

DESIGNING INCENTIVE AGREEMENTS FOR CONSERVATION: AN INNOVATIVE APPROACH

Renaud Lapeyre (IDDRI), Herlina Hartanto (TNC), Romain Pirard (CIFOR)



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Paintlight Digital Art

Supervised by:
Kun Setyawan

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Authors:

Renaud Lapeyre, Institute for Sustainable Development and International Relations (IDDRI)

Herlina Hartanto, The Nature Conservancy

Romain Pirard, Center for International Forestry Research (CIFOR)

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Fax: +62-21-7279 2044
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INTRODUCTION

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Many scientists, practitioners and decision makers have called for the design and implementation of innovative financial mechanisms, including economic incentives (Pirard and Lapeyre, 2014), to modify current human-use options for conserving, restoring and rehabilitating biodiversity and ecosystem services. Incentive agreements in REDD+ projects to reduce greenhouse-gas emissions from deforestation and forest degradation are one illustration. These are often viewed as payments for environmental services (PES).

Such PES instruments are seen as tools with the potential to enhance ecosystem services related to water cycles, erosion control, and carbon, among others. This has led to their speedy development at the national levels of developing and developed countries, such as Mexico, Costa Rica, China and nations in Europe (agro-environmental measures), and also at subnational levels in some states, where many payments for watershed services or payment schemes for carbon are implemented, such as Mexico, Uganda and Madagascar (Lapeyre and Pirard, 2013). In most cases, rather than providing financial compensation for strict restriction of land use, these PES mechanisms aim to modify local farming and resource-use practices in the longer term by technically and financially supporting shifts (e.g. asset building) toward more environmentally

sustainable agricultural protocols and practices (e.g. agroforestry).

Designing PES instruments can still be very challenging at the local level. Environmental services to be provided or conserved are often not clearly observable. Land-use trajectories are not well-known over the long term. Actual relative impact on ecosystem services of communities versus other confounding factors is difficult to disentangle (climate change at the global level, droughts, etc.). Overall, requisite information for making decisions and designing projects is structurally scarce and costly to obtain.

This study proposes a conceptual approach that potentially addresses these issues and assists project implementers in crafting incentive agreements at the local level. Dubbed BLACSI, it defines and structures data to be collected at the community and household levels about Baseline scenarios (BL), Acceptable Changes (AC) and Support and Incentives (SI). As documented in this report, this approach is expected to be useful to practitioners in several ways:

- First, when operationalized on the ground through a rapid assessment (questionnaires and focus group discussions), the approach can



Villagers in Long Duhung discussed their shifting cultivation activities and the location of the plots. © Siswandi

be implemented quickly and cost-efficiently to collect relevant and useful data.

- Second, the approach contributes toward a stronger foundation for incentive agreements, as it collects data at the household level and facilitates discussion and negotiation at the community level. More than just a research protocol, it further builds consensus and promotes participation as well as procedural equity, which in turn enhances sustainability in the long run.
- Third, questionnaires and focus group discussions can be tailored to local conditions. With no significant extra cost, the process can be designed based on the specific socioeconomic and environmental context of each targeted village.

The Nature Conservancy (TNC) and the Institute for Sustainable Development and International Relations (IDDRI) applied this approach as well as associated field methodologies in two villages in Berau district, in the Indonesian province of East Kalimantan, in order to test its efficacy in designing community incentive agreements.

In this document, we first present the rationale and objective of the BLACSI approach. Next, we describe the context where BLACSI was tested, i.e. the two villages in Berau that were engaged in the Berau Forest Carbon Program (“the Berau Program”), a district-wide program to reduce emissions from deforestation and forest degradation. Then, we describe the rapid assessment methodologies used. Finally, we present key lessons drawn from our experience.



THE BLACSI APPROACH FOR DESIGNING COMMUNITY INCENTIVE AGREEMENTS

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Modifying behaviors and strategies with respect to agriculture and natural resources is a costly endeavor for most forest-community households, especially poorer ones, and therefore often difficult to bring about. In this context, economic incentives are sometimes considered more likely than coercive measures to induce land-use changes by rural populations. Hence the growing call for new incentives to support communities that agree that natural resource management (NRM) must

be made more sustainable (Ferraro and Simpson, 2002; Ferraro and Kiss, 2002; Pattanayak et al., 2010).

Designing those incentives, however, is not easy. High uncertainty, incomplete information, and conflicts make it difficult to decide what kind of incentives to distribute to forest communities. Issues to be worked out include which practices to try to change, what conditionalities and conservation activities to request, what technical and institutional support is necessary, and more.

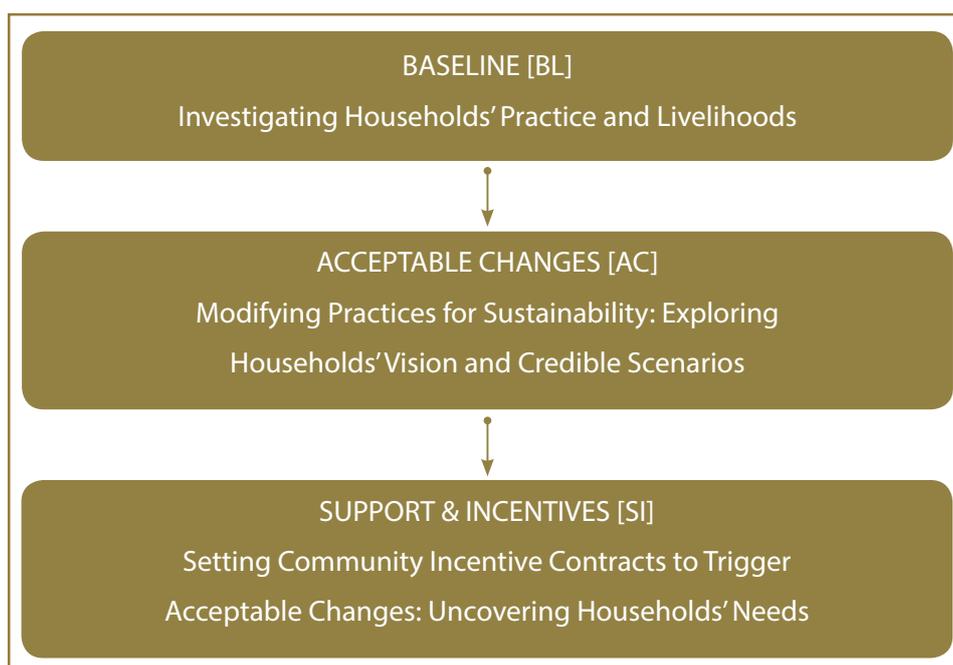
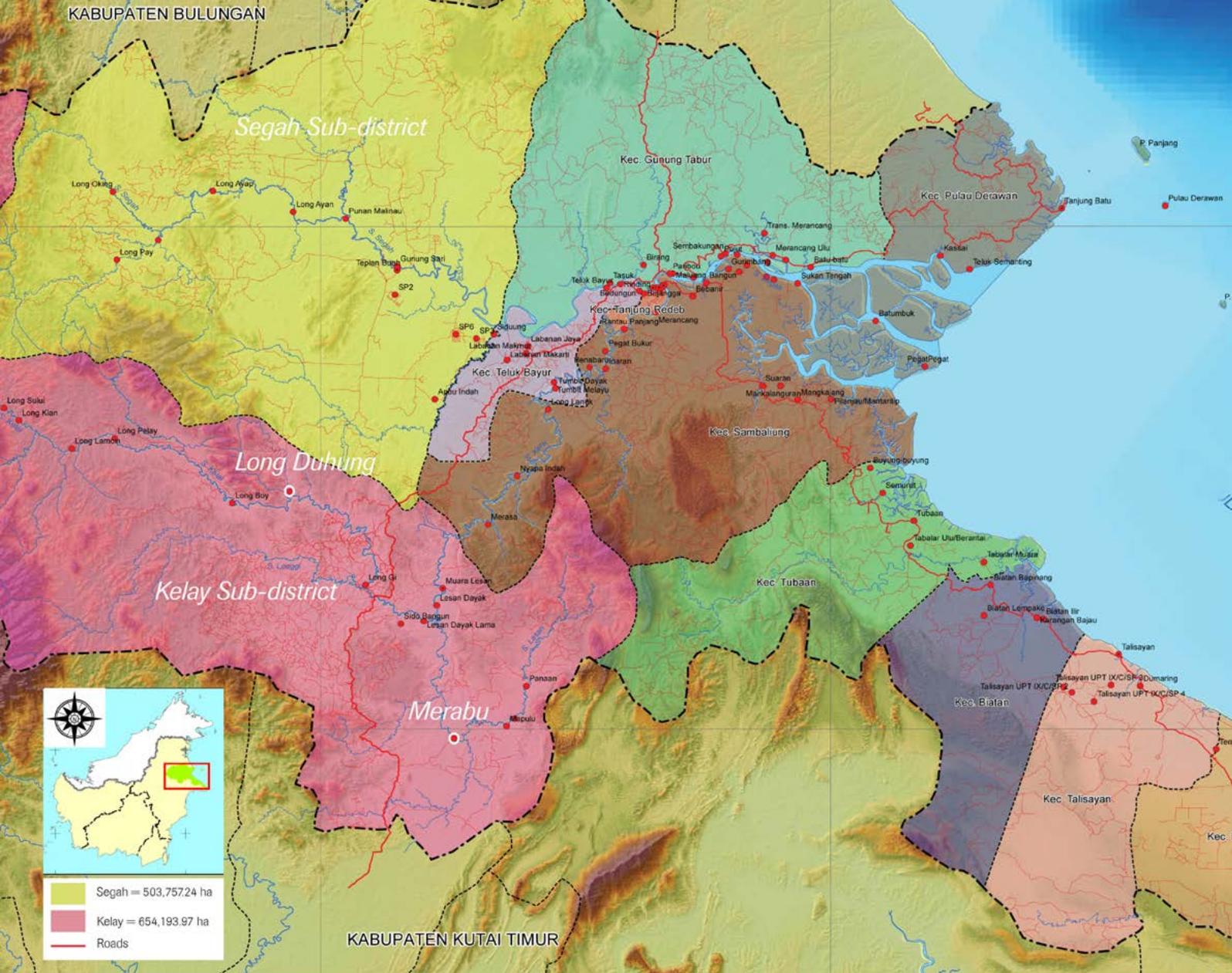


Figure 1. THE BLACSI approach: defining acceptable scenarios and appropriate support and incentives



Map 1. Location of Long Duhung and Merabu villages in Berau district.

