

# Information exchange in swidden communities of West Kalimantan: lessons for designing REDD+

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## SUMMARY

Forested areas of Kalimantan, Indonesia, are often inhabited by swiddeners, and are also targeted by a range of interventions related to development and forest conservation, including REDD+. Whether these interventions are adopted, adapted or rejected by the local people is linked to the varying degrees of access to information that different types of households have, which also leads to unequal sharing of the associated benefits. This paper analyses factors influencing household access to agriculture and forestry-related information using quantitative and qualitative methods in three communities in West-Kalimantan, and draws lessons for designing REDD+. Household socio-economic characteristics (origin, status, migration patterns) and the divide between sub-groups in the communities (caused by origin, opinions, residential location, and relationships) were found to influence household access to information. Suggestions for improved REDD+ information exchange include: having more targeted and incentivised REDD+ activities; encouraging more equitable information sharing; and taking better account of local realities while designing REDD+.

Keywords: intervention, agriculture, forestry, household, migration, socio-economic characteristic

## Echange d'information entre les communautés swidden du Kalimantan-ouest: leçons à ajouter à la conception de la REDD+

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Les zones boisées du Kalimantan, en Indonésie, sont souvent habitées par de swiddeners et sont également la cible d'un éventail d'interventions liées au développement et à la conservation forestière, la REDD+ incluse. L'adoption, l'adaptation ou le rejet de ces interventions par les peuplades locales est lié aux divers degrés d'accès à l'information que possèdent les différents types de foyers, ce qui mène également à un partage inégal des bénéfices associés. Cet article analyse les facteurs influençant l'accès des foyers à l'information liée à l'agriculture et à la foresterie en utilisant des méthodes quantitatives et qualitatives dans trois communautés du Kalimantan-ouest. Il en dérive des leçons pour la conception de la REDD+. Les caractéristiques socio-économiques des foyers (origine, status, trajets d'immigration) et la division entre les sous-groupes dans les communautés (causée par l'origine, la location résidentielle et les relations) ont prouvé être une influence sur l'accès des foyers à l'information. Des suggestions pour améliorer l'échange d'informations de la REDD+ comprennent: l'existence d'activités REDD+ mieux ciblées et encouragées, l'encouragement d'un partage d'information plus équitable et une meilleure prise en compte des réalités locales lors de la conception de la REDD+.

## Intercambio de información en las comunidades itinerantes de Kalimantan Occidental: lecciones para el diseño de REDD+

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Las áreas forestales de Kalimantan (Indonesia) están habitadas a menudo por comunidades itinerantes, y también son el objetivo de una serie de intervenciones relacionadas con el desarrollo y la conservación de los bosques, como REDD+. La adopción, la adaptación o el rechazo de estas intervenciones por la población local están vinculados a los diferentes grados de acceso a la información que tienen los diferentes tipos de hogares, que a su vez conduce a una distribución desigual de los beneficios asociados. Este artículo hace uso de métodos cuantitativos y cualitativos para analizar los factores que influyen en el acceso de los hogares a la información en materia de agricultura y silvicultura en tres comunidades de Kalimantan Occidental, y obtiene lecciones para el diseño de REDD+. Se encontró que las características socioeconómicas familiares (origen, estado, patrones de migración) y las brechas entre subgrupos dentro las comunidades (debidas al origen, opiniones, lugar de residencia, y relaciones) influyen en el acceso de los hogares a la información. Las sugerencias para la mejora del intercambio de información en torno a REDD+ son: actividades de REDD+ más focalizadas e incentivadas; favorecer intercambios de información más equitativos; y tomar más en cuenta las realidades locales en el diseño de REDD+.

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## INTRODUCTION

Throughout much of Kalimantan, the remaining forests are areas where shifting cultivators (i.e. swiddeners) have traditional rights to land and resources (Mertz *et al.* 2009, Padoch *et al.* 2007). These landscapes are often the target of many interventions designed to promote the diversification of livelihoods away from swidden practices towards mainstream economic development (e.g. such as agricultural intensification), or to support conservation objectives (i.e. towards sustainable forest management and protected area establishment) (Cramb *et al.* 2009, Wendley 2006). Many of these interventions have, however, been less than successful in achieving their aims because of not adequately taking into account the local context (e.g. Barrett 2013, Cooke and Kothari 2001) and the existing information networks and power structures (Cooke and Kothari 2001, Hoang *et al.* 2006, Pasgaard and Chea 2013, Pasgaard 2015), which sometimes results in ineffective program design, elite capture and failure to be inclusive in involving households with different characteristics in their activities (Chambers 1995, Hoang *et al.* 2006, Ribot and Peluso 2003). For example, many of the interventions implemented in local communities in developing countries have been accused of interacting with only a selected group of the wealthiest, most powerful, and easily approachable (or available) households. Meanwhile the most marginalized groups are left out of decision making and participation, and are thus highly dependent on the information received from other community members (Cooke and Kothari 2001, Dahal *et al.* 2010, Hoang *et al.* 2006, Sikor *et al.* 2010, Pasgaard and Chea 2013, Pasgaard 2015). This approach has often led to unequal sharing of information and the associated benefits (e.g. Hoang *et al.* 2006, Sikor *et al.* 2010, Luttrell *et al.* 2012, Pasgaard and Chea 2013), and further marginalization of specific groups (e.g. Cooke and Kothari 2001, Ribot and Peluso 2003). Consequently, there is much criticism towards the information sharing methods, participatory approaches and the efficiency and equity aspects of the numerous interventions (Cleaver 2001, Luttrell *et al.* 2012, Pasgaard and Chea 2013).

REDD+ (Reducing emissions from deforestation and forest degradation, and enhancing forest carbon stocks in developing countries) projects — as a relatively new intervention integrating the goals of reduced deforestation and livelihoods development, as well as other co-benefits — will face the same kind of problems faced by other interventions that target local rural communities in terms of power relations, elite capture, social exclusion, inequity, and constraints to access (Sikor *et al.* 2010, Dermawan *et al.* 2011, Korhonen-Kurki *et al.* 2012, Luttrell *et al.* 2012, Pasgaard and Chea 2013, Pasgaard 2015, Sunderlin *et al.* 2015). In particular, REDD+ will require institutions and mechanisms to channel information in a transparent and inclusive manner that includes actors with different interests at different scales (Herold and Skutsch 2009, Korhonen-Kurki *et al.* 2012, Luttrell *et al.* 2012, Pasgaard 2015), especially to fulfil the requirements of the Free Prior and Informed Consent (FPIC) (UN-REDD 2013). The distribution of financing across multiple levels of governance will also require similarly transparent mechanisms.

