We can express the combined effect of the value chain as:

- 1) Emission reduction = (Actual – Agreed emissions)*(1- Leakage correction)*(1- Permanence risk insurance)*(1- Allowance for uncertainty of accounting system)
- 2) Local incentives = Emission reduction * Price per unit ER minus Transaction costs
- 3) International price = Local incentives + Transaction costs + National tax

Actual emissions will generally be estimated from either

- a) the change in existing carbon stock over time (woody vegetation + understory biomass + necromass + belowground biomass in roots and soil biota + soil organic matter (including peat); or
- b) the summation of activities that affect any of these stocks, including:
 - cutting trees (reducing woody biomass);
 - removing wood (freshly cut and/or necromass), litter or peat;
 - draining swamps and peatlands, increasing their rate of decomposition;
 - initiating and/or (not) stopping fire;
 - enhancing growth of woody vegetation; and
 - restoring drained peatlands.

Whether an 'outcome-based' accounting of stock changes (a) or activity-based approach (b) is used is a matter of convenience, but it is important that the two are reconciled in consistency checks. A point of continuing debate is the attribution of 'extreme events', natural disasters and 'climate change impacts' on changes in carbon stocks. As most business contracts have '*force majeure*' or

‘acts of God’ clauses, this is a domain for insurance approaches to sharing of risk with litigation and contest over the application of rules.

Current practice that leads to emissions is often in breach of existing regulation and thus illegal. Enforcement of rules will often require review of the relevance and legitimacy of these rules. In case of ‘legitimate’ opportunity costs, the rights holder to the opportunities may deserve at least compensation, if not a share in net benefits. In case of illegal emissions, the wider context of a rule-enforcement system is the appropriate recipient of incentives.

Agreed emission level

Additionality or ‘emission reduction’ requires establishment of acceptable emission levels. Globally, such ‘rights to pollute’ have been defined in reference to the status quo in 1990, with a commitment to gradual emission reduction by ‘developed’ countries, most of which have per capita emission levels above the allowable footprint (emission level compatible with acceptable rate of climate change divided by global human population). The baseline and commitment to emission reduction underpins any market mechanism, as it defines both the demand and potential supply of credits.

An important current debate refers to ‘nested baselines’ or the ways national-scale claims to ‘emission rights’ are based on the summation over sectors (energy, land use) and/or area (provinces, districts, landscapes). These negotiations require making operational ‘free and prior informed consent’, off-sets in other ongoing global debates on trading rules and ways to achieve Millennium Development Goals.

UNFCCC agreements primarily refer to sovereign states, but agreements may only become effective if they have subnational support and enforcement mechanisms.

Existing ‘resource-sharing’ rules on water flows may provide a basis for comparison of ‘emission rights’, as both refer to land, variable and changing climate and upstream-downstream negotiations. Existing regulation of water follows a ‘settlers right’ in many parts of the world, where the first to develop and use a water resource can derive rights to future use on the basis of past investment. In other parts of the world the need for collective action to secure adequate and avoid excessive water flows for all, have lead to shared responsibilities (‘polder’ or ‘water temple’ models).

Leakage correction

Leakage refers to an increase in net emissions elsewhere that can be attributed to the actions that lead to a decrease in net emissions within a target area. Leakage is strongly dependent on scale. A localised effort to protect a forest can easily displace the existing extractive activities to other forests, cancelling at least part of the emission reduction. If neighbouring areas are used to measure ‘leakage’, there tends to be confounding with the measures of ‘additionality’, where neighbouring areas are used to establish ‘baseline’. One of the ways to control leakage is to ensure that all people who derive employment and benefits from the areas to be protected have alternative means of employment and income that don’t increase emissions. Less clear is how ‘demand’ leakage can be controlled, if market mechanisms ensure that the supply of resources in demand is met.

Permanence insurance

One of the reasons that afforestation/reforestation forms of the Clean Development Mechanism has found little application is that it leads to certified emission reduction that differ from those for reduction of fossil-fuel use. A/R-CDM leads to T_{CER} ’s, or temporary emission reduction certificates that maintain responsibility for the future fate of the increased terrestrial carbon stock owing to tree planting. It is not fully resolved how REDD emission-reduction achievements will be accounted: some argue that maintaining terrestrial carbon stock has similar aspects of ‘permanence’ as maintaining fossil-fuel carbon stock belowground. Both stocks can still be emitted in future if conserved now.