This report presents an approach for designing effective and equitable community incentive agreements that pay close attention to the realities on the ground. Called BLACSI, it is primarily a conceptual approach for defining and organizing the necessary information, as illustrated in Figure 1. It guides practitioners in defining, together with households, Baseline scenarios (BL) regarding individual households' past, present and future natural resource use and farming activities; developing a common vision for Acceptable Changes (AC) from these baseline scenarios; and uncovering and agreeing on the Support and Incentives (SI) needed to put these changes into effect. At the village level, it informs project implementers and communities in

the designing, negotiating and signing of incentive agreements to support NRM plans.

Empirically, the BLACSI approach is operationalized through a rapid assessment to collect and discuss data about BL, AC and SI. Three categories of information are to be disentangled by, discussed among and agreed upon by the various stakeholders involved in the project (NGOs, communities, local authorities):

- First, local conditions and past, present and future trajectories. Baseline and reference scenarios must be set. This involves investigating past and present agricultural practices and livelihood strategies in targeted villages at the



Environmental guards of Long Duhung. © Siswandi

- household level and predicting trends for the coming years (e.g. five to 10 years) should there be no intervention.
- Second, households' desired and possible changes. These are set out based on preliminary information about the current situation and trends in a given location. Since the intervention aims to improve the environmental situation relative to the baseline and reference scenarios, these changes might be more or less socially desirable without additional support (in-kind, financial, technical or others). All alternatives should be considered (e.g. reduction in the number of slash-and-burn plots or wildlife hunting) to assess what is acceptable, credible and realistic.
 - Third, interventions needed in terms of incentives and support. The BLACSI approach is meant to uncover and enable these interventions and ensure local buy-in. Changes in practices lead to various, often conflicting, needs and requests from households that must be thoroughly understood for negotiations to be successful.

Overall, the BLACSI approach narrows the scope of analysis to the household level. This is of paramount importance, as focusing on the household level provides project implementers with reliable information about local contexts and individual farmers' strategies, behaviors, desires and vision, as well as where they are most in need of support. Disaggregating data at the household level thus improves chances of fine-tuning effective incentives at the village level and reaching an agreement that takes most farmers' views into account.

For all these advantages, TNC partnered with IDDRI to apply, test and improve the proposed approach in two villages in Berau, namely Long Duhung and Merabu (see Map 1 for location).

Below we present these two villages within the context of the Berau Program and describe the Community Engagement Framework.





ENGAGING COMMUNITIES IN THE INITIATIVE TO REDUCE EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION IN BERAU

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Former Indonesian President Susilo Bambang Yudhoyono committed the country to a 26% reduction in emissions by 2020, or up to 41% with international assistance. Following this commitment, REDD+ initiatives of a variety of sizes and scopes were developed and implemented by various organizations in at least 50 locations across the country. One of these is the Berau Forest Carbon Program, which takes place in Berau district, East Kalimantan province.

The Berau Forest Carbon Program

Berau is a microcosm of Indonesia, with diverse economic drivers, forest types and threats. Its forests contain high plant and animal diversity and are home to a sizeable orangutan population. Local ecosystems provide food, water and other services to around 200,000 people spread over 100 villages and 10 urban villages (kelurahan), including several customary community groups that are heavily dependent on forests. Berau is at a critical point in its development. Around 75% of its 2.2 million hectares is still forested, but logging, clearing for oil palm and timber plantations, and expanding coal mining operations have resulted in annual net carbon dioxide emissions of around 10 million tons from 2000 to 2010.

The Berau Program, declared a district-scale REDD+ pilot in January 2010 by the Forestry Ministry, takes an integrated, large-scale approach to supporting sustainable economic development while protecting forests and reducing annual greenhouse gas emissions. It offers a unique opportunity to demonstrate how REDD+ can be applied across an entire political jurisdiction that is large and complex enough to provide important lessons for implementing a national REDD+ strategy but at a realistic scale for near-term results. It aims to protect the district's forest ecosystems and reduce carbon dioxide emissions by 10 million tons over five years. The Berau Program's goals will be achieved at two strategic levels. First, it targets district-level enabling strategies by increasing the capacity of government agencies and improving land-use planning, policy reform and engagement of relevant stakeholders. Second, it uses site-based strategies to transition timber concessions to sustainable logging, regulate expansion of oil palm plantations, establish effective management for forest protection, and engage local communities in natural- and forest-resource management.

TNC's Integrated Community Engagement Framework

A founding partner of the Berau Program, TNC supports the implementation of both enabling and site-based strategies. To help ensure that local communities contribute to and benefit from the program, especially at the site-based level, TNC specifically designed an integrated and systematic framework for engaging communities. The framework's development is guided by the principles of the REDD+ Social and Environmental Standards, including the need to obtain free, prior and informed consent (FPIC) as prescribed by the UN Declaration on the Rights of Indigenous Peoples. At heart, as Box 1 and Figure 2 detail, is engaging communities in determining the level of support and incentives they need for their contribution and engagement in NRM and designing community incentive agreements.

TNC has developed this Community Engagement Framework with challenges of scale in mind. The framework has been piloted in Long Duhung and Merabu since 2010 and showed promising results. The framework is currently being used by other NGOs in engaging communities in 12 different villages to take part in the Berau Program. The framework will be used in more villages in the future. In 2013, the BLACSI approach was tested in Long Duhung and Merabu.

Long Duhung lies in the upper watershed of the Kelay River (Map 1), a two-hour drive from Berau's capital of Tanjung Redeb, and is home to 136 Mabnan (Punan) people. The village's administrative area of around 17,000 ha lies inside two logging concession areas, meaning that villagers do not hold legal rights to use land in and resources from the surrounding forests. Villagers practice shifting cultivation. They hunt and collect honey, timber, sago, herbs, fruit from the forests, and fish from the river. They also engage in traditional small-scale gold mining. Traditionally the Punan people were hunters and gatherers. TNC started to work in the Upper Kelay watershed in 2002 with the facilitation of a dialogue between Long Duhung villagers and the adjacent logging company to collaboratively manage the forests. Since 2010, TNC has engaged residents in the Berau Program implementation.

Around a four-hour drive from Tanjung Redeb (Map 1), Merabu is home to 195 people. Mostly of Dayak Lebo descent, the people of Merabu, in the Kelay watershed, engage in shifting cultivation to produce rice for subsistence. Several households have established rubber plantations. The village administrative area, which covers around 22,000 ha, lies inside a logging concession and the Pegunungan Menyapa protected forest (hutan lindung). The latter is a part of a karst, or limestone bedrock, landscape, an ecosystem that extends through Berau and East Kutai Timur districts. Villagers use the forests for hunting and collecting timber, fruit, honey and rattan. The forest provides them with clean water, and provides nest sites for orangutans, which have moved from surrounding areas cleared for oil palm. The limestone caves provide another source of livelihoods: young men from the village generate income as cave climbers, harvesting bird's nests and selling them internationally, as they are the main ingredient in the Chinese delicacy "bird's nest soup." TNC engaged Merabu villagers in the Berau Program since 2012.



The view of Labuhan Kelambu, Biduk-biduk Village, Berau District.
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BOX 1. The Community Engagement Framework



Long Duhung villagers preparing land to plant rubber seedlings. © Siswandi

The Community Engagement Framework consists of seven main phases (Hartanto et al., 2013):

1. **Village Consultation and Awareness Building:** First, facilitators interact with villagers to understand the local socioeconomic and political context, the level of pressure on forest and natural resources, and the challenges villagers face, hoping to eventually gain their trust. Facilitators visit households, attend village meetings and inform villagers of the global concerns over climate change, national commitment, and the Berau Forest Carbon Program.
2. **Visioning and village land-use planning:** Villagers develop a long-term vision for their surrounding land and natural resources. They identify the strategies and activities that should take place to achieve their vision for the future. These strategies and activities are then integrated into five-year and annual village development plans.
3. **Mobilizing non-REDD+ financial resources for the village development plans:** Development plans, required by district government, help villagers strategically target different funding sources and prepare proposals that articulate their aspirations and development needs. There are a number of potential sources that can fund specific components of development plans, such as national, provincial and district government budgets and programs, as well as private companies and NGOs. These sources are often quite specific in what they can fund, such as infrastructure, economic development and capacity-building activities, but not natural resource management activities.
4. **Developing a Natural Resource Management (NRM) plan and discussing levels of support and incentives:** The Berau Program creates specific access to funding for natural resource management activities. Funding sources include the “debt-for-nature swap” between the U.S. and Indonesian governments, and grants from the Government of Norway through TNC. To make use of this REDD+ fund, the communities need to formulate an NRM plan. This plan lays out activities to be funded including:

- a. Activities to reduce pressure on forests and natural resources or improve the conditions of the forests, such as limiting shifting cultivation to formerly cultivated areas, forest patrols, rehabilitation of degraded land, and strengthening community access or management rights;
 - b. Livelihood activities that are consistent with forest management and protection; and
 - c. Capacity building and technical assistance to support these activities.
5. Community resolution and incentive agreement: Villagers that decide to participate in the Berau Program develop a resolution formalizing their commitment to natural resource management activities. Village institutions and funding institutions decide together on the terms of the performance-based payments, including milestones and indicators. Upon the signing of the incentive agreement, villagers receive initial start-up funds to begin implementing the agreed-upon first year activities. Subsequent funds are performance-based.
 6. Implementation of NRM, livelihood activities and capacity building: With the financial resources provided, villagers carry out NRM activities and develop livelihood projects. Capacity building and technical assistance support is provided at the appropriate time to ensure villagers are able to successfully implement these activities.
 7. Monitoring and Evaluation: Using the monitoring system developed, villagers and relevant external institutions assess their performance against the agreed-upon performance-based milestones described in the incentive agreement and their progress in realizing their vision.