Because REDD+ is still a relatively new program, and despite the explicit emphasis on the co-benefits of REDD+ and local livelihoods (e.g. Angelsen *et al.* 2012, Jagger *et al.* 2010, Sunderlin *et al.* 2014); the real incentives and constraints that households face to participate in this kind of land-use related intervention are still not well understood. Hence further research is needed as REDD+ develops in new areas. West-Kalimantan provides an example where this information is still limited, even though it is crucial considering the massive deforestation challenges and dramatic changes in land-use and livelihoods happening in the area, for which REDD+ has been planned as one of the options to tackle the associated environmental, economic and social impacts. In fact, the district has been a REDD+ pilot site since 2009/2010 (Eilenberg 2015) with project activities led by environmental NGOs and development partners (e.g. with FORCLIME, WWF, FFI). However, progress seems to have been slow, with implementation not yet taking place, therefore the information presented in this paper can be useful for the villages where the intervention might expand in the future.

This paper aims to provide information on factors influencing local households' access to information, which can be used as lessons for REDD+. It is based on observation and data collected from three swidden communities in a remote district of West Kalimantan, Indonesia. The focus of this study is on agriculture and forestry-related interventions (by the government, NGOs, or international donors) because: (1) these incentives were mostly provided at the household-level (versus community-level); and (2) they were closely related to local livelihoods and land-use change, as REDD+ should be. In addition, some lessons were drawn from more general village development related interventions and oil palm expansion. The specific research questions are: (1) Do the household's socio-economic characteristics (including migration patterns and kinship relations) influence their ability to access information related to the interventions?; (2) What are the other possible incentives (or motivations) and constraints that households face related to participation in the interventions?; and (3) What is the relevance of, and lessons learnt from, these interventions for potential REDD+ activities? Providing insights to these questions is particularly relevant as such findings can inform a still emerging REDD+ arena in Kapuas Hulu and elsewhere, thus helping to better understand local realities and avoid any adverse impacts of REDD+ for local livelihoods.

## ANALYTICAL FRAMEWORK

One essential issue that tends to be often overlooked by (external) interventions is the heterogeneity of households, and the varying levels of access to information and resources that households with different levels of social, human, physical, natural and financial capital may have (i.e. the five capitals) (DFID 1999, Hoang *et al.* 2006, Portes 1998, Ribot and Peluso 2003). In this paper a set of specific socio-economic factors — that can be categorized into three of the five capitals — were selected in order to analyse the potential

factors influencing household access to information provided by the interventions. The factors studied were: (1) household origin and whether they lived in a longhouse or not, migration patterns and links to urban centres, household status, memberships, and kinship relations (i.e. social capital); (2) gender, age, and level of education (i.e. human capital); and 3) total value of assets (i.e. financial capital) (Figure 1 c).

Migration is one of the many factors influencing access to information, as it links people and places, individuals to organizations, and peripheries to centres. These links influence a household's ability to access information and resources, and thus migration contributes an important part to a household's social and financial capital (Eilenberg 2012, Kelly 2011, Rigg 2006, 2007). Similarly, it has been hypothesized that the origin of a household may influence access to information and resources, either by providing links outside the village, or by being excluded from specific networks due to the outsider status. Whether a household had specific links to an urban centre or not was also included in this analysis because it was assumed that access to urban centres may be a channel to specific kind of information, resources or influential people. Whether the household lived in a traditional longhouse or not was selected as a potential factor influencing household access to information and resources because the common area in the longhouse was often cited during the Focus Group Discussions (FGDs) as being an important place for sharing information. It was used for meetings and all manner of social events, including the meetings held with external actors. In fact, this area is called *ruai*, a word that also means a community meeting.

Household status, assets, memberships, kinship relations, gender, age, and level of education were also included as variables in the analyses as key components of social, human, or financial capital (DFID 1999, 2001), having previously been found to influence households access to information and resources (e.g. Cooke and Kothari 2001, Dahal *et al.* 2010, Hoang *et al.* 2006, Pasgaard and Chea 2013, 2015).

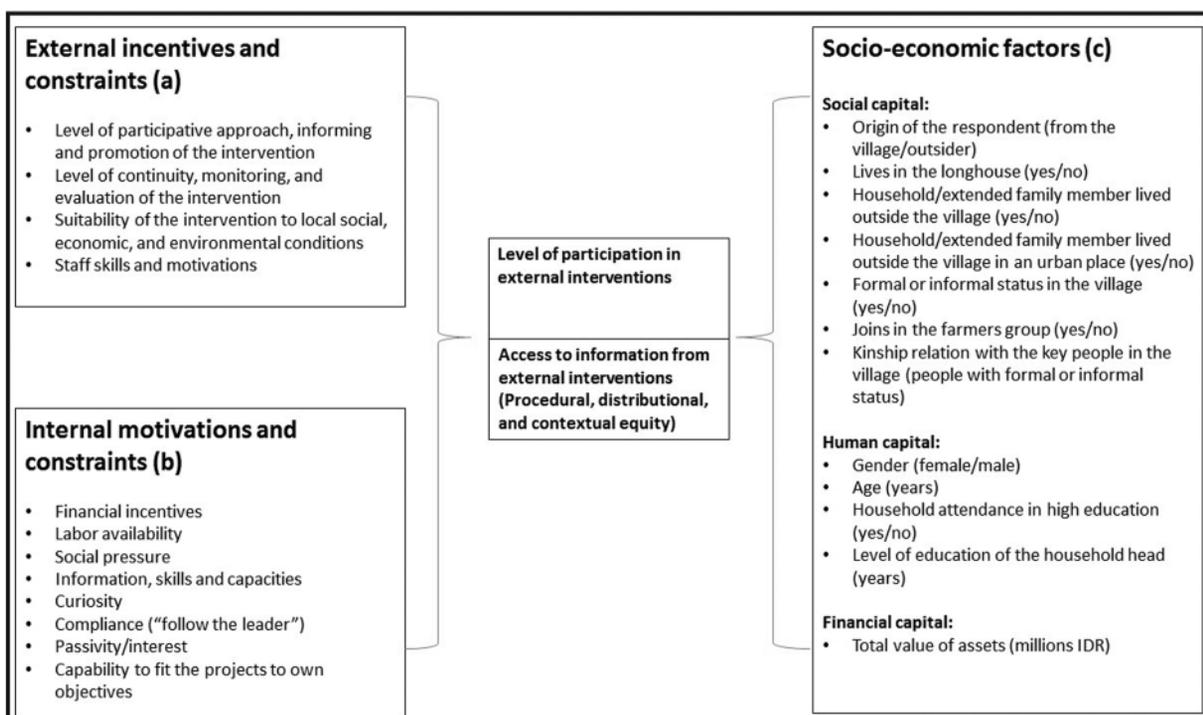
In addition to the potential socio-economic characteristics, several other internal or external factors — also included in the qualitative analyses — may influence household's access to interventions and associated information, including the capacities and approaches that interventions use for information sharing; and other motivations and constraints faced by the local people (see Figure 1 a, and b).