Usually debates on ‘permanence’ refer to existence of ‘land-use plans’ and long-term commitments from (local) governments to maintain forests in part of the landscape. Imposing a ‘permanent forest’ status on lands may reduce the opportunities for local communities to use forest lands for rotational forms of agriculture/fallow and/or to transform it into an agroforest dominated by trees farmers want. Depending on the emerging international rules, we may thus see a reduction in the degrees of freedom for local resource management.

Accounting system

The integrity of the national carbon accounting system used has a direct relation to the ‘value’ of local efforts to conserve or enhance terrestrial carbon stocks, as many systems use the spread in the ‘confidence interval’ of estimates as the basis for financial transactions. Securing a credible accounting system is thus a common interest for all potential stakeholders in financial REDD incentives.

Salesmanship/marketing

Indonesia has proposed to use a ‘concession’ system for allocating parts of its landscape for REDD-project development. Such concessions could avoid contesting claims between multiple agents who all claim attribution for efforts to preserve woody vegetation, while maintaining diversity in the approaches used. A major concern expressed on the draft used for public consultation in July 2008, however, has been that there is no guarantee that the rights and interests of local communities will be respected: similar to long-term experience with logging or mining concessions.

Flexibility requirements

In the various case studies, the question has come up how the nesting of activities across scales can best be achieved. It may help to consider an analogy of people crossing borders and having to deal with a change of language, currency, customs and legitimacy (Figure 38).

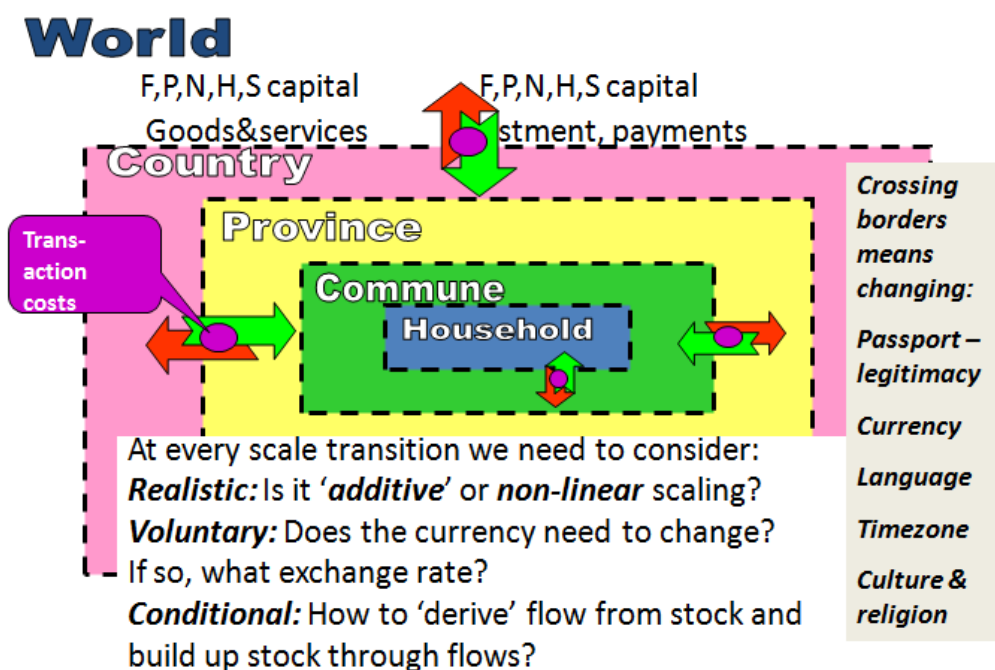


Figure 38. Perspective on the nesting of scales from household to global with the need for an exchange across financial (F), human (H), social (S), natural (N) and infrastructure (P) capitals that provides a net benefit on both sides of the deal, by being realistic, conditional and voluntary; to achieve this, the deals may need to shift in currency, language and timeframe

While the concept of nesting subnational emission reduction in a national context has become widely accepted in international negotiations, there may be insufficient appreciation as yet for the relevance (if not need) of a change in character of the exchanges at multiple scale (Figure 39). It is probably appropriate to link national emission reduction below an agreed ‘baseline’ to financial flows, with a relatively short timeframe for conditionality. Funds so obtained can be used for a range of incentive mechanisms that ultimately support households in taking long-term strategic decisions towards a high carbon stock society. The ‘transparency’ requirements of achieving a ‘fair’ price may need to be relaxed to create space for the type of flexibility that is needed to achieve efficiency and avoid a ‘lock in’ of resources. Once national emission bottom-lines have been negotiated (for Indonesia probably based on its unilateral NAMA commitment as first bid), the issues of ‘permanency’ can be moved from project to national level.

