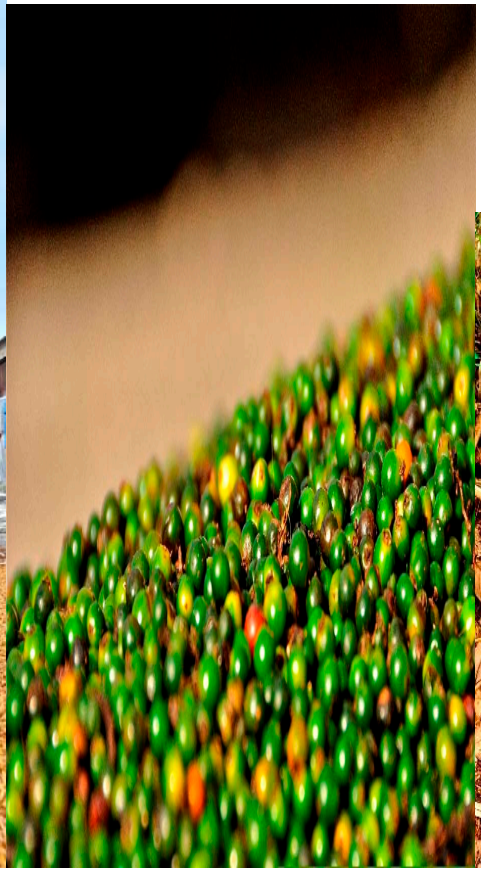
Beyond resistance: The current and potential livelihood strategies of Kampung Kujang Sain, Sarawak Malaysia.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Abstract

This paper investigates the current livelihood strategies in the village of Kujang Sain, Sarawak, Malaysia. Additionally it assesses the potential of livestock, ecotourism and commercial plantation schemes. Furthermore, it explores the history and dynamics of a localized resistance to participation in governmental large-scale plantation schemes. A range of interdisciplinary natural and social sciences methods, such as Participatory Rural Appraisal methods, questionnaire survey and soil sampling were employed in order to fully reach the research objectives. According to the research findings present livelihood strategies in Kujang Sain are based on natural resources, as agricultural activities play a crucial role in livelihood activities. These activities include shifting cultivation of uphill rice for subsistence, and cash cropping of rubber and pepper. It was established that livelihood diversification was important if the villagers aspire to minimize the vulnerabilities associated with their current livelihood strategies. In addition, the findings reveal that the resistance to large-scale plantation schemes was linked to the villagers' negative perception of these schemes in combination with an ongoing internal social conflict. Thus, the research concludes that households in Kujang Sain have the potential to diversify and develop. However, this is only plausible if the community addresses its most significant vulnerability, which is social cohesion.

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1. Introduction

1.1 Background

In the State of Sarawak on Malaysian-Borneo people living in small rural communities rely on agriculture as a main source of food and income. While shifting cultivation of uphill rice forms the main source of subsistence farming, other activities, such as pepper and rubber cultivation, generate the necessary cash income (Dove 1993).

However, for a number of years farmers have been under increasing pressure from the government and private companies to convert their land to large-scale commercial plantations (Padoch et al. 2007; Cooke 2002). Current agricultural trends in Malaysia show that the area under palm oil cultivation is unmistakeably increasing, with areas under rice, pepper and rubber cultivation remaining relatively stagnant (Figure 1).

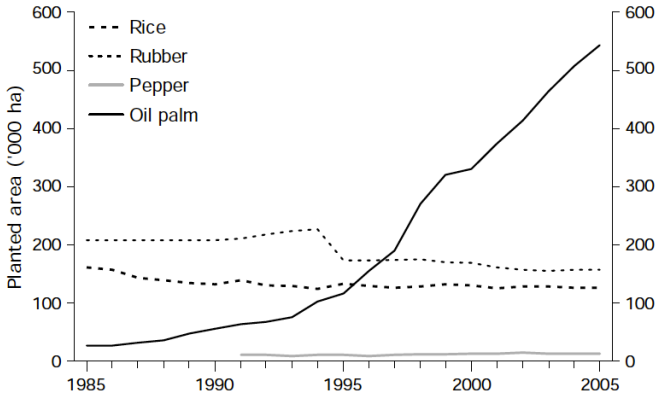


Figure 1. Planted hectares of crops. Sarawak. (Source: Abdullah, 2008)