## METHODS AND SITES

### Site selection

The district of Kapuas Hulu is one of the three Forest Conservation Districts in Indonesia (Sanker *et al.* 2007), and is a site well suited to address the aims of this study. It is still sparsely populated, with the majority of its people involved in swiddening, and with approximately 80% of the land falling under the different Indonesian government definitions of forest, varying between production forest and conservation forest (MOF 2009, Shantiko *et al.* 2013). Two national parks occupy about 30% of the area (i.e. Danau Sentarum and Betung Karihun National Parks) (ibid). The area is experiencing a rapid land-use change driven by external and internal actors,

FIGURE 1 Analytical framework of the study: Internal and external factors potentially influencing the level of participation in external interventions, and the access to related information



and the remaining forests of Kapuas Hulu are one of the new potential target areas for REDD+ (Eilenberg 2015). REDD+ initiatives in Kapuas Hulu are still in the early stages of planning. The uncertainty and misapprehension creates opportunities for divergent local interpretations of land-use claims which may trigger local land disputes and hinder REDD+ implementation despite its potential future carbon credit (Eilenberg 2015).

Three sub-villages in Kapuas Hulu were selected as study sites, with two in the sub-district of Badau, and one in the sub-district of Putusibau Utara (Figure 2). The three sites were selected because they varied in several characteristics that are key to this study, including: accessibility to roads, services, and the national park; distance to the nearest larger town/s and the Malaysian border (influencing migration patterns); the availability of oil palm in the village, and; the level of urbanization/transition from the traditional way of living<sup>1</sup> (see Table 1).

### Focus Group Discussions (FGDs)

A total of nine FGDs — differentiated by gender and age — were conducted in the study sites. The FGDs were conducted

in order to get a basic understanding of: (1) the environmental, economic and social characteristics of each site, including the key past events and their impacts on the communities; and (2) the existing information and resource networks<sup>2</sup> within the community and with the external actors. Participants of the FGDs were identified through consultations with key informants selected to represent households with a range of different characteristics. Each FGD took approximately two hours to conduct, and were recorded and transcribed for further analyses.

The information and resource systems, and the networks identified during the FGDs can be broadly divided into two general categories: (1) external interventions, including actors coming to the village with specific objectives, such as government, credit union, church, oil palm companies, local NGOs, and research organizations etc.; and (2) longer established and traditional practices, including longhouse customs, customary rules (*Adat*), culture, swidden practices (*Umai*), rubber tapping (considered as part of the traditional system by the communities), and labour exchange. Other income sources such as pepper, durian etc., were also mentioned, which were related to both the interventions and traditional

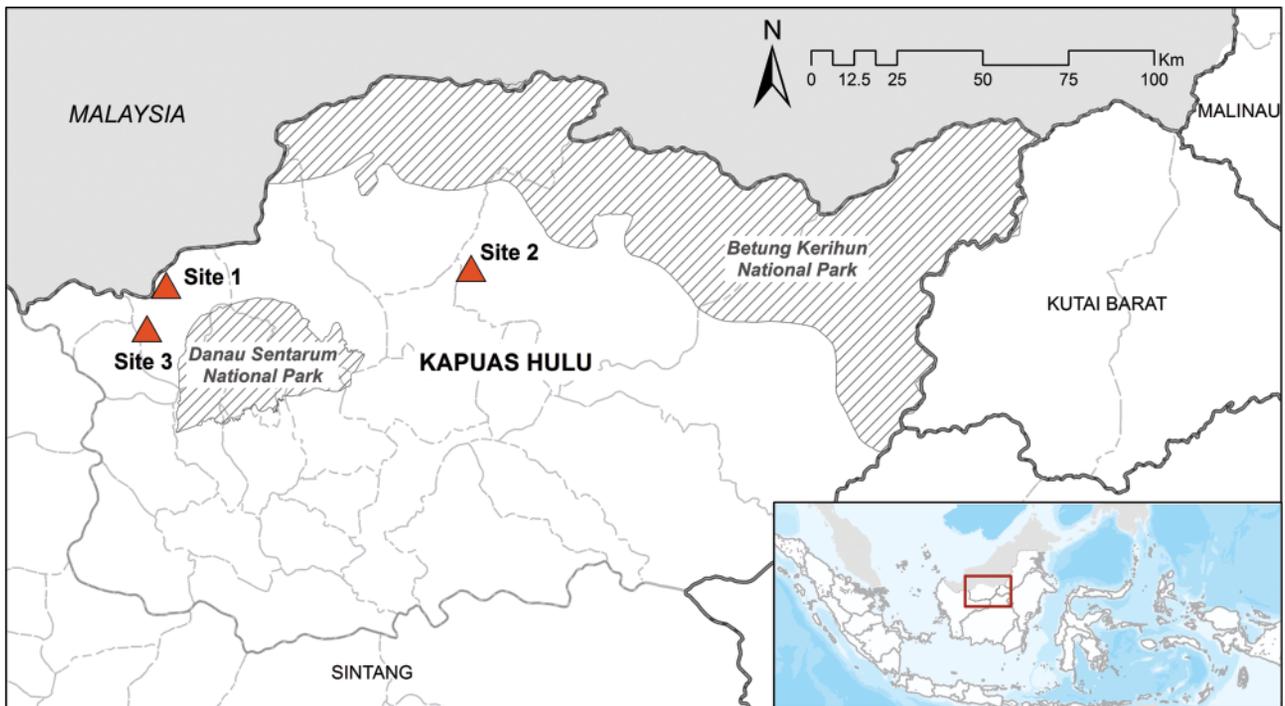
TABLE 1 *Characteristics of the three study sites*

| Characteristic  | Site 1  | Site 2  | Site 3   |
|---|---|---|--|
| Main ethnicity  | Dayak Iban  | Dayak Embaloh                                       | Dayak Iban   |
| Location (remote/relatively easy access)  | Easy access: pave road in good condition              | Relatively easy access: Mud road in poor condition  | Relatively easy access: pave road in a relatively good condition |
| Rural/urban/in transition   | Transition  | Rural   | Transition   |
| Proximity to nearest town   | Merged together (2.2 km or 10 minutes motorcycle/car) | Relatively far (35.5 km or 1 hour motorcycle/car)   | Relatively close (14.5 km or 30 minutes motorcycle/car)          |
| Proximity to Malaysia   | Border (5.18 km or 15 minutes motorcycle/car)         | Relatively far (63.3 km or ~4 hours motorcycle/car) | Close to border (8.2km or 30 minutes motorcycle/car)             |
| National park   | Bordering   | Bordering   | Bordering  |
| Oil palm status   | Oil palm  | No oil palm   | Oil palm   |
| Lives in longhouse (%)  | 13  | 53  | 69   |
| Respondent originates in the village (%)  | 67.4  | 78.7  | 84.6   |
| Swidden farmers (at least partially) (%)  | 80.4  | 91.5  | 84.6   |
| Total No. of households in the sub-village (No. of households who lived in the longhouse) | 96 (10)   | 49 (27)   | 35 (26)  |
| No. of respondents interviewed (lives in the longhouse)                                   | 46 (10)   | 47 (23)   | 26 (19)  |

<sup>1</sup> Whether a place was identified as rural, urban, or in transition was not straightforward, and was rather subjective. The research team divided the study sites into these groups based on the level of labour differentiation, services, infrastructure, house styles, population density, and level of communal life style.