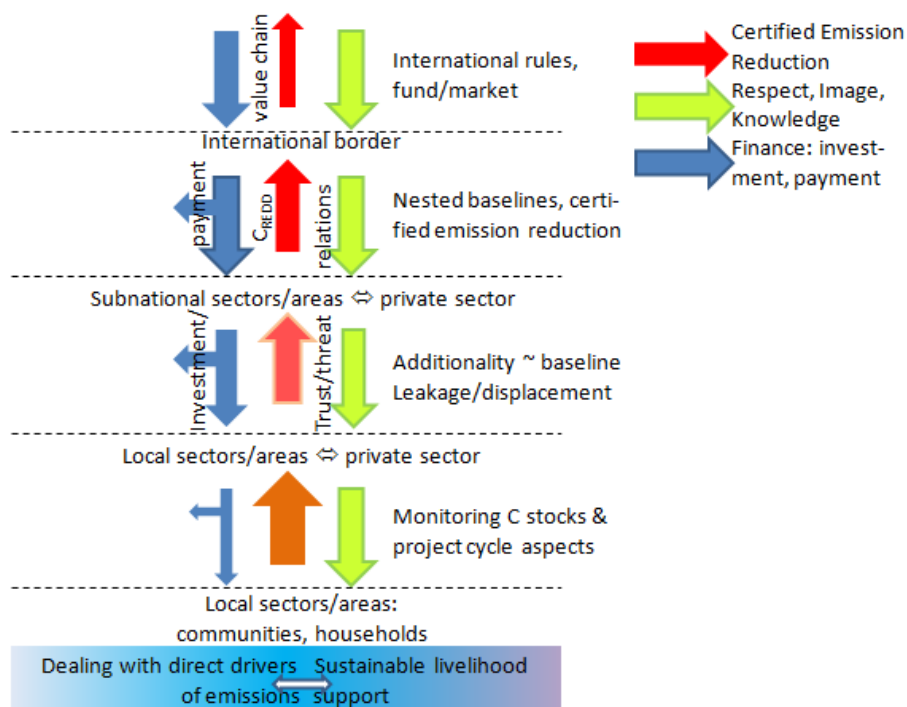


Figure 39. Exchanges will need to combine the currencies of respect, image (branding), knowledge, financial investment and payments and certifiable emission reduction. The ratio between finance and certifiable emission reduction is likely to change with scale, as emission reduction at a national scale is of greater international public value than emission reduction locally; information needs change in character, but probably not in importance

‘Carbon rights’ may be a new concept and term, but several of the components of the rights to modify land use and terrestrial carbon stocks have a long history of regulation, formal and informal recognition of rights and involve government authority at a range of levels.

As point of comparison the complexity of ‘water rights’ offers analogies but also shows how difficult it may be to get full agreement on rights. Water rights are of forest importance for climate change and maintaining woody vegetation and peatland under REDD may have local significance for climate change adaptation, as well as global significance through mitigation of greenhouse gas emissions.

Existing legal capacity to understand the multiple interactions between existing rights and regulations and REDD (and similar) proposals is limited and this will pose serious challenges if REDD

is to become operational. It will lead to contests over benefit streams and complex court cases. Building appropriate capacity in law schools should become part of 'REDDINESS' efforts.

The concept of 'landscape' is interpreted as a sub-national entity in which land use interacts with national economy and emission patterns. Five components will be needed in each site:

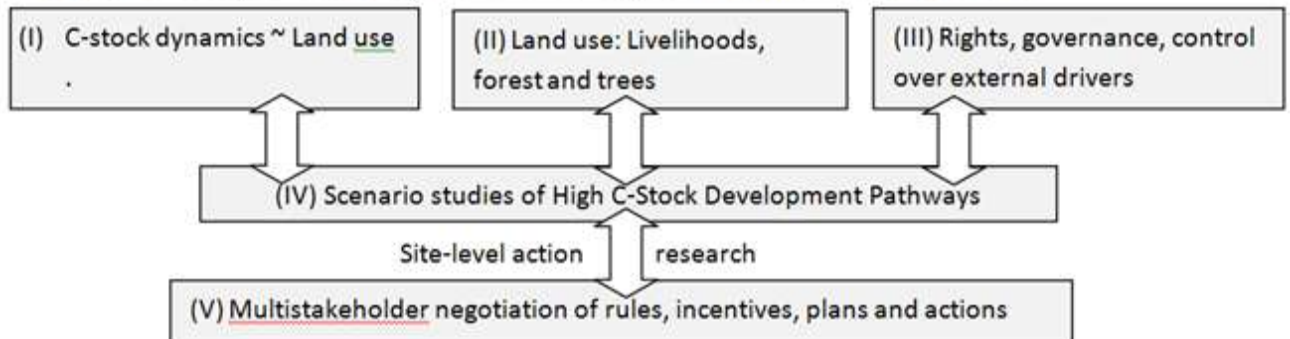


Figure 40. Components of proposed follow-up research on issues of REALU architecture