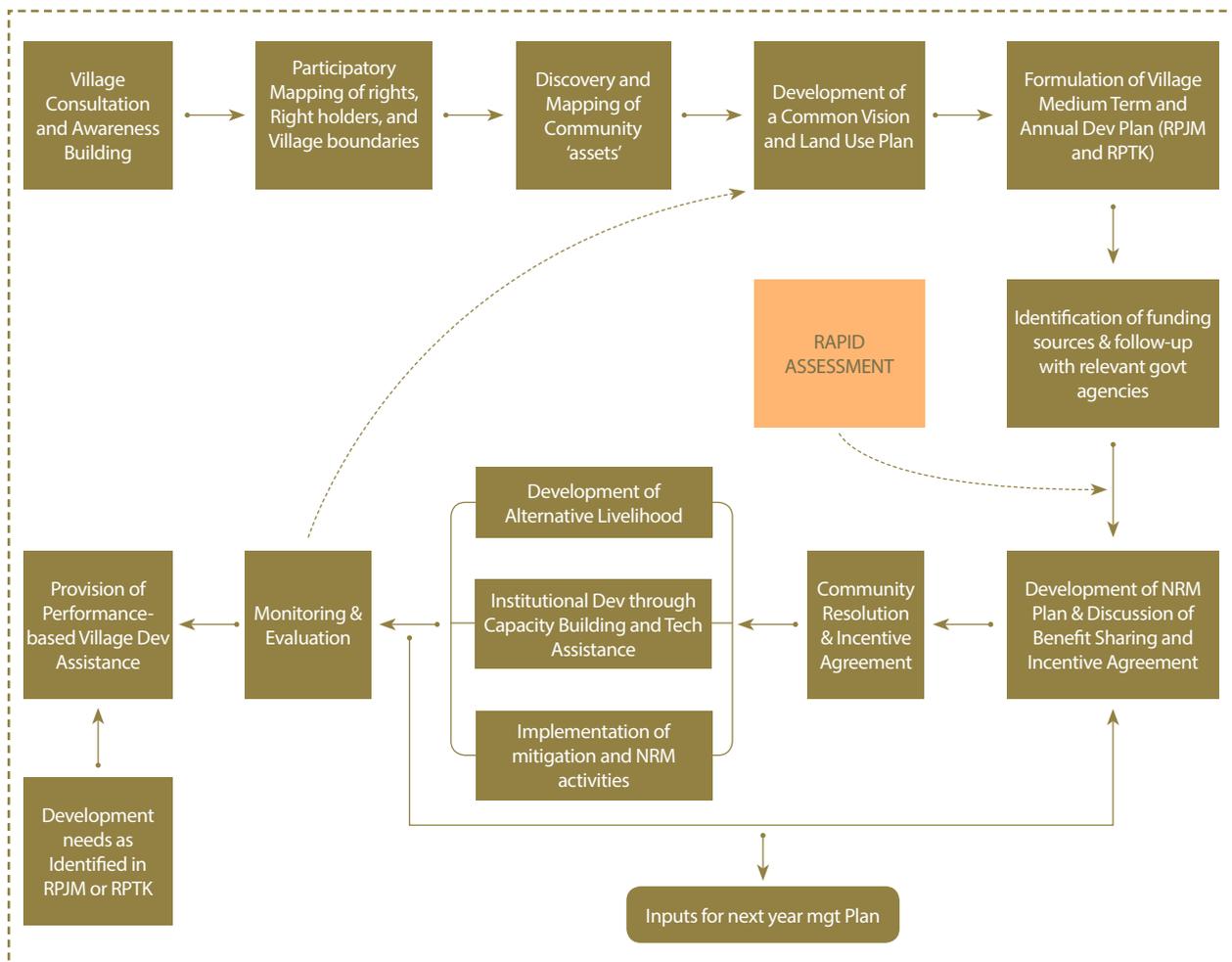


Figure 2. The integrated Community Engagement Framework.



APPLICATION OF THE BLACSI APPROACH WITH A RAPID ASSESSMENT

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As presented in Box 1, the TNC Community Engagement Framework engages Berau communities in natural resource management activities to reduce emissions. Phase 4 of the framework asks forest communities to formulate a Natural Resource Management (NRM) plan. As part of phase 5, communities that endorse such plans are entitled to a variety of incentives. Activities eligible for funding include: (i) reduced pressure on forests and natural resources, (ii) enhanced livelihood activities that are consistent with sustainable forest management, and (iii) capacity building and technical assistance to support those activities.

In phases 4 and 5, efficient and fair deals must be informed by reliable data and information. The proposed BLACSI conceptual approach helps lay out a plan for collecting that data, as well as analyzing and using those data to inform NRM plans and incentive agreements. To this end, a rapid assessment exercise is carried out on the ground before phase 4 (Figure 2), building on qualitative data collected through participant observation during consultation and visioning phases 1 and 2. Systematic quantitative data collection and analysis involves an extensive household survey to gather information, followed by focus group discussions (FGDs) to confirm and agree on conclusions. The results will ultimately inform the design and final signing of the community resolution and incentive agreement in phase 5.

Below we present in more details how the household survey and focus group discussions were applied as two complementary field methodologies involved in the process.

Assessing baseline, acceptable changes and household needs with a household questionnaire

In Long Duhung and Merabu, information collected during phases 1 and 2 (Figure 2) have helped fine-tune questionnaires to be used for household surveys and adapt surveys to the socioeconomic and environmental contexts of each village. Following the BLACSI conceptual approach, household surveys collected in-depth data about:

- Current and evolving household livelihood strategies and agricultural practices (BL). For example, surveys investigated the number and size of plots 'controlled' and/or cultivated by each household, considering three periods (the previous decade, now and the decade to come). It also collected dynamic data on shifting agriculture and other agricultural practices, including the number of plots involved in rotation farming activities (past, present and future) and alternative income-generating activities from forest and other natural resources, e.g. hunting, fishing, gold mining and more.

- Possible and acceptable levels of change in future household agricultural practices and natural resources use (AC). The questionnaire asked each household about possible changes in their practices (e.g. modifying shifting agriculture by reducing the number of plots involved in rotation farming) as well as alternative activities they would be willing to carry out in the near future (e.g. planting cash trees, poultry, fish ponds, and more depending on households' responses), if assisted by TNC. In addition, the questionnaire investigated the possibility for and willingness of households to carry out natural resource management activities (work and inputs), e.g. patrolling the forest to monitor resources, riparian tree planting, etc.
- Financial and technical support needed by households to modify their livelihood strategies (SI). For each possible future change in practice and/or alternative activity mentioned (see above), the questionnaire asked each household what technical and financial assistance they would need to carry out specific changes or activities. Support requested by households and investigated in the survey broadly concerned activity kick-off and maintenance as well as training and technical assistance, including financial (cash) and non-financial (in-kind).

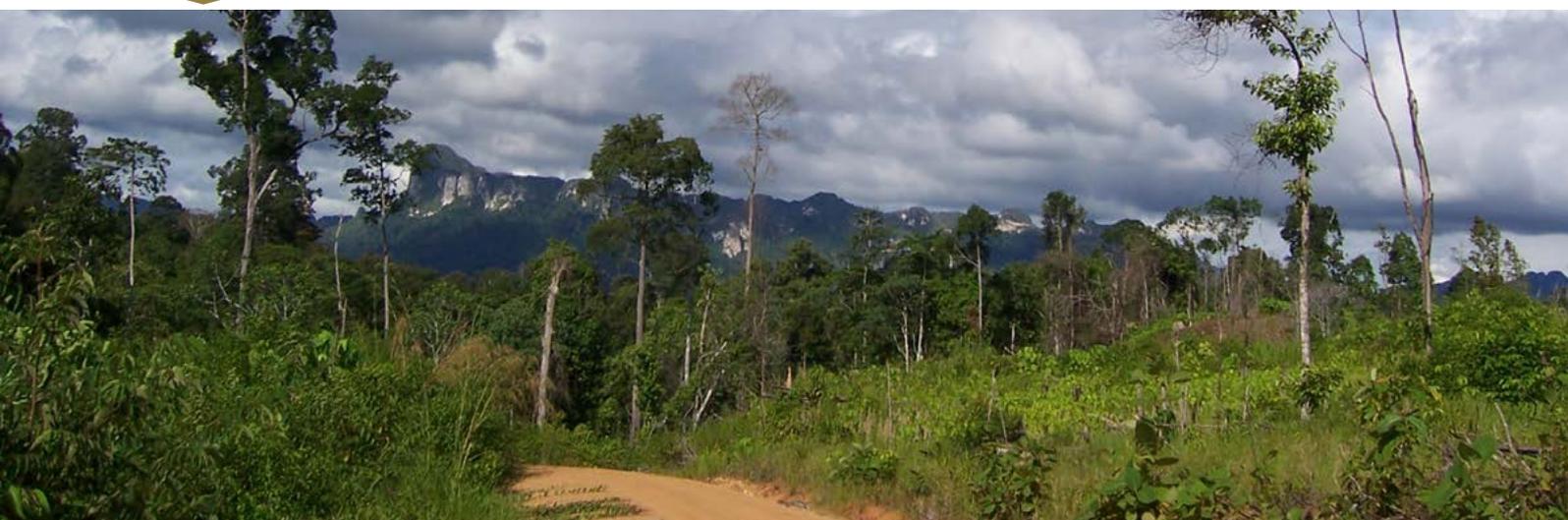
Such information, specifically collected at the household level provided a clearer picture for each village with respect to every BLACSI category. The information was eventually used as a base for informing FGDs and helping the community

collectively agree on an NRM plan and incentive agreement. A major strength of the approach is that only household surveys can gather quantitative information with a reasonable degree of confidence.