However, in many rural villages in Sarawak pepper and rubber dominates as the main cash crops of many smallholders. The profitability of pepper depends on many factors, such as prices fluctuations and government pepper subsidy schemes (Wadley & Mertz 2005). As for rubber, the flexibility of management (in terms of timing of the crop) makes it very suitable in combination with the shifting cultivation of rice. However, its price fluctuations in the international market make the profitability of this crop unpredictable (Dove 1993). Despite an increasing diversification of livelihood activities among these farmers, shifting cultivation of uphill rice is still considered the main economic activity used by many rural households in Sarawak communities (Padoch *et al*. 2007).

The strong modernisation ideology behind the Federal Malaysian state's Vision 2020 (Barney 2004), has led the Sarawak State Government to push hard for economic growth though the means

of different agricultural and land development schemes. The target of these programmes has been the development of Native Customary Land (NCL) (Cooke 2002), which according to Ngidang (2002) is considered unproductive and "idle" by the political economic elite in Sarawak. The land development schemes intend to generate wealth and reduce poverty through the establishment of commercial plantations of, for example, oil palm and rubber on NCL. They thus propose a substitution of the traditional methods of land cultivation (Cooke 2002; Ngidang 2002). Many of the plantation schemes are run by government agencies or in joint ventures with private companies.

The Sarawak Land Consolidation and Rehabilitation Authority (SALCRA) and the Rubber Industry Smallholders' Development Authority (RISDA) are two examples of government agencies established to promote large-scale plantations of mainly oil palm and rubber. Under SALCRA schemes, farmers sign over their unregistered parcels of NCL to the government, who then establishes the commercial plantation. The farmers are then provided with jobs in the plantation. Furthermore, at the termination of the lease period the landowners are promised titles to their land (Ngidang 2002).

The official goal of the land development schemes is a means to reduce poverty and promote economic growth in rural communities. However, some communities experience problems when engaging in the development schemes (Cooke 2002). The rules and laws on this issue are ambiguous, and in many cases local landowners agree to participate without fully understanding the implications. Landowners are sometimes pressured into complying with a decision made by community leaders and local politicians (Ngidang 2002). In many cases communities are not willing to lease their land and abandon their traditional ways of living (Barney 2004; Cooke 2002). Reasons vary, but also include farmers' preference for producing their own food staples, their traditional preference for hill rice (Padoch *et al.* 2007), low wages in the plantations, insecurities from past rural development schemes, and land security issues (Cooke 2002). Some communities object to what they perceive as the extension of government control over their land (Doolittle 2007; Barney 2004).

In many ways, rural communities in Sarawak are therefore caught between the strong governmental push towards large-scale commercialisation of agriculture and economic development, and their traditional subsistence system.

1.2 Introduction to Kujang Sain

Kujang Sain is a small Bidayuh community in the state of Sarawak on Malaysian-Borneo and located South-east of Kuching city (Image 1). The village is located in a remote, mountainous area bordering Indonesia. The population of 450 people lives in approximately 83 households. While the villagers of Kujang Sain engage in the traditional shifting cultivation of uphill rice for subsistence,

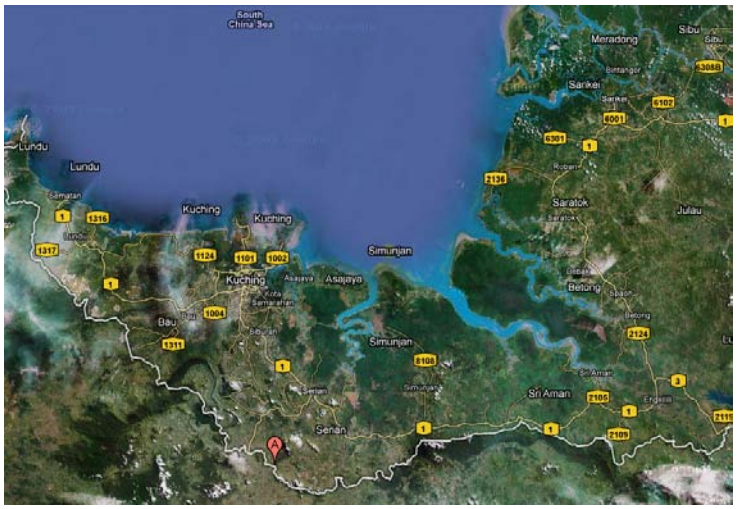


Image 1: Satellite image of southern Sarawak, Borneo. The red circle indicates approximate location of Kujang Sain. Source: Google Earth.