5.3 Main issues for REALU 2 in Indonesia

On the basis of the results presented here for Indonesia and parallel discussion in other countries in which the REALU architecture project was implemented, a set of issues was prioritised for Phase 2.

Table 12. Main issues to be explored in a second phase on REALU architecture

Main issues for REALU 2	Possible approach
<p>Planning low-carbon-flux/high-carbon-stock scenarios for regional development that are consistent with autonomous NAMA; this will inform REL for supported NAMAs (incl. REDD+).</p>	<p>Direct involvement in scenario development and multi-stakeholder discussions at district and provincial levels, testing (semi) quantitative scenario tools.</p>
<p>Inclusive multi-stakeholder carbon-stock management, based on joint planning, reduction of conflict and shared benefits.</p>	<p>Expanding agreements between forest-margin villages and forest authorities and testing the effectiveness of conflict management.</p>
<p>Nested incentives for REDD+ aligned with fairness and efficiency at international, national and subnational levels: identity and (perverse) incentives and balancing CIS, COS and CES approaches to locally appropriate adaptation and mitigation actions (LAAMA).</p>	<p>Further quantification of stakeholder perceptions with the FERVA tool, simulation games and similar approaches to link action to words; integration of REDD+ with development of reward and incentive mechanisms for other environmental services.</p>
<p>Conditionality: the initial focus on ‘institutional forest’ meant effectively a ‘subnational’ REDD+ approach, where ‘emission displacement’ with the ‘non-forest forest’ sector is a major issue; a credible MRV as performance yardstick in REDD+ needs to consider emissions from all land uses.</p>	<p>Direct engagement with the cross-sector development of MRV systems that involve forestry, agriculture and environmental line agencies and local government</p>
<p>Evaluate and enhance the self-regulation of Emissions Embedded in Trade (EET) by sectors, such as initiated by the RSPO for palm oil. Such an approach needs:</p> <ul style="list-style-type: none"> • Effective criteria and indicators • Attention to the politics of image and branding; certification and ethics • Consideration of scale effects of implementation rules and implications for transaction costs for smallholder producers 	<p>Engagement with the industry, government and environmental lobby groups that need to find common ground in negotiating effective and implantable criteria and indicators</p>

Hypotheses to be tested

1. Mechanisms for fair and efficient REALU need to acknowledge differences in clarity of rights and performance measures between local, subnational and national levels.
2. At national borders, an international form of 'commoditised environmental services' is feasible that links performance on verifiable emission reduction below agreed levels to financial flows (CES paradigm).
3. From national to subnational entities a form of 'compensating for opportunities skipped' is appropriate, using 'proxies' such as forest cover in relation to human population density (COS paradigm).
4. At local level, property rights and outcome-based performance criteria are a challenge to a '\$ per tCO₂' exchange and co-investment in environmental services (interpreted across water, biodiversity and carbon stocks) and the human and social capital that support them is appropriate as a start (CIS paradigm).
5. Transparency can be achieved despite shifts in currency, language, time-frame and conditionality between levels.

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Emission reduction from agriculture, forestry and other land uses in Indonesia requires a broadening of the current debate on Reducing Emissions from Deforestation and forest Degradation (REDD+) to include all land use and land-use changes. This report provides an overview at two levels: the national debate in Indonesia and a compilation of case studies of specific landscapes where the local context shapes the debate.

A substantial part of Indonesia's emissions derive from peatlands, some of which are within, and others outside of the formal, government institutional 'forest' category and many have contested status. Peatlands themselves need to be managed as hydrological entities if emissions are to be controlled and reduced.

Other aspects of land use on the edge of the REDD+ debate are the agroforests and tree-based land-use systems managed by farmers across Indonesia. While this vegetation usually meets international standards to be considered 'forest', the institutional interpretation of forest in Indonesia implies loss of sovereignty for communities and farmers across the country and so they prefer naming their systems 'gardens'.

The partial mismatch between the new international objective of emission reduction and the existing forest management institutions suggests that efforts to 'reduce emissions from all land uses', or REALU, can be both more fair and more efficient.