Practically, household surveys need to be widely administered. As many of the households that ultimately have to comply with the NRM plan and incentive contract within the village administrative boundaries as possible were interviewed, and for each household an effort was made to interview husband and wife together. As such, this survey serves as much as a tool for data collection as for encouraging a democratic process that results in the consultation and involvement of all villagers in the project.

The survey's proposed duration and timeline is three weeks, a period that was successfully tested in the field. This enabled, first, recruitment and training (of at least one day) of skillful enumerators, and second, administration of the questionnaire. Subsequent activities involved data management and analysis in order to prepare FGDs (see below). Box 2 displays the results of questionnaires from Long Duhung, and a sample questionnaire is shown in the Appendix.

The view of Sangkulirang-Mangkalihat karst landscape on the way to Merabu village. © Siswandi



BOX 2. Long Duhung case: The results of the household survey.

In Long Duhung, we interviewed 31 of 33 registered households. More than 60% of the households depended on farming activities (both crops and trees) for their primary livelihood; hence the importance of analyzing their current agricultural practices and acceptable changes, if assisted. In the village, the number of land opened from primary and secondary forest (whether for planting crops, gardening, fallow periods, and more) has increased over the last 10 years (from 5.3 to 9.6 plots per household). Also increasing has been the average area of land opened and controlled by each household (4.6 to 8.4 ha). In the future (10 years), a large majority of households wanted to bring more land under their control if no support was provided (reference scenario), to an average of almost 16 plots per household for a total size of 14 ha. Forested land opened each year for shifting agriculture (rain-fed rice cultivation) would make up the bulk of this increase, from around five plots per household in 2003 to eight in 2013 and an extra three over the next 10 years, reaching an average of 11 plots per household. Despite this increase in the number and area of land for shifting agriculture rotations, the number of plots actually planted and cultivated for rain-fed rice each year remained stable over the years (around one plot of one ha).

When asked about their willingness to change practices if support was provided (investigation of the intervention scenario), most households (81%) said they could reduce to almost six the number of plots they use for shifting agriculture (as compared to the current eight). Most households (83%) also agreed that they could contribute to tree plantation activities in common areas, particularly on river banks close to the village (more than 75% of respondents) where erosion has been observed, or in the village water catchment area. Support needed from TNC for that NRM activity includes assisting with seedlings (87% of respondents), providing financial support, e.g. for transport (48%), and paying for labor costs (30%).

Alternative income-generating activities mentioned by households in order to compensate for changes in their practices include rubber plantations (76%), chicken raising (72%), fruit trees on private lands (44%), permanent rice fields (32%) and fish farming (20%).

These results helped TNC understand what assistance to propose and provide through a community incentive contract. When tree planting was mentioned as a possible alternative, households proposed *rambutan* (63%), *durian* (33%) and rubber trees (24%). To support these activities, TNC was asked to provide seedlings (90%), training (39%), financial assistance (35%) and labor cost assistance (19%). When shifting toward permanent rice fields was mentioned as a possible alternative, households said they would need support in the areas of training and sensitization (74%), seedlings (68%) and provision of tools. But shifting to permanent agriculture was not the households' preferred option.

Focus group discussions to identify community preferences for a draft incentive agreement

Focus Group Discussions (FGD) were organized after the results of the household surveys were analyzed. FGDs took place in both targeted villages and they pursued the following objectives: restituting and validating information from the household surveys, and discussing and synthesizing villagers' inputs about potential changes in NRM activities and TNC support. For each village, we decided to organize a series of smaller FGDs with 10-15 participants each, rather than a single large FGD with all households. This format enabled more active and fruitful discussions in which all participants had the opportunity to express their opinion, and therefore improved transparency and procedural equity.

Each FGD was prepared based on the analysis of household survey data. The point was to enable discussion on a very preliminary draft of the future NRM plan and incentive agreement, particularly about associated NRM indicators and targets as well as monitoring procedures, and support and incentives to eventually be provided to households implementing the NRM plan. At this stage all households had a chance to express their views through the household survey, and the FGD provided them with another opportunity to confirm or change their views and discuss the agreement in a more concrete and interactive manner. All views, including conflicting ones, were accepted and recorded.

Ultimately, this process helped TNC synthesize households' preferences and fill in most of the cells presented in Table 1 below. In the latter are reported all aspects which must be addressed before drafting the NRM plan and community incentive agreement. To this aim, FGDs lasted four hours each in Long Duhung and Merabu and consisted of three successive sub-components that are crucial to facilitate the process.

First, organizers presented the Berau Program and went over FGD objectives. Then the FGD facilitator recalled and discussed the village's shared vision built during the initial consultation and visioning phases 1 and 2. Against this backdrop, the rationale of NRM plans as well as community incentive agreements

were presented and explained. Finally, the FGD objective was clarified to participants, i.e. to consult villagers and get their inputs to inform the drafting of a first version of the community resolution and incentive agreement. Here it was clearly stated that the FGD meeting would result in no final decision and that the proposed agreement would be presented on another occasion and amended before being signed.

Second, the FGD facilitator restituted results from household surveys (data analysis), before these were discussed among participants. Reported past, present and future patterns of agricultural practices and natural resource use in the village were discussed and double-checked (the reference scenario, including the average number of controlled plots, or the average coverage area of rain-fed rice fields). Particular consideration was given to the findings about how much change in their agricultural and other practices the villagers would accept (reduction in the number of plots involved in the rotation, reduction in coverage of the area planted with rain-fed rice, tree plantations on common lands, and others). Discussion also focused on the findings about alternative economic activities that could be introduced and how they might benefit from external conditional support.

Third, based on the aforementioned discussions and building on Table 1, participants discussed concrete elements of the envisioned NRM plan and the associated incentive community agreement. On the one hand, all possible and realistic changes in agricultural practices to be undertaken as well as NRM-related activities to be performed by households were described and debated and a timeline was set (see Table 1). With assistance from the FGD facilitator, participants thereafter came up with indicators for easily, empirically measuring these committed changes in practices. Quantified objectives (targets) were then proposed and agreed upon by FGD participants for each activity. To assess whether these objectives would be reached in the future, participants also determined feasible monitoring procedures and discussed who should be involved in monitoring,

Table 1. Structure of all elements to be agreed on at the end of the rapid assessment (FGD).

NRM-related activities				
Year	Activity	Indicator	Objective	Monitoring
Can be from Year 1 to the end of the contract, for any given year or several years	This has to be an activity that provides environmental benefits, e.g. reduction of shifting agriculture rotations, forest patrolling, riparian plantations	One indicator must be designed for each activity, as will be the basis for defining objectives and their monitoring	What has to be achieved for a given activity according to the agreement	Provides technical recommendations to monitor if objectives are fulfilled
Support & Incentives for NRM-related activities				
Year	Type of activity	Type of support		
Can be from Year 1 to the end of the contract, for any given year or several years	Specifies the activity that receives support, can be either one of the NRM-related activities or alternative livelihood activities	Can be either direct (e.g. wages or seedlings) or indirect (e.g. training)		
Other conditions (in addition to NRM-related activities)				
Year	Type of condition	Indicator	Objective	Monitoring
Can be from Year 1 to the end of the contract, for any given year or several years	Defines conditions that must be met	Indicators must be designed for all conditions, possibly more than one indicator for a given condition in order to address sub-components over time (e.g. for internal governance of initial establishment of specific institutions and delivery of reports later on)	What has to be achieved for a given type of condition according to the agreement	Provides technical recommendations to monitor if objectives are fulfilled

the frequency of control and the specific method to be applied. FGD participants also discussed support and assistance needs for each of these changes and NRM activities. This included new alternative livelihood activities, wages for carrying them out, provision of inputs, capacity building and technical assistance, and more. At this point participants were asked to consider whether all of these new activities could realistically be compatible from a time and effort perspective, in order to ensure their feasibility and participants' understanding of them. For this purpose, participants were asked to draw a tentative timeline of their visions for when these activities and associated support could be realized, as specified in Table 1 to be filled in during the FGD.

Furthermore, for each of the latter incentives, participants were eventually asked to agree on criteria defining beneficiaries and recipients, on realistic sanctions for those violating NRM rules, as well as on specific indicators to enable quality control of internal governance (including fairness and efficiency in the distribution of support and incentives at the intra-village level). Box 3 presents some results from the FGDs conducted in Long Duhung and Merabu.



Environmental guards in Long Duhung during a training session. © Siswandi

BOX 3. An application of FGDs for community incentive agreements: the cases of Long Duhung and Merabu.

Several essential inputs were produced in two FGDs respectively conducted in Long Duhung and Merabu in July 2013.

Regarding shifting cultivation, FGD participants identified the following indicators and targets:

- The annual size of cultivated area, possibly estimated with the number of kaleng (bags of seeds) necessary for the planting. In both villages a target of half a hectare for yearly crops was deemed reasonable.
- The number of land plots used over the rotation cycle. Between three plots (in Long Duhung) and five plots (Merabu) were agreed to be included in the agricultural rotation.



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Considering monitoring processes, participants initially envisioned mapping the plots subject to shifting cultivation or other land uses, per family or for the whole village, with global positioning system (GPS) coordinates. Each subsequent year, a verification team would then control the absence of land use beyond plots initially mapped with GPS coordinates, to be conducted around August when fields are generally cleared. The ideal verification team would include members of the village, the implementing NGO, the district's Forest Office, and if possible the Forest Management Unit as well as the forest concession holder.