they gain their main income from the production of rubber and pepper. Other important activities include the collection of forest products and fishing.

Moreover, the villagers have apparently applied for RISDA rubber plantation schemes some years back, but the negotiations have failed. Additionally, the villagers have been approach by SALCRA, who wanted to establish an oil-palm plantation on their land however the negotiations also failed here due to resistance within the village.

1.3 Problem Statement

As Kujang Sain seems to be one of the communities who have so far resisted the push from state and federal government towards large-scale commercial agriculture, this report will investigate the reasons behind this and the dynamics for the villages resistance. Furthermore, an assessment of the current livelihood strategies adopted by the villagers will be made, as well as a discussion of their potential options for livelihood diversification strategies.

1.4 Hypothesis

In face of the government pressure for land development, it is important that the community of Kujang Sain diversifies its household livelihood strategies and reduces its present vulnerabilities.

1.5 Objectives

Therefore, the objective of this report is threefold:

A. To understand the history and dynamics of the resistance by the villagers of Kampung Kujang Sain to large-scale plantation schemes;

B. To assess the current livelihood strategies that the community members in Kampung Kujang Sain engage in;

C. To investigate and discuss alternative and potential livelihood diversification strategies that are possible for the community members.

1.4.1 Research Questions.

In order to meet the latter objectives and answer the overall problem statement, the following research questions have been developed:

1. What is the history of resistance in Kujang Sain?
2. What are the natural resources available in Kujang Sain?
3. What are the effects of the decision-making process in Kujang Sain?
4. What are the factors affecting access to resources in Kujang Sain?
5. What are the existing livelihood strategies of households in Kujang Sain?
6. How do the people of Kujang Sain perceive their future livelihood possibilities?

1.6 Report outline

Chapter 1 introduces the background and study area and contains the problem-statement, research objectives and research questions. Secondly, Chapter 2 describes and reflects on the limitations, applied methods, sampling strategy and the theoretical framework. The research results and discussion on the past, current livelihood strategies in Kujang Sain are demonstrated in Chapter 3, including a description on current farming system, the importance of natural resources, barriers and vulnerability in relation to livelihood activities. Furthermore, the history and dynamics of the resistance is discussed. The chapter also presents and discusses potential livelihood strategies. In Chapter 4 reflections on research findings are discussed. Lastly, Chapter 5 contains the conclusion from the field work based on the three objectives.

2. Methodology

A variety of social science and natural science methods combining qualitative and quantitative data were used to answer the research questions and reach the objectives of this study. Table 1 explains in detail the methods that were used (in chronological order), as well as the sampling method employed. Furthermore, the table illustrates how the data collected achieves different perspectives and enhances the overall validity of our findings.

Table 1. Employed social science and natural science methods in the field study.			
Method	**Type**	**Sampling/Selection Method**	**Triangulation** (main methods)
Community Walk	Qualitative	N/A	Community map, resource map, key informant interviews
Focus Group Session Community Mapping	Qualitative (PRA)	Gatekeeper approach (Announced in church)	Key informant interviews, community walk, resource map
Focus Group Session Community Timeline	Qualitative (PRA)	Gatekeeper approach (Announced in church)	Key informant interviews, household questionnaires
Focus Group Session Resource Mapping	Qualitative (PRA)	Selected participants from the community mapping session and timeline session	Community walk, community map, key informant interviews, questionnaires
Key informant Semi-structured interviews	Qualitative	Gatekeeper approach	Academic literature, direct observation, questionnaires
Household Questionnaire	Quantitative	Stratified-systematic, from community map	Key informant interviews, community map, resource map, seasonal calendar, community walk
Soil Sampling	Quantitative and qualitative	Convenience sampling	Resource map, community map, forest assessment, key-informant interviews
Water sampling	Quantitative and qualitative	Purposive sampling (upstream, downstream)	Resource map, key-informant interviews
Forest Assessment	Quantitative and qualitative	Random sampling	Resource map, key-informant interviews
Focus Group Seasonal Calendar	Qualitative (PRA)	Purposive Sampling (Participants in questionnaires)	Questionnaires, key-informant interviews, direct observation, resource map
Focus Group – Youth (Girls and Boys)	Qualitative (PRA)	Purposive Sampling	Direct observation, questionnaires, key-informant interviews
Direct Observation (ongoing)	Qualitative	N/A	All methods