<sup>2</sup> In this study a network was defined along the following dimensions: (a) resources that are exchanged (i.e. money, information, skills, material); (b) actors (i.e. who is exchanging resources); (c) purpose (i.e. why the resources are exchanged); and (d) social foci and tools facilitating the exchange (i.e. where, when and how the exchange is done).

FIGURE 2 Map of Kapuas Hulu showing the three study sites, borders of the national parks, and the Indonesian and Malaysian border (Made by Indah Waty Bong and Gilang Aria Seta)



practices. In fact all of the topics — internal or external — were interlinked.

### Household surveys

Semi-structured household surveys were used to collect data about the following: (1) the existing information and resource exchange approaches of the interventions, and related equity aspects; (2) the constraints and incentives that the households' faced related to interventions, and (3) the potential factors (socio-economic, migration patterns, and kinship relations) influencing household's access to information provided by interventions (see Table 2 for details).

A minimum of 40 households per site were randomly selected for the interviews,<sup>3</sup> with a total of 119 household heads interviewed across three sites (see Table 1). The study was explorative in nature, with an open and flexible interview approach used (as described in Clerc 2012 and Pasgaard and Chea 2013). This approach allowed for open discussion, where many follow up questions emerged depending on which topics the respondents highlighted.

### Statistical analyses

The data was analysed using qualitative and quantitative methods. Qualitative analyses were done using MaxQda© software, with a focus on: (1) the existing information and

resource exchange approaches of the interventions, and related equity aspects (procedural and distributional equity)<sup>4</sup> (Figure 1 a); and (2) the incentives and constraints (external and internal) faced by the local people for participating in, and receiving information and resources from interventions (see Figure 1 a and b).

Quantitative analyses were used to analyse the socio-economic factors influencing household access to information provided by interventions (Figure 1 c) using SPSS (Mann-Whitney U tests, T-tests, cross tabulations and Chi-square tests). The focus of the quantitative analyses were on the agricultural and forest-related interventions, to determine if household characteristics influenced household access to agriculture and forestry-related information from the government, NGOs, or international donor organizations. Access to information was selected as the focus of the quantitative analyses because it became clear during the FGDs that access to material resources (e.g. seedlings) from interventions was more common to most households, whereas access to information (e.g. information on different types of projects or management practices for the species provided) was more variable, and the assumption was that household characteristics would specifically influence the ability to access related information. Quantitative analyses were only conducted in sites 1 and 2 where there was more variation between the households in receiving agriculture and forestry-related information than in site 3.

<sup>3</sup> Except at the site 3 where all the available households in the sub-village were interviewed (26).

<sup>4</sup> While doing the qualitative analyses it was recognized that REDD+ needs to operate within three dimensions of equity: distributional, procedural, and contextual equity (McDermott *et al.* 2013).

## RESULTS AND DISCUSSION

### The local context

The swidders of Kapuas Hulu have long been able to adapt their livelihoods to changing situations (e.g. Cramb *et al.* 2009, Padoch *et al.* 2007). However, changes are increasingly rapid and at larger scales. Though logging came and went within less than five years (Eilenberg 2012), oil palm development has much more drastically changed both the physical — as well as the livelihood — landscape. Oil palm, more permanent agriculture (see Clerc 2012), and conservation (the villages were bordering a national park; see Shantiko *et al.* 2013) challenged traditional land-use rights and swidden practices in a way that logging and rubber did not. Where logging and rubber were integrated and adjusted to local systems, oil palm has resulted in large areas of traditional systems being taken out of the system.

Within this change, however, the FGD and interview results showed that the people maintained swidden practices, albeit with shorter fallow periods and smaller areas. In fact, people preferred several concurrent livelihood options over one (e.g. oil palm only) to cope with various risks such as drought and price fluctuations. Thus they engaged in a range of land-use activities in addition to swiddening and oil palm, including the collection of forest products (e.g. NTFPs), rubber tapping and other cash crops (e.g. pepper), integrating varying forms of agroforestry and forest management, and subsistence production of vegetables. This was highlighted for example during the youth FGD at site 3, where one of the participants stated that: *“Swidden remains important, even though we are working at oil palm establishment. We cannot abandon swiddening practice. Swidden is the basis of our livelihood here: source of food and hence life, and then we have (cash from) rubber and oil palm. Swidden is also the fundament of our social life (identity) as we are working together and engaging with each other”* (more details Maharani *et al.* 2015, in preparation). In fact, this form of livelihoods dependence of the Iban (sites 1 and 3) has been described by many (e.g. Clerc 2012, Colfer *et al.* 2000, Padoch and Peters 1993, Wadley *et al.* 1997).

Typical of the local people in Kapuas Hulu, migration was mentioned during all the FGDs as an integral part of the household's livelihoods and a key source of cash in all the sites, with most households having at least someone that had lived outside the village to work (based on household interviews, Table 2). The most common migrant destination was Malaysia (Sarawak), which was very close. Malaysia had more job opportunities and better wages, and the Iban had strong cultural and social ties there (described also in Eilenberg 2012, Wadley 2000). In fact, the Iban (sites 1 and 3) — especially the young men — had a long history of migrating (*ibid.*). Migration to Malaysia was, however, reported by several respondents (especially at site 3) to have become a less important income source now that income could be earned in the oil palm plantations close to the village. One respondent, for example, described the situation as follows: *“Before the oil palm was here, we migrated to Malaysia. As*

*soon as there were new livelihood options: oil palm and rubber cultivation; we went back into the village and did not migrate anymore”*. Furthermore, the recent introduction of more strict regulations hampered migration (described also in Clerc 2012). Both, the FGDs and the household interviews showed that migration exposed the migrants, their families, and others around them to new information and resources, but also to constraints such as reduced labour at home. One respondent described the negative impacts of migration as follows: *“Actually, we are losing out. Not only agricultural labour, but the parents often give money to support their migrated children”*.

The qualitative analyses also showed that the use of agricultural inputs was expanding in all three study sites. This was expected because the respondents identified them as an important part of the land-use system due to the following factors: (a) land was increasingly used more permanently (i.e. oil palm and rubber plantations) and thus less land was available for swiddening; (b) fallow periods were shorter (due to the lack of suitable land available) and thus more herbicides and fertilizers were needed because of an increase in weeds and decreased soil productivity; (c) less labour was available for weeding and opening new swidden land (due to off-farm jobs and migration); and (d) the improved rubber and paddy rice varieties introduced by the government required fertilizers to achieve adequate production.

In all study sites, it was found that official government administrative systems and customary *Adat* processes functioned in parallel, causing some confusion in governance (see also Clerc 2012, Fripp and Shantiko 2014, Harwell 2010, Wandley and Eilenberg 2005). Land-use rights and swidden practices were the purview of *Adat*, and the *Adat* leaders played an important role in solving a range of issues and conflicts related to land-use rights.

### Interventions targeting the communities

This study focussed on interventions related to agriculture and forestry (see Table 3), initiated by a range of actors including government, NGOs, international organizations, traders, and also private commercial companies.