Participants also discussed riparian plantations (NRM activity) around riverbanks on common lands in the village. Agreed-upon indicators included the number of trees planted in riparian plantations, the survival rate for planted trees after year 1 and the health condition for planted trees after year 2. The proposed associated targets were: 500 trees initially planted per hectare, survival rate of 70% after one year, and a minimum diameter of trunks and height after the second year.

Monitoring processes for this NRM activity were quite similar to those agreed upon for reducing shifting cultivation. Indeed, the verification team would annually check random plots (25%) of riparian tree plantations to make sure targets are successfully met.

Environmental patrols were the last NRM activity to be discussed. Participants agreed on the necessity of controlling activities in forests around the village and envisioned indicators for these patrols, ideally composed of environmental guards and representatives of other stakeholder organizations. They cited the number of patrols carried out per year, the delivery and quality of reports, record books accounting for violations and animal sightings, and more. A number of targets were defined: 90 man-days a year with four patrols that go out for one week each, with three villagers; and the writing and delivery of reports after each patrol. Proposed monitoring processes included double checking reports and unannounced, random spot checks of patrols.



KEY LESSONS LEARNT

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The BLACSI conceptual approach, together with its operationalization on the ground through a rapid assessment exercise, allows practitioners to design efficient and acceptable community incentive agreements to support better natural resource management and associated reduction of greenhouse gas emissions from deforestation and forest degradation. Indeed, it helps to collect very useful and reliable data at the household level and contributes to fine-tune incentives that are better tailored to local conditions and thus more likely to efficiently modify behaviors toward environmentally friendly natural resource use strategies.

Most importantly, the BLACSI approach endows villagers with voice and agency. As a bottom-up approach, it contributes toward a cohesive vision for empowering villagers and realizing their potential. It promotes procedural equity, capacity building and information-sharing. Participation at the grassroots level is invaluable and increases chances for long-term success and sustainability of the project. Beyond the immediate results, i.e. the signing and implementing of a well-designed incentive agreement, the process per se, in engaging all households in decision making, contributes to future success in modifying farmers' land uses.

The process is not without challenges, so practitioners would do best to avoid seeking perfect solutions.

Openness to accepting trade-offs, flexibility and local adaptation is important. First, even when agreed upon collectively through a participatory process, sanctions can be difficult to put in place for several reasons. Not only should some level of deviation be tolerated in order to avoid risking ending the whole process because of minor transgressions, but it is also politically sensitive for outsiders to stop delivering assistance once agreements have been signed. In other words, continued local participation and buy-in should be a priority; hence there should be some flexibility in implementation for the sake of learning by doing among participating communities. In addition, one must pay attention to the issue of migrants, which might complicate efforts to meet commitments.

Second, the balance between individual and collective commitments is key but subject to various appreciations. While collective agreements are required in many communities in order to make a substantial impact, bring the villagers on board and avoid excluding people who might later put the whole process at risk, at the same time free-riding is a danger that should be nipped in the bud. In this regard the issue of households' membership in the NRM plan, resolution and community incentive agreement remains problematic.

Third, agreements are dependent on demographic and political context. On one hand, accounting for local population dynamics is crucial, as the issue of new households' rights to forest (once children get married) might jeopardize conservation impacts from implementing the NRM plan and community incentive agreement. On another, community and individual rights to land, be they *de jure* or *de facto*, remain unclear and can evolve rapidly. This in turn can prevent NRM plans and agreements from being efficiently enforced and complied with in a context where exclusion and management rights are, with some exceptions, still often in local governments' and private companies' hands.

Finally, implementers should carefully design incentives based on local expectations and traditions. Monetary payments, some literature contends, potentially affect communities' intrinsic (moral, ethical) motivations to conserve forest, substituting the latter with monetary and utilitarian motivations. In the longer term, terminating payments can jeopardize project permanence and sustainability. To avoid such outcomes, any agreement should be based on thorough analysis of local beliefs and motivations in order to provide economic support that will not distort local pro-nature and pro-social behaviors (Lapeyre et al. 2015).

Such context-dependency may question the replicability and feasibility of the proposed BLACSI approach in bigger villages where the political context might be trickier, and community participation, consensus and procedural equity will be harder to achieve. Not only this will involve longer time and higher costs to administer household questionnaires and organize focus group discussions when more people are involved. Further,

because bigger communities might feature more heterogeneous characteristics and therefore more diverging interests and preferences, reaching an agreement about changes and associated support and incentives accepted by all households will be burdensome and less likely. Some households might refuse to sign the agreement, and many might disagree on incentives to be provided and alternative activities to be promoted (e.g. fish ponds versus poultry). In such situations, one might revert to more top-down approaches with lower costs. Yet, as literature suggests (Ostrom, 1990; Birner and Wittmer, 2004), decreasing transaction costs in data collection and consensus building in the start-up phase of the project actually jeopardizes success in the medium and long term and increases management costs in the ongoing phase. Without procedural equity and capacity building, compliance with the agreement will be lower, especially in a remote geographical context where information is scarce and monitoring thus infrequent, costly and difficult; and managing non-compliance *ex-post*, community conflicts and resentment, as well as sanctions will be very costly for the project implementer. Therefore, incurring more costs in the start-up phase with such a participatory approach to collect and analyze data and agree on the incentive might prove cost-effective in the longer-term. This nevertheless calls for further research and testing of the BLACSI approach in different contexts, in Berau and elsewhere.



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REFERENCES & APPENDIX

© Siswandi

- Birner, R., Wittmer, H. 2004, On the 'efficient boundaries of the state': the contribution of transaction-costs economics to the analysis of decentralization and devolution in natural resource management, *Environment and Planning C: Government and Policy* 22, 667-685.
- Ferraro, P.J., Kiss, A., 2002, Direct Payments to Conserve Biodiversity, *Science* 29 (298), 1718-1719.
- Ferraro, P.J., Simpson, R.D, 2002, The Cost-Effectiveness of Conservation Payments, *Land Economics* 78 (3), 339–353.
- Hartanto, H., Hayden, L., Madeira, E.M., Yulianto, T. S., Hidayat, T., 2013, *Envisioning a Green & Prosperous Future with the Berau Forest Carbon Program*, TNC, Arlington.
- Lapeyre, R., Pirard, R. 2013, Payments for environmental services and market-based instruments: next of kin or false friends, *IDDR Working Paper 14/2013*, Institut du développement durable et des relations internationales, Paris.
- Lapeyre, R., Pirard, R., Leimona, B., 2015, Payments for Environmental Services in Indonesia: What if economic signals were lost in translation?, *Land Use Policy* 46, pp. 283-91.
- Ostrom, E., 1990, *Governing the Commons. The Evolution of Institutions for Collective Action*, Cambridge University Press, 280 p.
- Pattanayak, S.K., Wunder., S., Ferraro, P.J., 2010, Show me the money: do payments supply environmental services in developing countries? *Review of Environmental Economics and Policy* 4(2), 254–274.
- Pirard, R., Lapeyre, R., 2014, Classifying market-based instruments for ecosystem services: A guide to the literature jungle. *Ecosystem Services* 9, 106-114.

APPENDIX 1. QUESTIONNAIRE

QUIZZ ID (enumerator don't fill):

Notes for Enumerator:

Read the questionnaire carefully before conducting the interview. Make sure that you understand how to complete the questionnaire to ensure that the process is carried out smoothly and comfortably for the respondent. Specific notes for a number of questions are provided directly in the said question.

General Instructions for Enumerator:

1. If the most appropriate respondent does not have sufficient time during the meeting, make an appointment at a different time or day. If this cannot be done, record this in your notes, and interview other households.
2. In this questionnaire, if the respondents cannot/would not answer the questions or provide information, write "did not respond" or circle the number "-99".
3. Try to interview the husband and wife together. This is critical for obtaining in-depth information from both respondents. Engage the wife as much as possible during the interview, especially regarding development of their sources of livelihoods.
4. If the husband and wife do not agree on certain issues in their answers, record these differences of opinion.
5. If the respondent is not married, a widower or widow and "own" land that is cultivated with the assistance of others or family members, interview the respondents and those who assist them at the same time.
6. If the head of household being interviewed is a mother (such as a widow), together with her son, record the mother's status and the name of the interviewed son.

SECTION A: IDENTIFICATION INFORMATION

1. Date of survey (dd/mm/yyyy) : /
2. Time start of survey (24-hr clock; HH:MM) : :
3. The name of the enumerator : _____
4. Any other Research officers present : _____ / _____
5. Village : _____
6. Village ID (enumerators don't fill this) :

7. Household ID (enumerators don't fill this) :

SECTION B: CONSENT FORM AND PERSONAL INFORMATION

Read the following paragraph to the respondent and ask if they agree to participate. Explain to the respondent that it is important for them to participate in this interview because the facilitating organisation will design future programmes based on results of this interview.

"Hello. How are you? I am (name) from [Insert name of facilitating organisation], that is currently conducting an activity in your village. I would like to know more about the community, your livelihoods, and forest and natural resources management. Could I please speak with the head of this household who normally decides or/and manages those activities?"

I would like to ask you a few questions about yourself and your household, as well as your farming and planting activities. This should take no longer than one hour. You do not need to talk to me if you do not want to. If you choose to participate in this activity, you should feel free to stop talking with me at any time when you have any problems, or when you feel uncomfortable answering any question. If you have any questions or comments about this activity you can also speak with people from the facilitating organisation at the following number: _____ (contact person's number)

May we have your permission to ask you some questions, and would you be willing to participate?"

1. Consent given? (1=Yes; 0=No)

If Q1=2, then ask Q2 and close the survey, otherwise skip to Q3

2. If respondent DOES NOT GIVE CONSENT: Why? _____

3. What is your current full name? (Respondents only) /_____/_____/_____
(Enumerator: Put the names as complete as possible)

4. Are you the head of the household? (1=Yes, 0=No)

5. Is your wife present and is also answering the questions? (1=Yes, 0=No)
If Q5=1 (yes), continue to Q6. If Q5=0 (no), skip to Q7.