Due to circumstances on the ground the actual methods used in the field have been changed and adapted from the original synopsis. Instead of doing five in-depth household interviews we chose to do two focus group sessions and a key informant interview with a young girl. The data obtained through these activities helped inform the objective about future livelihood strategies in Kujang Sain, and the aspirations of the youth. The seasonality of the agricultural activities was investigated through the focus group PRA session on the seasonal calendar.

In addition to these methods observation, previous documentation and literature, and exchange of information with other groups were used. To address each objective fully, at least two methods were combined in order to triangulate the validity of the data obtained, as seen in Table 1.

2.1 Limitations

Limitations and constrains were inevitably faced when applying the different methods in the field. These limitations were due to three main factors: social dynamics, communication and time.

From our general field observations all group members had the impression that there was a social divide within the community. Families related to the headman's family, living in one of the two

longhouses, seemed to hold key positions of power, and were, in general, more affluent than other community members.

Since we were hosted by the Headman's sister, we were most likely associated with the headman's extended family. In other parts of the community, for example, some of the families living in the other longhouse and in some of the separate houses around the two longhouses seem to be excluded from the main power structures in the village. This situation put us in a difficult position in relation to obtaining information, especially regarding sensitive issues like village decision-making process and land security issues. Furthermore, this social division put limitations on the success of our PRA sessions, as only members of the Headman's extended family were willing to participate. For example, during the community timeline session one member of the headman's family told us not to go to the other longhouse to seek more participants because they were "at war with them".

As for communication, two interpreters translated for the group. Although helpful, this was their first time interpreting. Additionally, it was the first time most of the team members had worked with interpreters. This inevitable influenced some of the interviews.

One of the interpreters, Ivong, was a local farmer and the vice-chairman of the village council, Jawasan Kuasa Kemajuan dan Keselamatan Kampung (JKKK). Although this was often an advantage due to his knowledge of the village, it also put some restrains on some of the PRA sessions and interviews as he was often eager to answer the questions himself. In many situations his role in the study changed from interpreter to key informant.

The fieldwork lasted only 10 days, therefore time was another main constrains in the field. All the methods were selected and adapted in consideration to time.

2.2 Social science methods

The social science methods used in this study include the use of different Participatory Rural Appraisal (PRA) methods, informal interviews, key informant/semi-structured interviews and questionnaires.

2.2.1 PRA methods

The PRA methods used in the study are adapted from Mikkelsen's (2005) *Methods for Development Work and Research*. PRA methods were carried out in order to involve different stakeholders in the research and to gain a common understanding of different aspects of the village, such as the village resources and history. As researchers, we acted as facilitators to each PRA session. Besides the information gained from each session, the PRA methods also helped us understand some of the underlying social dynamics and power structures in the village. The PRA sessions carried out are listed in Table 2.

Table 2. PRA sessions listed in chronological order.