The main government intervention at the study sites was the National Village Empowerment Program (PNPM), which aimed to improve general wellbeing and empower the communities. Another large national program was GERHAN (the national movement for land rehabilitation). This program consisted mainly of distributing tree seedlings and occasionally fertilizers. In addition, local government agencies provided subsidies to either develop permanent (paddy) rice fields or establish rubber plantations (mainly in monoculture systems but also for agroforestry systems).

With two large national parks in Kapuas Hulu, interventions aimed at promoting conservation were also significant. However, realizing the need to improve livelihoods, conservation agencies such as World Wildlife Fund (WWF) and the park management were providing interventions indistinguishable from the more development oriented interventions by the government. Both provided households with seedlings

TABLE 2 Socio-economic and demographic summary of the sample village

| Variable  | Site 1            | Site 2      | Site 3      |
|---|-------------------|-------------|-------------|
|   | Yes (%)           | Yes (%)     | Yes (%)     |
| Originates in the village (respondent)                          | 67.4              | 78.7        | 84.6        |
| Lived outside village for any reason:                           |                   |             |             |
| - respondent  | 78.3              | 56.5        | 73.1        |
| - household member  | 45.7              | 74.5        | 53.8        |
| - extended family member  | 19.6              | 53.2        | 23.1        |
| Lived outside village in an urban area (*):                     |                   |             |             |
| - respondent  | 94.4              | 66.7        | 100         |
| - household member  | 26.8              | 67.4        | 48.0        |
| - extended family member  | 9.1               | 31.0        | 13.0        |
| Joins in farmers' group (household)                             | 4.3               | 0           | 7.7         |
| Gender of the respondent (males)                                | 84.8              | 70.2        | 92.3        |
| Attendance in senior high-school or university                  | 23.9              | 44.7        | 26.9        |
| Formal or informal status (**) in the village (respondent)      | 30.4              | 31.9        | 38.5        |
|   | <b>Mean ± std</b> |             |             |
| Mean age of the respondent (years)                              | 45.9 ± 11.9       | 49.3 ± 14.8 | 46.4 ± 11.2 |
| Mean of the highest level of education (household head) (years) | 6.3 ± 4.4         | 6.3 ± 5.1   | 6.4 ± 5.4   |
| Mean total value of assets (millions of IDR)                    | 1.1 ± 1.1         | 0.8 ± 1.1   | 1.4 ± 1.4   |

(\*) The percent from the respondents that had lived outside

(\*\*) When a respondent states having an informal or formal status in the village this refers to their having either a formal (i.e. village leader, sub-village leader, hamlet leader, village secretary, deputy village leader, women's group leader, farmers' group leader, youth group leader, or police) or an informal — but commonly recognized — status/role in the village (i.e. customary leader, longhouse leader).

of different trees such as rubber (*Hevea brasiliensis*), mangusteen (*Garcinia mangostana*), agarwood (*Aquilaria sp.*), sungkai (*Peronema canescens*), petai (*Parkia speciosa*), and tengkawang (*Shorea sp.*).

The most visible intervention was, however, oil palm plantations, especially in sites 1 and 3. This intervention differed from others because it happened very fast, it was driven by the private sector, and it was beyond community (and often government) control. Oil palm expansion provided new income for local people, but at the same time it took land out of community control, reduced biodiversity, and probably impacted negatively on ecosystem services; although evidence about this is lacking (Clerc 2012, Savilaakso *et al.* 2014). Furthermore, while in most cases interventions were seen as additional practices or resources to be adapted into existing local systems, oil palm competed with the traditional land-use systems, practices, daily routines, customs, and labour force. People reported frequent conflicts, specifically related to the contracts, prices, and payback rules for the establishment costs paid by the company, and violation of property boundaries (also in Clerc 2012).

Interventions were typically implemented by extension agents following pre-determined objectives and frameworks (an approach reported by others; e.g. Mosse 2001). Communities were rarely consulted about what they wanted to

develop (except in the case of PNPM), or about the local ecological, social and economic realities. One of the respondents described the situation as follows: “the government only targeted the communities half-hearted” and “only for the sake of the project”. As a result, many of the agriculture and forestry-related interventions in the study sites were not well suited to the local environmental, social, and economic realities.

### Adoption, adaptation or rejection?

Nearly all households — regardless of their socio-economic characteristics — had accepted some assistance from the numerous interventions targeting the communities. Not surprisingly, the majority of respondents were involved in an agriculture or forestry-related intervention in some way; either receiving information or material (Figure 3a).

The qualitative analyses showed that the main incentive (or motivation) for joining agriculture and forestry-related interventions reported by most of the respondents was economic. People were curious to try different species, especially if they were provided for free, although they were most interested in receiving seedlings of species that they were familiar with, and that had existing markets (such as rubber). However, assistance accepted did not always mean it was adopted. Interventions were often adapted and integrated into their

TABLE 3 Description of the external interventions studied in the three study sites

| Intervention (name)   | Purpose   | Involvement level & site       | Resources exchanged  |
|---|---|--------------------------------|--|
| <b>Agriculture &amp; forest-related interventions</b>                       |   |                                |  |
| The National Movement of Forest & Land Rehabilitation (Gerhan) <sup>1</sup> | Rehabilitation of degraded land, improvement of ecosystem services & land productivity. | Group/household (Sites 1,2,3). | Tree seedlings & agricultural inputs   |
| Agricultural extension by the district agricultural office <sup>2</sup>     | Improvement of land productivity & income of the people.                                | Group/household (Sites 1,2,3)  | Agricultural inputs, sometimes livestock   |
| National parks  | Forest conservation   | Group/household (Site 3)       | Livestock (poultry, cows, pigs)  |
| Local NGO driven  | Improvement of the local livelihoods & sustainable use of natural resources             | Group/household (Site 1)       | Agriculture & forest-related inputs, livestock   |
| Oil palm expansion (private companies & government)                         | Oil palm expansion  | Group/household (Sites 1 & 2)  | Wages, services & infrastructure   |
| <b>Other interventions</b>  |   |                                |  |
| (*) Rural Community Empowerment Program (PNPM) <sup>3</sup>                 | Community empowerment   | Community level (Sites 1,2,3)  | Village development, (i.e. infrastructure & services); wages for the committee involved. |
| Rice subsidy for the poor <sup>4</sup>                                      | Food security   | Household (Sites 1,2,3)        | Subsidized rice (15 kg/month/household)  |

<sup>1</sup> Gerakan Nasional Rehabilitasi Hutan dan Lahan/Gerhan).

<sup>2</sup> Lampiran Peraturan Menteri Pertanian No. 25/Permentan/OT.140/05/2009.

<sup>3</sup> Program Nasional Pemberdayaan Masyarakat/PNPM.

<sup>4</sup> *Beras untuk orang miskin/Raskin*. Additional source: Kementerian Koordinator Bidang Kesejahteraan Rakyat dan Sosial, 2014. Pedoman Umum Raskin, Jakarta.