6. Wife's name (If respondent is interviewed jointly with his wife) /_____/_____/_____
(Enumerator: Put the names as complete as possible)

7. Telephone number (if any): _____

SECTION C. DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS

Instructions for Enumerator:

1. Write down the gender of the primary respondent whose name is written in Question 3 Part B.
2. If the respondent only knows his/her age, the enumerator must calculate the respondent's birth year.
3. Source of livelihood as stated here is the source of livelihood for the entire household member, not only for the husband or the wife. Make sure that all sources of livelihoods for all family members are recorded here.
4. Ask when the household was established in this village. If the household came another village, ask when the household began living in this village.

1. Sex (1=Male; 0=Female)	2. Marital status	3. Date of Birth	4. Level of school completed?	5. Main source of livelihood	6. Secondary source of livelihood	7. Number of people in the household	8. Number of males older than 14 years old who still live in household	9. How many years has the household lived in the village (1000= always lived here)
					a. b.			

SECTION D. LAND AND NATURAL RESOURCES USE PATTERNS AND THEIR CHANGES

Instruction for Enumerator:

1. Use the Appendix titled "Household Land Use Pattern Description" when interviewing respondent about the number and the extent of the land they "own". This Appendix will help you fill in the table below, for sub-questions 1-16 and 18-25 in question 1 below.
2. Make sure that the respondent only calculates the land they "own" or cultivate within the village, not those in other villages (if respondent previously lived and cleared lands in other villages). Respondent is not calculating lands in which they are only assisting their parents or other landowners.
3. The land cultivated means land for shifting cultivation, whether those currently being cultivated or left fallow (to cultivate in the future).
4. "Kebun" (garden) means land cultivated with a large number of trees, such as rubber, coffee, fruits, or other crops, and not former the land cultivated planted with few trees. The number of kebun is included in the total number of lands given in sub-question 1.
5. Farmlands are agriculture lands cultivated permanently from year to year, in which the commodity is not a tree species. For example, cassava, corn, and others. The number of farmlands is included in the total number of lands given in sub-question 1".

- 6. For now, respondents should not consider small gardens around houses and forest areas used for collecting fuelwood, timber and non-timber forest products.
- 7. Specify that this question on the future does not take into account the project activities and incentives.

QUESTION 1. BASELINE: CONTROLLED LANDS AND THEIR CHARACTERISTICS

5 YEARS AGO (If respondent did not live in this village 5 years ago, skip to sub-question 9 below)

Specific instructions for sub-questions:

- Sub-question 1. The numbers written here = numbers sub-question 2 + sub-question 3 + sub-question 4 + sub-question 5.
- Sub-question 6. The land cultivated plots that are inaccessible are those located far (more than two hours walk) or requiring specific modes of transportation, and this is experienced in the past five years, not only today. A respondent might say that the land cultivated is difficult to access today because the respondent has moved to another area further away from the land cultivated. Or vice versa, the land cultivated is currently more accessible due to a recently constructed road. The number of difficult to access the land cultivated plots are part of the total the land cultivated stated in sub-question 1.
- Sub-question 7. The number and areas of shifting cultivation plots planted by a household in a year. The number of the land cultivated plots cultivated is part of the total the land cultivated stated in sub-question 2.

1. 5 YEARS AGO, HOW MANY LANDS DID YOUR HOUSEHOLD CONTROL (OWN)? (Put the number of lands and their sizes in hectare)	2. NUMBER OF THE LAND CULTIVATED PLOTS	3. NUMBER OF KEBUN OR GARDEN PLOTS (PLANTED WITH TREE SPECIES BY RESPONDENT)	4. NUMBER OF PERMANENT FARMLANDS	5. NUMBER OF PLOTS FOR OTHER USES (Specify...)	6. HOW MANY THE LAND CULTIVATED PLOTS ARE INACCESSIBLE?	7. 5 YEARS AGO, HOW MANY LADANG DID YOUR HOUSEHOLD ACTUALLY CULTIVATE? (put the number of lands and their sizes in hectare)	8. 5 YEARS AGO, DID YOU HIRE LABOUR TO WORK ON YOUR LADANG? (a: 0=NO, 1=YES) b: IF YES, HOW MANY PLOTS?
a. _____ plot b. _____ total area (Ha)						a. _____ plot b. _____ total area (Ha)	a. _____ b. _____

NOW TODAY

Specific instructions for sub-questions:

9. NOWTODAY, HOW MANY LANDS DO YOUR HOUSEHOLD CONTROL (own)? (Put the number of lands and their sizes in hectare)	10. NUMBER OF LADANG PLOTS	11. NUMBER OF KEBUN OR GARDEN PLOTS (PLANTED WITH TREE SPECIES BY RESPONDENT)	12. NUMBER OF PERMANENT FARMLANDS	13. NUMBER OF PLOTS FOR OTHER USES (Specify...)	14. HOW MANY LADANG PLOTS ARE INACCESSIBLE?	15. NOWTODAY, HOW MANY LADANG DO YOUR HOUSEHOLD ACTUALLY CULTIVATE? (put the number of lands and their sizes in hectare)	16. NOWTODAY, DO YOU HIRE LABOUR TO WORK ON YOUR LADANG? (a: 0=NO, 1=YES) b: IF YES, HOW MANY PLOTS?
a. _____ plot b. _____ total area (Ha)						a. _____ plot b. _____ total area (Ha)	a. _____ b. _____

17. WHY DID YOU ADD/REDUCE/MAINTAIN YOUR TOTAL PLOT AREA FROM 5 YEARS AGO TO THIS DAY? (If respondent did not live in this village 5 years ago, skip to sub-question 18 below)

a. _____

b. _____

IN 5 YEARS

Instruction for Enumerator:

Please note that the question asked here is the total area owned 5 years from today, not the new plots cleared from today to the next five years. Therefore, you need to sum the total area that the respondent currently has, and the new plots that will be cleared or owned from this day to the next 5 years.

Sub-question 18 The number written here = numbers sub-question 19 + sub-question 20 + sub-question 21 + sub-question 22

18. NOWTODAY, HOW MANY LANDS DO YOUR HOUSEHOLD CONTROL (own)? (Put the number of lands and their sizes in hectare)	19. NUMBER OF LADANG PLOTS	20. NUMBER OF KEBUN OR GARDEN PLOTS (PLANTED WITH TREE SPECIES BY RESPONDENT)	21. NUMBER OF PERMANENT FARMLANDS	22. NUMBER OF PLOTS FOR OTHER USES (Specify...)	23. HOW MANY LADANG PLOTS ARE INACCESSIBLE?	24. NOWTODAY, HOW MANY LADANG DO YOUR HOUSEHOLD ACTUALLY CULTIVATE? (put the number of lands and their sizes in hectare)	25. NOWTODAY, DO YOU HIRE LABOUR TO WORK ON YOUR LADANG? (a: 0=NO, 1=YES) b: IF YES, HOW MANY PLOTS?
a. _____ plot b. _____ total area (Ha)						a. _____ plot b. _____ total area (Ha)	a. _____ b. _____

26. WHY DO YOU PLAN TO ADD/REDUCE/MAINTAIN YOUR TOTAL PLOT AREA FROM NOW TODAY TO THE NEXT 5 YEARS?

a. _____

b. _____

Instruction for Enumerator: If the plot of land owned in 5 years (Sub-question 18a) is larger than the area owned today (Sub-question 9a), ask: "Why will you add to your land?" If the plot of land owned in 5 years (Sub-question 18a) is smaller than the area owned today (Sub-question 9a), ask: "Why will you reduce your land?" plot of land owned in 5 years (Sub-question 18a) is the same as the area owned today (Sub-question 9a), ask "Why will you maintain your land?"

QUESTION 2. REDUCTION IN THE NUMBER OF LADANG FOR SHIFTING CULTIVATION

<p>1. WOULD IT BE FEASIBLE/DESIRABLE FOR YOU TO REDUCE THE NUMBER OF LANDS ACCESSED FOR SHIFTING CULTIVATION, IF YOU WERE SUPPORTED IN SOME WAYS? Instruction for Enumerator:</p> <ul style="list-style-type: none"> - This question aims to understand whether the respondent will reduce the number of lands accessed for shifting cultivation. - Circle one answer 	<p>0=NO 1=YES -99=Did not provide answer</p>	<p>IF SUBQ1 = NO (=0), CONTINUE WITH SUBQ2 BELOW IF SUBQ1 = YES (=1), CONTINUE WITH SUBQ3 BELOW IF SUBQ1 = -99, SKIP TO QUESTION 3</p>	
<p>2. WHY DON'T YOU WANT TO REDUCE THE NUMBER OF LADANG IF YOU WERE SUPPORTED IN SOME WAYS</p>	<p>CONTINUE TO Q3</p>		
<p>3. WHAT IS THE CONSEQUENCE FOR YOU OF REDUCING THE NUMBER OF LADANG FOR SHIFTING CULTIVATION? Instruction for Enumerator:</p> <ul style="list-style-type: none"> - Ask respondent to identify both positive and negative impacts of reducing lands. "Number of ladang" means ladang cultivated as part of a shifting cultivation system. - Write quoted answers from the respondent by order of importance - Respondent does not have to provide 3 answers 	<p>1. _____ 2. _____ 3. _____</p>		
<p>4. WHAT IS THE MINIMUM NUMBER OF LADANG FOR SHIFTING CULTIVATION YOU NEED IF YOU WERE SUPPORTED IN SOME WAYS? Instruction for Enumerator:</p> <ul style="list-style-type: none"> - Write the number stated by respondent. 			
<p>5. WHAT SUPPORT DO YOU NEED TO REACH THAT MINIMUM NUMBER OF LADANG? Instruction for Enumerator:</p> <ul style="list-style-type: none"> - Link this question with the answer provided by respondent for previous Question. - This Question applies specifically for ladang. The following sections will ask about support required for other activities. - Allow the respondent adequate time to think about the question without providing options for answers. It is only if the respondent appears hesitant or unable to answer that the enumerator is allowed to read the options given. Note that respondents are allowed to give different answers from those provided in the option list. If this occurs, select "Other Support" and specify. - Write answers from the respondent by order of importance. - Select "alternative livelihood activities" if respondent states activities other than farming, e.g. kebun (gardens), livestock, honey, etc. Note that more detailed questions on the alternative livelihood activities that respondent desires will be asked in the following sections. 	<p>1. _____ 2. _____ 3. _____ 4. _____</p>	<p>1. Agricultural extension/ training support (for ladang) 2. Rice seedlings (better quality) (for ladang) 3. Fertilizers (for ladang) 4. Pesticides (for ladang) 5. Additional labour 6. Alternative livelihoods activity 7. Capital/cash (for ladang), specify amount _____ 8. Equipment (for ladang) 9. Other, specify _____ -99= Did not provide answer</p>	<p>ENUMERATOR: If respondent answer's here = 6, you must then ask Question 5 below.</p>