PRA Method		Location	Facilitators	Participants	Time Length	Learning Outcomes
1	Community Map	Community Hall	2	1 Woman 4 Men	4 hours	Overview of the community structure and households
2	Community Timeline	Longhouse Veranda	2	10 Women 2 Men	2 hours	Understanding of the events that have influenced the development of Kujang Sain
3	Natural Resource Map	Longhouse Veranda	2	5 Men	2.5 hours	Overview of the locations of the crops, the boundaries of the village and the soil types.
4	Focus Group Sessions - Youth	Longhouse Veranda	2	4 Girls 4 Boys	2 hours (total)	Understanding of youth's perspectives on life in the village and the future
5	Seasonal Calendar	Longhouse Veranda	2	2 Women 2 Men	2 hours	Overview of labour distribution and prioritization of time for rubber, pepper and rice

2.2.2 Community Mapping and Village Timeline Sessions

These sessions were carried out simultaneously on the second day of the fieldwork. The objectives of the sessions were to gain a general impression of the community as a whole, and use the information as starting point for the rest of the research. Furthermore, we wanted to investigate important events related to the village resistance towards large-scale plantation schemes.

In both sessions we encountered difficulties in conducting them. In the community mapping session (Image 2), the Headman wanted to make a very accurate map of the village and took charge of the session. He brought a previously drawn map of the village and began to transfer it onto the large paper. Therefore, discussion and participation of the others was very limited due to his position of power. When the Headman moved to the timeline session, the other participants began to take part and contribute to the discussion.

Image 2: Community mapping session

In the timeline session participants were told to mark the significant historical events in the village. The headman and our interpreter, Ivong, joined in the middle of the session. This appeared to cause most of the women to leave. The majority of the participants represented an elderly age group. However, there were younger villagers present as well, but they contributed little. Therefore, the information collected was somewhat limited. Nonetheless, more information on historical events was gained later on through informal conversation with villagers.

Although both sessions were scheduled for the community hall, the female participants refused to enter the building. Therefore, we re-located the timeline session to the longhouse veranda. This may be the reason for why more women participated in the timeline session than in the community mapping session. Although the location of all the PRA session may have posed a barrier to some villagers and potential participants, it was highly noticeable in the case of the community map and the timeline.

2.2.3 Community Resource Map

The resource map mapping session was conducted in the evening of the same day of the community mapping and timeline session. The objective of this session was to get an overview of the resources in the village, their location and importance to the villagers.

Reflecting on the difficulties encountered during the afternoon sessions, we tried to explain the Headman that accuracy in the map was not so important as group discussion and participation. As a result the session turned out a lot better. Also, we located this session outside the longhouse in order not to limit participation of any community member. As a result, participation in the resource map was well distributed amongst participants and a lot of useful information was gained.

2.2.4 Focus Group Discussions with Youth

These sessions were held in order to get young people's view on life in the village, as well as their aspirations for the future. Reflecting on the difficulties encountered in other activities with mixed-gender participation, it was decided to split the session into two group discussions, males and females. The same questions were however used in order to be able to compare results. A female team member facilitated the girl's group discussion, and a male team member facilitated the boys group to make the participants feel comfortable. This was done based on an observation that many of the young people were very shy and it was difficult to get the conversation started.

2.2.5 Seasonal Map

This session (Image 3) was carried out on the last day of fieldwork to gain information about the seasonality of farming activities. All the participants grew the three main crops: rice, rubber, and pepper. The participants were asked to indicate the activities they carried out in relation to these crops over the course of a year, and to indicate labour distribution through ranking the busiest times of year and which gender was involved in the activity.

Image 3: Seasonal calendar mapping session

Using the experiences and knowledge gained through the fieldwork we decided to facilitate it differently from the first sessions. First of all, we invited the participants ourselves and chose villagers that we had made good relationships with during the week. Secondly, we tried to make sure that all participants

were involved and felt comfortable in the discussion. Consequently, the PRA session worked much better than the others. All participants contributed and discussed the information before putting it into the calendar, even the women.

2.2.6 Interviews

Interviews were carried out every day during the fieldwork. Eleven semi-structured interviews and multiple informal interviews were conducted in order to inform most of the research questions. Some interviews were carried out in English, while others were done with interpretation.

From the first day we discovered that informal interviews were a really good way to gather information, especially information about sensitive issues as land security and decision making processes. Many of the informal interviews were conducted by one of our Malaysian partners, who spoke Bidayuh, and therefore had easier access to the relevant information. He also had the advantage of knowing all the local customs. As mentioned above, our interpreter Ivong became one of our main key informants and provided us with much valuable information through informal interviews during the whole fieldwork.