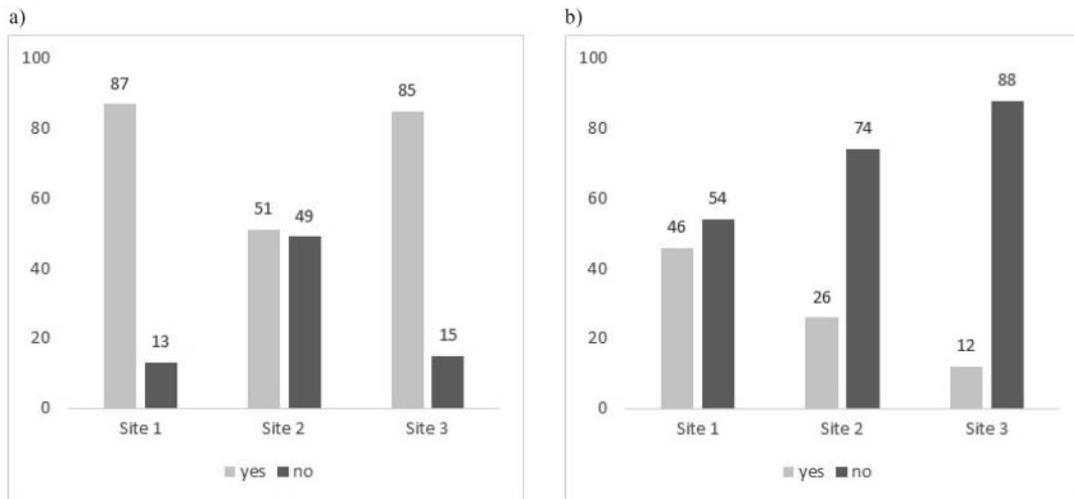
existing systems in ways that did not necessarily match the initial project objectives (e.g. planting rubber trees received from different projects into existing agroforestry systems and fallows). This kind of phenomena has also been found by several previous studies; where the community uses the project, or shapes the project into something else, for their own purposes (e.g. Hildyard *et al.* 2001).

In other cases, households chose to not adopt an intervention. Although it might partly be due to having no access to information or to the unsuitability or undesirability of the intervention itself, non-participation can also be a rational, easier, or more beneficial strategy for the individual (Adams *et al.* 1997). For instance, even though most of the communities were either situated inside, or in the border of the national park, this intervention was rarely mentioned during the FGDs or household interviews (only after being directly asked and probed). The national park was either not perceived as being very important, or it was purposively avoided as a topic because it represented a restriction for land and forest access, which was often considered as being the community's traditional land. Seldom were interventions rejected by the local communities outright, oil palm being an exception in some sites as it was contested mainly because of the drastic, far-reaching effects on land-use, tenure and tradition.

Other reasons given for non-adoption were (based on the qualitative analyses):

- A lack of resources (i.e. not enough money to buy the agricultural inputs required for the maintenance of the improved seedlings provided);
- Not enough time for the management (some of the improved species required high maintenance, e.g. more intense weeding. This time was needed for other more urgent on-farm activities or off-farm jobs);
- A lack of adequate skills (e.g. terracing irrigated rice fields, or silvicultural management of the improved rubber or other tree species);
- Low productivity of the promoted species (unsuitable to local conditions, pests, and lack of management);
- Complex land tenure and user rights accompanied with scattered land-use practices (the government encouraged people to plant improved rubber in large stands, which did not fit local land-use practices and land rights);
- Lack of land (especially poor widows living alone);
- Being an outsider in the village (some projects or group leaders preferred to include mostly the indigenous people into their activities);
- Lack of capacity to report on and evaluate the projects (e.g. to receive more fertilizers for rubber, reporting on project performance was required, but fertilizer distribution was stopped due to poor reporting).

FIGURE 3 (a) Proportion of the households involved in agriculture and forestry-related intervention; (b) Proportion of households receiving agriculture and forestry-related information from government, NGO, or international organization within the last two years



### Access to information and lessons for REDD+

Access to information, either on opportunities for assistance or on technical know-how, to make use of the intervention is assumed to improve participation and thus a sense of ownership (Ostrom, 1998, 2010, 2012; Berkes and Folke, 2002). Yet, when the respondents were asked whether they received information related to agriculture or forestry within the last two years the figures were low; with only half in site 1, a quarter of respondents in site 2, and one tenth of respondents in site 3 (Figure 3b)<sup>5</sup>. The lack of information was also the most often cited constraint related to interventions (cited by approximately 50% of respondents at all sites). The access to information was influenced by: the type of information sharing activities of the different actors implementing the interventions; the characteristics of the key people in the village; unequal information sharing among the community (influenced by households' socio-economic characteristics), and the divide between sub-groups in the communities.

Several respondents, for example, cited during the interviews (qualitative analyses) that the information received from external interventions was often limited to the announcement of a project and seldom involved technical aspects. Information sharing was also cited by many respondents to be theoretical (included few visits to the field) and there was little or no follow-up occurring. For instance, one of the local farmers' group leaders (in site 3) described the situation when an extensionist had left the village after his one-time visit to provide the incentives as: "We felt like chicks left by the mother, so we all went our own way". The respondents also cited that in some cases information sharing took place in the district township, with very few people able to attend. Information sharing and project implementation was further

hindered by frequent changes in extension staff and organizational roles, and inadequate matching of the activities to the local realities (also found by Dermawan *et al.* 2011).

There was also confusion between the projects. For example, even though much of the assistance in Kapuas Hulu was implemented by other actors than the local government, and the proponents (e.g. national government agency in charge of land rehabilitation, national park agency, NGOs and private actors) made decisions dictated by the respective policies of their organizations, yet these programs required cooperation with government. This meant that often the very same district officer or local NGO staff accompanied and facilitated the external actors in the field for several different projects. One respondent described the confusion related to external interventions as follows: "Someone came, and asked about something, and then nothing".

Even when information about interventions was received, the community was not necessarily well informed. In Kapuas Hulu, as in most other remote rural areas in Indonesia, traditionally the government disseminates information (and development assistance) through the hierarchical structure of the government. The decentralization processes disturbed this order, with participatory processes becoming mandatory with development planning to be based on village meetings which, in theory, were open to all community members (although in practice involving mostly the elite) (Eilenberg 2015). Similarly, this study showed that most of the interventions approached the sample communities via formal hierarchical channels, by first meeting the relevant government officials, and then with a limited number of people in the village who had some kind of status (the community leaders and their closest entourage), which was then followed by incomplete interactions with the rest of the community. These leaders

<sup>5</sup> It could, however, be that when the respondents were asked about information related to agriculture and forestry, it was interpreted as information on any intervention, which according to several respondents in site 3 might have stopped at the village leader.

or contact points were usually men that the local authorities already had contact with, and were often the same people no matter what the project objective was. For example in village 3, the respondents claimed that the village leader was often approached by external actors, but no subsequent meetings were ever held with the rest of the community about the subject<sup>6</sup>. Evidence for this phenomenon was found both qualitatively (in all sites) and quantitatively (in site 1), whereby status was found to influence household access to agriculture and forestry-related information (see Table 4). Such findings are common, with many interventions implemented in local communities in developing countries being accused of interacting with only a select group of households (Cooke and Kothari 2001, Hoang *et al.* 2006, Pasgaard and Chea 2013, 2015).