QUESTION 3. REDUCTION IN THE SIZE OF THE AREA ACTUALLY CULTIVATED YEARLY FOR SHIFTING CULTIVATION

<p>1. WOULD IT BE FEASIBLE/DESIRABLE FOR YOU TO REDUCE THE SIZE OF AREA ACTUALLY CULTIVATED YEARLY FOR SHIFTING CULTIVATION, IF YOU WERE SUPPORTED IN SOME WAYS? Instruction for Enumerator: - This question is about the respondent's likelihood of reducing the area actually cultivated yearly compared to the area currently cultivated. For example, reducing 1 ha of current land area into ½ ha in the future. - Circle one answer</p>	<p>0=NO 1=YES -99=Did not provide answer</p>	<p>IF SUBQ1 = NO (=0), SKIP TO SUBQ2 IF SUBQ1 = YES (=1), CONTINUE WITH SUBQ3 BELOW IF SUBQ1 = -99, CONTINUE TO QUESTION 4</p>	
<p>2. WHY DON'T YOU WANT TO REDUCE THE SIZE OF AREA ACTUALLY CULTIVATED YEARLY FOR SHIFTING CULTIVATION, IF YOU WERE SUPPORTED IN SOME WAYS?</p>	<p>CONTINUE TO QUESTION 4</p>		
<p>3. WHAT IS THE MINIMUM SIZE OF THE AREA THAT YOU CULTIVATE YEARLY IF YOU WERE SUPPORTED IN SOME WAYS</p>	<p>_____ ha</p>		
<p>4. WHAT SUPPORT DO YOU NEED TO REDUCE THE SIZE TO THE MINIMUM NUMBER?</p>	<p>1. _____ 2. _____ 3. _____ 4. _____</p>	<p>1. Agricultural extension/training support (for ladang) 2. Rice seedlings (better quality) (for ladang) 3. Fertilizers (for the land cultivated) 4. Pesticides (for the land cultivated) 5. Additional labour 6. Alternative livelihoods activity 7. Capital/cash (for ladang), specify amount _____ 8. Equipment (for ladang) 9. Other, specify _____ -99= Did not provide answer</p>	<p>ENUMERATOR: If respondent answer's here = 6, you must then ask Question 5 below.</p>

QUESTION 4. OTHER NATURAL RESOURCES UTILISED

<p>WHAT ARE THE NATURAL RESOURCES THAT YOU UTILISE? NAME THE TYPES OF NATURAL RESOURCES, LOCATION WHERE THEY ARE COLLECTED, AND HOW OFTEN (THE FREQUENCY), AND WHETHER THEY ARE SOLD OUTSIDE THE VILLAGE</p> <p>Instruction for Enumerator: - Respondent does not need to list answer in any order - Respondent can answer any of the options provided below. Just write in the number. E.g., "1" if respondent answers "hunting"</p>	<p>NATURAL RESOURCES</p>	<p>WHERE ARE THESE NATURAL RESOURCES COLLECTED?</p>	<p>FREQUENCY (how many times a month)</p>	<p>ARE THEY SOLD OUTSIDE THE VILLAGE? (0=No; 1=Yes)</p>
	<p>A1. _____ B1. _____ C1. _____ D1. _____</p>	<p>A2. _____ B2. _____ C2. _____ D2. _____</p>	<p>A3. _____/month B3. _____/ month C3. _____/ month D3. _____/ month</p>	<p>A4. _____ B4. _____ C4. _____ D4. _____</p>
	<p>1. Hunting 2. Fishing 3. Panning gold 4. Birdnest 5. Collecting Gaharu 6. Medicinal plants 7. Firewood 8. Timber 9. Others, specify _____</p>	<p>1. In concession area 2. In protected forest 3. In small gardens 4. In ladang 5. Other places, specify_ _____ -99. Did not provide answer</p>		

QUESTION 5. OTHER ACTIVITIES YOU WOULD LIKE TO DO

IMPORTANT INSTRUCTION FOR ENUMERATOR: If respondent has answered that they need “alternative livelihood activity” which is answer 6 in Question 2 Sub-question 5 and/or Question 5 Sub-question 4, please ask the following Sub-questions 1&2.

On the other hand (if respondent did not provide that answer), continue to Question 6 below.

<p>1. WHAT ALTERNATIVE LIVELIHOOD ACTIVITIES WOULD YOU LIKE TO DEVELOP (MAX. 4) TO REDUCE THE FOLLOWING ACTIVITIES (THE NUMBER OF LADANG, THE SIZE OF LADANG CULTIVATED, BEING PAID TO CUT DOWN TREES TO BE SOLD OUTSIDE THE VILLAGE)?</p>	<p>1. _____</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p>	<p>1. Rice field</p> <p>2. Vegetable garden</p> <p>3. Farming livestock (goat, cattle, etc.) Specify _____</p> <p>4. Chicken raising</p> <p>5. Duck raising</p> <p>6. Cultivating rubber</p> <p>7. Planting fruit trees</p> <p>8. Planting timber species</p> <p>9. Honeybee keeping</p> <p>10. Collecting bird nests</p> <p>11. Handicrafts</p> <p>12. Aquaculture</p> <p>13. Others, specify _____</p> <p>-99. Did not provide answer</p>	<p>IF SUBQ1 = -99, CONTINUE TO QUESTION 6</p>
<p>2. WHAT WOULD YOU NEED TO CHANGE YOUR LIVELIHOOD TO THE ACTIVITIES MENTIONED (IN THE PREVIOUS QUESTION)?</p> <p>Instruction for Enumerator:</p> <ul style="list-style-type: none"> - Do not read off list of support first-hand. Only read them after the respondent has attempted to answer. For every economic activity stated by the respondent, ask the kind of support that they need. Ask starting from Activity 1, then Activity 2, and so on. Respondent can only state 3 types of support for each activity, starting from the most important. 	<p>1. a)_____ b)_____ c)_____</p> <p>2. a)_____ b)_____ c)_____</p> <p>3. a)_____ b)_____ c)_____</p>		<p>1. Additional labour</p> <p>2. Seedlings and young animals (trees, fish, livestock, chicken, duck)</p> <p>3. Fertiliser</p> <p>4. Pesticide</p> <p>5. Extension/Training</p> <p>6. Equipment</p> <p>7. Capital/cash, specify amount _____</p> <p>8. Other, specify _____</p> <p>-99= Did not provide answer</p>

QUESTION 6. TREE PLANTING ACTIVITIES

<p>1. HAVE YOU PLANTED TREES ON YOUR OWN LAND (IN KEBUN OR GARDENS)?</p> <p>Instruction for Enumerator:</p> <ul style="list-style-type: none"> - Explain that garden (“kebun”) is a plot of land that is mostly planted with trees. If respondent only planted few trees around the land, mark 0 (No). 	<p>0=NO</p> <p>1=YES</p> <p>-99=Did not provide answer</p>	<p>IF ANSWER = 0 (NO), CONTINUE TO SUBQ2</p> <p>IF ANSWER = 1 (YES), CONTINUE TO SUBQ6</p> <p>IF ANSWER = -99, CONTINUE TO SUBQ2</p>
<p>2. WOULD YOU BE WILLING TO PLANT TREES ON YOUR OWN LANDS IF YOU WERE SUPPORTED IN SOME WAYS?</p>	<p>0=NO</p> <p>1=YES</p> <p>-99=Did not provide answer</p>	<p>IF ANSWER = 0 (NO), CONTINUE TO SUBQ3</p> <p>IF ANSWER = 1 (YES), CONTINUE TO SUBQ4</p> <p>IF ANSWER = -99, CONTINUE TO SUBQ11</p>