It was also found that the personal characteristics of the key people (e.g. village leader, rubber group leader), and their ability to gain information and make realistic proposals and performance reports (e.g. the case of fertilizers for rubber) influenced the ability of the community to get government assistance. There was also some division between the role of the customary leaders and the leaders that were nominated as part of the formal Indonesian government structure (e.g. village leader), as also described elsewhere (Wadley and Eilenberg 2005). For example, the interview data showed that the customary leader in site 2 had a strong interest in enhancing the cultural heritage and ecotourism in the longhouse area, while the village leader was more interested in oil palm development. In site 3 an interesting finding was that some of the non-leaders were also developing their own proposals for interventions through their own personal or political links to the district officials. Some division was observed at this site between the village leader and other community members (some of whom had also been nominated as candidates for the position of village leader, but were not elected), a situation that could have influenced their self-initiative to develop their own proposals.

As people with status were usually the key contacts with external actors, they were in a position to act as gatekeepers or information brokers between the external actors and the rest of the community. This gave them a lot of decision-making power, for example, over the type of interventions that would reach the community, which runs the risk that they could advocate initiatives that not all community members agree with. For instance, in site 2 the village leader was often mentioned (including by himself) as being aware about, and having plans for, different village development activities (e.g. oil palm expansion in one of the customary land areas). However, most of the community was not aware of the exact plans, nor agreed with this idea. Similar findings were found by Mosse (2001) who reported that information can be used in various ways, including advantaging certain agendas within communities. This could also be the case with REDD+ as pointed out by Eilenberg (2015) who found that REDD+

was already being interpreted (and misinterpreted) in different ways across the different levels and actors (i.e. donors, NGOs, government actors at different levels, and village elites) in Kapuas Hulu, leading to positioning claims and conflicts over land. Brockhaus and Angelsen (2012), for the case of REDD+, pointed this out as being part of the 'politics of numbers' across multiple levels of governance, where facts and numbers get constantly selected, interpreted, and reinterpreted depending on particular interests. On the other hand, in this study it seemed that no projects, other than oil palm, had been completely rejected by the villages, thus the decision making on the type of the project had basically already been made at the district level.

At site 1, conflict caused by oil palm expansion was often cited to influence the information and resource exchange within the community (also described by Clerc 2012). Two sub-groups had been formed, the first group (pro oil palm expansion) consisted of people that lived in the longhouse, led by the longhouse leader and persuaded by the oil palm company. The second group (anti oil palm expansion) consisted of the people that had moved out from the longhouse, and was led by a strong traditional figure (higher level of customary leader) involved in many NGO driven environmental and conservation-related projects. Of course the divide was not so black and white, and some people were balancing between these two groups. This kind of divide in the community hampered the information and resource flow received from other kinds of interventions, and the decision-making processes in general. In this case, the sub-groups could also have been formed because of some old, more complex disputes or power struggle between the two groups, or between the people living inside the longhouse and outside the longhouse, while the oil palm expansion could be just the tip of the iceberg.

Furthermore, in site 2, it was found that the people with immediate family relations to the customary leader were less likely to receive agriculture or forestry-related information from the government compared to people with immediate family relations to the village leader (i.e. formal government position) (Table 4). However, the finding was most likely related to the location where the different leaders and their close relatives were living, rather than to their role in the community. The village leader and his immediate neighbours — who lived close to the main road and services — were easier targets to be visited by external actors, while some of the people living further away from the road, including the customary leader and his immediate family members, were sometimes left out from interventions. In fact, across all sites there was a division between those living in the longhouse and those not, and social unity and connectedness was also cited to decrease when people moved out of the longhouse.

Even though information from external actors was not distributed equally within the local communities, it is important to note that the Iban traditionally seek consensus in decision

<sup>6</sup> Even when meetings were held for the larger community, not everybody had access to them for several reasons explained in more detail previously in this paper.

TABLE 4 Comparison of the household characteristics between the respondents who received agriculture and forest-related information (from government, NGO, or international organisation), and the households who did not receive agriculture and forest-related information

| Received agriculture & forest-related information<br>Variable (yes/no) | Site 1            |            |       | Site 2      |             |       |
|--|-------------------|------------|-------|-------------|-------------|-------|
|  | Yes (%)           | No (%)     | p     | Yes (%)     | No (%)      | p     |
| Originated in the village (respondent)                                 | 52.4              | 84.0       | 0.047 | 58.3        | 85.7        | 0.046 |
| Lives in the longhouse (respondent)                                    | 4.8               | 20.0       | NS    | 58.3        | 51.4        | NS    |
| Had lived outside the village:   |                   |            |       |             |             |       |
| - respondent   | 76.2              | 80.0       | NS    | 66.7        | 52.9        | NS    |
| - household member   | 33.3              | 56.0       | NS    | 66.7        | 77.1        | NS    |
| - extended family member   | 33.3              | 8.0        | 0.037 | 58.3        | 51.4        | NS    |
| Lived outside in an urban area   |                   |            |       |             |             |       |
| - respondent   | 88.9              | 100        | NS    | 62.5        | 69.2        | NS    |
| - household member   | 20.0              | 33.3       | NS    | 66.7        | 67.6        | NS    |
| - extended family  | 21.1              | 0          | 0.029 | 40.0        | 28.1        | NS    |
| Formal or informal status  | 47.6              | 16.0       | 0.027 | 33.3        | 31.4        | NS    |
| - respondent   |                   |            |       |             |             |       |
| Joins in farmers' group (household)                                    | 9.5               | 0          | NS    | 0           | 0           | NS    |
| Males (respondent)   | 85.7              | 84.0       | NS    | 91.7        | 62.9        | NS    |
| HH attendance in higher education                                      | 23.8              | 24.0       | NS    | 58.3        | 40.0        | NS    |
| Immediate family with:   |                   |            |       |             |             |       |
| - Longhouse leader   | NR                | NR         | NS    | NR          | NR          | NR    |
| - Customary leader   | 38.1              | 28.0       | NS    | 25.0        | 64.7        | 0.023 |
| - Community leader   | 50.0              | 52.2       | NS    | 41.7        | 48.5        | NS    |
| - Hamlet leader  | 50.0              | 44.0       | NS    | 50.0        | 63.6        | NS    |
| - Village leader   | 65.0              | 76.0       | NS    | 45.5        | 45.7        | NS    |
| - Any other leader (*)   | 66.7              | 76.0       | NS    | NR          | NR          | NR    |
|  | <b>Mean ± std</b> |            |       |             |             |       |
| Age of respondent (years)  | 48.8 ± 13.7       | 43.5 ± 9.6 | NS    | 49.8 ± 15.8 | 49.1 ± 14.7 | NS    |
| The level of education of the household head (years)                   | 6.7 ± 5.2         | 6.1 ± 3.7  | NS    | 7.8 ± 4.3   | 5.7 ± 5.2   | NS    |
| Total value of household assets (millions of IDR)                      | 0.9 ± 0.9         | 1.2 ± 1.2  | NS    | 1.1 ± 1.3   | 0.7 ± 1.1   | NS    |

NS = not significant; NR = not relevant; HH = household

(\*) Higher-level customary leader in site 1

Note: Mann-Whitney U tests, T-tests, and Chi-square tests used

making (Freeman 1981, Wadley 1997). In fact, in a longhouse it is difficult to exclude anyone. If any outsider stayed overnight in the longhouse, most of the people would know about it. Similar findings were also found by Clerc (2012) in her oil palm-related case-study in the same area.

In addition to their formal or informal hierarchical status and living location, households were found to be more likely to have received agriculture or forestry-related information if: (1) the respondent did not originate in the village (sites 1 and 2); (2) a household's extended family member had lived outside the village in any kind of area (site 1); and (3) if they specifically had lived in an urban area (site 1) (Table 4).<sup>7</sup>

It could be that the people who originated in another place were more open to new things; bringing experience from their

previous area that encouraged them to join interventions (supported by the qualitative analyses; especially related to the use of fertilizers); or perhaps they had more connections to outsiders (such as the extension agent). However, several of the respondents that originated outside the village also reported that they were left out from some government activities. For example, the government-required rubber groups were cited in some cases to favour the local people over outsiders.

Out-migration exposed the migrants and their families to new information, resources, and new ideas, thus making them more interested in joining agricultural and forestry-related interventions. The lack of labour, or access to specific resources (such as fertilizers from the relatives in Malaysia)

<sup>7</sup> In site 3, this part of the analysis was not conducted because most of the households had not received agriculture or forestry-related information from an extension agent.

due to the migration could have also influenced the adoption of a specific land-use option (such as the ones promoted by interventions), but this aspect would require more research.

It might also be that information was given but not received. There was information related to the assistance given which might not have been heard, was forgotten, not understood, or not found relevant, and hence people claimed that it was not received. But unlike information, seedlings and other agricultural inputs or infrastructure were real, visible to the recipient and others, and of obvious use. A rubber seedling is to be planted and it is up to the recipient whether to plant it or not.

To sum up, and drive lessons for REDD+, it seems that for effective learning between intervention practitioners and diverse local communities, a solid understanding of household's socio-economic characteristics (i.e. origin, status, and migration patterns) and the divide between different sub-groups in the communities (i.e. origin, opinions, residential location, and relationships to specific people) would be required, as these factors were found to influence household access to information. Applied to the case of REDD+ (an emerging and debated intervention for the Kapuas Hulu area), such learning would require efforts towards ensuring that more effective and equal information sharing happens throughout the whole community using multiple networks and foci to ensure that information reaches the different sub-groups; a lesson also found globally (Sunderlin *et al.* 2014). Skilled, committed, and more long-term staff could enable this process.

In addition, migration patterns were found to influence household access to information, and its prevalence means that migration needs to be considered in the planning of any future interventions such as REDD+. For instance, if migration increased the access to information, then perhaps REDD+ projects could also have information sharing events in the main migration destinations. The REDD+ projects could also ensure that the households with no migrating relatives — and hence perhaps less links to specific information — also had adequate access to information. Furthermore, participation of representatives of households with migrating members — such as women household heads while the men are away — should be included in the activities.

However, as pointed out by Cooke and Kothari (2001), the numerous approaches for participatory actions do not necessarily allow interventions to overcome the local power relations and social structures that influence an individual's ability to participate in interventions or decision-making processes. It is also important to remember that more participation would not necessarily lead to better interventions (Mosse 2001). Therefore, since the village leaders (customary and statutory), traders and oil palm managers played a significant role in several sorts of information and resource exchange, then how could this information be used for the purpose of REDD+? What would be the best approach to ensure that the powerful would also be equal information and resource sharers?

An optimistic approach would be to think that once the key people in the network would be informed and targeted,

then the information and resources would automatically flow through them to the rest of the community. However, this is often not the case, as also confirmed by this study. The key people in these networks could also act as bottlenecks, rather than being the efficient and equitable information sharers desired. Information is power, and information may also be misinterpreted or purposefully not shared if they do not fit within the key people's priority or objectives. Understanding the incentives and accountability measures which could drive information to be shared by the key people, and to be demanded by the community could be an important leveller in the process. Again, adequate monitoring and evaluation of REDD+ implementation could play an important role in ensuring equal distribution of information and resources (See also de Sassi *et al.* 2014). Careful consideration would, however, be needed to understand the nature of how power circulates (Cooke and Kothari 2001), as new bottlenecks could always be formed.

## CONCLUSIONS

Understanding the way local people respond to the different interventions can provide several lessons for REDD+, especially since REDD+ implies transformations in multi-level governance whereby inclusive participation and effective and efficient information and resource sharing mechanisms play a significant role (Angelsen *et al.* 2012, Jagger *et al.* 2014; Korhonen-Kurki *et al.* 2012, Luttrell *et al.* 2012, UNFCCC Cancun Agreement Decision 1/CP.16). Hence, this section concludes by describing what a REDD+ project would need to take into account while designing or implementing their activities in Kapuas Hulu, Kalimantan, or in similar sites elsewhere.

### Investing in an understanding of local realities

Whether an intervention will be adopted, adapted or rejected by the local communities will depend on how the communities understand the intervention. Information provided does not necessarily lead to an informed community. For those intending to implement an intervention, this would — on the one hand — require an investment of substantive time and resources to engage with the people to gain a solid understanding of the local socio-cultural realities and how local people approach external interventions. Information flows can be easily misinterpreted, transformed and contested through local social, economic and political processes (Eilenberg 2015). On the other hand, it would therefore be essential to fully engage the community in planning from the beginning and to provide clear and transparent information to build local understanding and ownership in the project (as also found by de Sassi *et al.* 2014). The capacities of the involved institutions and individuals to make realistic proposals on reporting performance of their projects would also need to be improved in cases such as REDD+ where benefits are dependent on performance.

### Need for clear (economic) benefits and trade-offs

Most of the people chose to participate in external interventions when economic incentives and or trade-offs were clear and significant. For REDD+ or other payments for environmental services schemes to be adopted, they would then need to provide enough economic incentive for the participating communities (e.g. Angelsen *et al.* 2012, Pascual *et al.* 2013). While it is unlikely that REDD+ could realistically compete with the short-term economic benefits that come with oil palm plantations expanding throughout Kapuas Hulu, it might be still an important incentive despite the trade-offs with other potential land-uses. While being aware of trade-offs and short and long term gains and losses, REDD+ incentives could allow for an adaptation of the management of forests and fallows within the swidden landscapes and an integration of the REDD+ incentive within their suite of livelihood options, especially with the promise of a clear tenure system (see also Fripp and Shantiko 2014).

### Creating a transparent and open learning process

There is no blue print for the design of REDD+ interventions on the ground, so that smallholders managing a forested landscape — such as the many swidden communities in Kapuas Hulu or elsewhere — are compelled to adopt the project, or to adapt it within their fallow-forest management systems. However, at the very least, a committed and realistic approach that considers the local realities, is honest about the trade-offs between efficiency and equity, and that builds in a learning process would be needed for REDD+ to not be rejected by the local community.

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