3. WHY WOULDN'T YOU WANT TO PLANT TREES IN YOUR OWN LANDS IF YOU WERE SUPPORTED IN SOME WAYS?		AFTER THIS SUBQ3, CONTINUE TO SUBQ11	
4. WHICH SPECIES OF TREES WOULD YOU BE WILLING TO PLANT IN PRIORITY ON YOUR OWN LAND? Instruction for Enumerator: - See Code Sheet	1. _____ 2. _____ 3. _____		
5. WHAT DO YOU NEED/REQUEST TO NOW PLANT TREES ON YOUR OWN LAND?	1. _____ 2. _____ 3. _____	1. Labour 2. Seedlings 3. Fertiliser 4. Pesticides 5. Capital/cash, specify amount _____ 6. Equipment 7. Training/Extension 8. Others, specify _____ -99. Did not provide answer	ENUMERATOR: AFTER SUBQ5, CONTINUE TO SUBQ11
6. WHAT TREE SPECIES HAVE YOU PLANTED IN YOUR OWN LANDS (GARDENS)? STATE THE AREAS FOR EACH TREE SPECIES PLANTED	1. a. (species)_____ b. (area)_____ha 2. a. (species)_____ b. (area)_____ha		
7. WOULD YOU BE WILLING TO PLANT MORE TREES PARTICIPATE ON YOUR OWN LANDS IF YOU WERE SUPPORTED IN SOME WAYS? Instruction for Enumerator: - See Code Sheet	0=NO 1=YES -99=Did not provide answer	IF ANSWER = 0 (NO) , SKIP TO SUBQ8 IF ANSWER = 1 (YES), GO TO SUBQ9 IF SUBQ7 = -99, CONTINUE TO SUBQ11	
8. WHY WOULDN'T YOU WANT TO PLANT MORE TREES IN YOUR OWN LANDS IF YOU WERE SUPPORTED IN SOME WAYS?		AFTER THIS SUBQ8, CONTINUE TO SUBQ11	
9. WHICH SPECIES OF TREES WOULD YOU BE WILLING TO PLANT ON YOUR OWN LAND? Instruction for Enumerator: - See Code Sheet - List answer by order of most important	1. _____ 2. _____ 3. _____		
10. WHAT DO YOU NEED/REQUEST TO PLANT MORE TREES ON YOUR OWN LAND?	1. _____ 2. _____ 3. _____	1. Labour 2. Seedlings 3. Fertiliser 4. Pesticides 5. Capital/cash, specify amount _____ 6. Equipment 7. Training/Extension 8. Others, specify _____ -99. Did not provide answer	
11. WOULD YOU BE WILLING TO PLANT TREES ON OTHER LANDS (NOT YOUR OWN LANDS) IF YOU WERE SUPPORTED IN SOME WAYS? Instruction for Enumerator: - Explain that the land in question is public or communal land, not land owned by the respondent or other individuals.	0=NO 1=YES -99=Did not provide answer	IF ANSWER = 0 (NO) , SKIP TO SUBQ12 IF ANSWER = 1 (YES), GO TO SUBQ13 IF SUBQ13 = -99, CONTINUE TO SUBQ7	
12. WHY WOULDN'T YOU WANT TO PLANT MORE TREES ON OTHER LANDS (NOT YOUR OWN LANDS) IF YOU WERE SUPPORTED IN SOME WAYS?		AFTER THIS SUBQ12, CONTINUE TO QUESTION 7	

<p>13. WHERE WOULD YOU PROPOSE TO PLANT THOSE TREES (ON OTHER LANDS)?</p> <p>Instruction for Enumerator:</p> <ul style="list-style-type: none"> - Make sure respondent provides specific location 	<p>a. _____</p> <p>b. _____</p> <p>c. _____</p>	
<p>14. WHICH SPECIES OF TREES WOULD YOU BE WILLING TO PLANT ON OTHER LANDS (NOT YOUR OWN LANDS)?</p> <p>Instruction for Enumerator:</p> <ul style="list-style-type: none"> - See Code Sheet - List answer by order of most important 	<p>1. _____</p> <p>2. _____</p> <p>3. _____</p>	
<p>15. WHAT WOULD YOU NEED/REQUEST TO NOW PLANT TREES ON OTHER LANDS?</p> <p>Instruction for Enumerator:</p> <ul style="list-style-type: none"> - Explain that the land in question is public or communal land, not land owned by the respondent or other individuals. 	<p>1. _____</p> <p>2. _____</p> <p>3. _____</p>	<p>1. Labour</p> <p>2. Pay/wage</p> <p>3. Seedlings</p> <p>4. Capital/cash, specify amount _____</p> <p>5. Training/Extension</p> <p>6. Provided rights to land to utilise</p> <p>7. Equipment</p> <p>8. Others, specify _____</p> <p>-99. Did not provide answer</p>

QUESTION 7. FARMLANDS

<p>1. WOULD YOU BE WILLING TO ENGAGE IN OR INCREASE THE SIZE OF FARMLANDS IF YOU WERE SUPPORTED IN SOME WAYS?</p>	<p>0=NO 1=YES -99=Did not provide answer</p>	<p>IF ANSWER = 0 (NO), SKIP TO SUBQ2 IF ANSWER = 1 (YES), GO TO SUBQ3 IF SUBQ13 = -99, CONTINUE TO SUBQ8</p>
<p>2. WHY WOULDN'T YOU WANT TO CULTIVATE/INCREASE THE SIZE OF FARMLANDS IF YOU WERE SUPPORTED IN SOME WAYS?</p>		<p>AFTER THIS SUBQ2, CONTINUE TO QUESTION 8</p>
<p>3. WHAT PLANT SPECIES DO YOU WANT TO CULTIVATE?</p> <p>Instruction for Enumerator:</p> <ul style="list-style-type: none"> - This question is about permanent agriculture lands, such as rice fields, vegetable gardens/farms, and others, therefore hardwoods such as rubber is not included here. 	<p>a. _____</p> <p>b. _____</p>	
<p>4. WHAT MAXIMUM AREA (HA) COULD YOU MANAGE WITHOUT HIRING PEOPLE?</p> <p>Instruction for Enumerator:</p> <ul style="list-style-type: none"> - Emphasise this condition "without hiring", whether hiring labourers from the village or outside of the village 	<p>_____ha</p>	
<p>5. WHAT WOULD YOU NEED/REQUEST TO REACH THIS MAXIMUM SIZE?</p>	<p>1. _____</p> <p>2. _____</p> <p>3. _____</p>	<p>1. Seedlings</p> <p>2. Fertiliser</p> <p>3. Pesticides</p> <p>4. Capital/cash, specify amount _____</p> <p>5. Training/Extension</p> <p>6. Equipment</p> <p>7. Irrigation</p> <p>8. Others, specify _____</p> <p>-99. Did not provide answer</p>

QUESTION 8. CLOSING

THANK YOU VERY MUCH FOR YOUR PATIENCE IN ANSWERING MY QUESTIONS, WE ARE VERY GRATEFUL. THIS WILL GREATLY HELP THE FACILITATING ORGANISATION IN SUPPORTING COMMUNITIES TO MANAGE THEIR NATURAL RESOURCES AND SUSTAINING THEIR LIVELIHOODS.

1. WOULD YOU LIKE TO ASK THE FACILITATING ORGANISATION A QUESTION? IF YES, PLEASE ASK

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.....
.....

2. WOULD YOU LIKE TO MAKE ANY COMMENT?

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.....
.....

QUESTION 9. Time End of survey: (24-hr clock; HH:MM)

□□:□□

APPENDIX 2. CODE SHEET FOR ENUMERATOR

SECTION C. DEMOGRAPHICS AND SOCIO-ECONOMIC CHARACTERISTICS

Question 1. Household Information

Sub-Question 2. Marital status

1. Married 2. Widower or widow	3. Other, specify _____
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Sub-Question 4. Education

1. Did not attend school 0	7. Junior High School Grade 7
2. Elementary School Grade 1	8. Junior High School Grade 8
3. Elementary School Grade 2	9. Junior High School Grade 9
4. Elementary School Grade 3	10. High School Grade 10
5. Elementary School Grade 4	11. High School Grade 11
6. Elementary School Grade 5	12. High School Grade 12
7. Elementary School Grade 6	13. College/University 13

Sub-Question 5. Primary Occupation and Sub-Question 6. Secondary Occupation

1. Farming (farmer)	13. Lumberjack
2. Farmhand in ladang	14. Fisherman
3. Livestock farmer (incl. goat, cattle, poultry, etc.)	15. Shopkeeper
4. Middlemen/trader	16. Hunting
5. Government employee (e.g. teacher, etc.)	17. Fishing
6. Private employee	18. Gold panning
7. Unemployed	19. Bird nest collector
8. Mechanic	20. Gaharu collector
9. Construction worker	21. Gardening
10. Motorcycle taxi driver	22. Garden labourer
11. Public vehicle (angkot) driver	23. Other, specify _____
12. Timber labourer	

SECTION D. LAND & NATURAL RESOURCES USE PATTERNS AND CHANGES

Question 6. Tree Species

Sub-Questions 4, 6, 7 and 14

1. Melinjo (<i>Gnetum gnemon</i>)	12. Albizia
2. Coffee	13. Mahogany
3. Durian	14. Mango
4. Salak (Snakeskin fruit)	15. Blady grass (<i>Imperata cylindrical</i>)
5. Banana	16. Grass for livestock
6. Cacao	17. Coconut
7. Petai/bitterbean (<i>Parkia speciosa</i>)	18. Rambutan (<i>Nephelium lappaceum</i>)
8. Cotton	19. Mangosteen
9. Jengkol/dogfruit (<i>Archidendron pauciflorum</i>)	20. Kayu Aprika/Sobsis
10. Clove	21. Rubber
11. Teak	22. Oil palm
	23. Other, specify _____

APPENDIX 3. HOUSEHOLD LAND USE PATTERN DESCRIPTION

Instruction to enumerators:

Please start with 5 years ago (if the respondent was already living in the village 5 years ago). Ask how many plots of lands were “owned” by the respondent. Each cell below represents one plot of land. Please note that the information to be collected is the number of times the respondent cleared forest to establish land. So, if e.g. the respondent stated that he had 1 plot of 2 hectares but opened it little by little each year, you have to get information on how long it took the respondent to establish this 2 ha of land. If the respondent cleared forest 3 times or 3 years, this is counted as 3 plots or 3 cells in the matrix below.

In each cell, write down the code below and write the number of hectares of each plot; if respondent did not know the size of each plot, please ask in ‘Kaleng’ and calculate (1 kaleng = ½ Ha) or other local units of measurement. Add all cells and transfer the total figure in the questionnaire.

- L = Ladang
- LYD = Ladang cultivated (with rice) every year
- K = Kebun (garden)
- S = Sawah (irrigated ricefields)

After collecting information of the conditions 5 years ago, add in the matrix the number of plots cleared from the last 5 years to this day. Add the code and areas. Calculate the total number of plots and their total size. Transfer these figures into the questionnaire. Note that there may be possibilities that some of these land uses have changed in the past 5 years, such as the land cultivated becoming gardens. The process is similar to fill the matrix for question about lands in 5 years from now.



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