Semi-structured interview and some of the key-informants was chosen by convenience and opportunity. Overall the semi-structured interviews contribute to the triangulation of data especially from the household questionnaire and the PRA sessions. Table 3 list the semi-structured interviews with key informants carried out during the field study.

Table 3. Key informant interviews conducted during the field study.

Key informant	Role	Location	Justification	Learning Outcomes
Chakam ak Mawi	Headman	Kujang Sain	To gain a overview of the village	- Power structures, decision making process - Resistance to SALCRA - Land tenure
Ivong Igong	Interpreter	Kujang Sain	To gain an overview of the village. To get information about the cultivation of the different crops.	- Cultivation of rice, rubber and pepper - Aquaculture ponds - General overview about Kujang Sain - Power structures decision making process.
Mr. Bai Udin Anak Dungak	Sarawak Administrative Officer - Tebedu	Tebedu	To understand the structures, processes and institutions at a national, state, district and village level	- Government policies on rural development - Education levels - Future changes in village decision making processes and changes in relation to appointment of Headman - Kujang Sain prefers rubber over oil palm due to topography

Mr Robert Malong	Lawyer and General Manager, SEBAYOR Holdings	Tebedu	To understand the legal structure that governs native customary land rights	- Native court system with disputes - How SALCRA works - Land rights - Headman can settle land rights, but not grant titles
Mr. Rizc	Primary 3-6 teacher	Kujang Sain	To get an overview of the school system and education levels	- Primary education in the village - Education level in the village low - All the young children goes to school - No problem with attendance
Mr Apai	Sub-district Agricultural Officer	Tebedu	To understand the governmental services offered to farmers	- Good agricultural practice - Pest and diseases for the different crops - Process of application for subsidies o Not granted every year
	Shopkeeper	Kujang Sain	To understand alternative livelihood strategies and the products that the community members buy	- Some indications of diversification of livelihood for the HH involved in shop keeping - Products available in the village
Kesi	Youth out of school	Kujang Sain	To obtain a youth's perspective on the village	- Wishes and hopes for the future. - Potential livelihoods strategies. - Future perspectives.
	Trader	Kujang Sain	To understand the inflow and outflow of goods to the village	- In- and outflows of the village - Reliance on protein from outside

2.2.7 Questionnaires

A total of 31 questionnaires were conducted in the village (see Appendix 1 for the questionnaire guide). The structure and content of the questionnaire was adjusted in the field in order to accommodate the new information we gained from the initial interviews and PRA methods. Two pilot questionnaires were carried out in order to test the questionnaire format and modifications were made. Due to the language barrier and the literacy levels in the village, we facilitated all the household questionnaires in teams of two or three.

The questionnaire took longer than expected to administer. Even after modifying the questionnaire, it turned out to contain open-ended and ambiguous questions, which were difficult to answer by the respondents. Therefore, explanations were often needed during the facilitation of the questionnaire and, in many cases, it was similar to a semi-structured interview. Despite these limitations, the information gained from it was more useful than expected.

Again, the separation of the village was evident during the questionnaires. Some of the selected houses from the "other side" of the village were often not willing to participate for reasons stated in Section 2.1.

2.3 Natural science methods

Natural science methods were used in order to obtain qualitative and quantitative data necessary for the assessment of the natural resources: water, forests, soil and land.

2.3.1 Water analysis

Water samples were taken from the two rivers surrounding the village at both upstream (before the village) and downstream points (after the village). The water analysis was carried out to assess the effect of the village on water quality.

2.3.2 Soil analysis

Soil samples were taken from a hill rice field, a pepper field, a rubber plantation and a secondary forest close to the village in order to compare the effects of the different crops and management on soil quality. Four composite samples were taken at each site by use of a small shovel at 0-10 cm and 10-20cm depths.

A Soil Management Assessment Framework (SMAF) was used in the soil analysis. This framework uses various visual, physical, biological and chemical indicators to evaluate the soil quality. The framework was adapted to the conditions in the field once we arrived.

2.3.3. Forest assessment

The forest assessment was done in order to assess the species diversity of the forest and to link it to the role that NTFPs (non-timber forest products) play in the communities' livelihood.

The forest is located at 128m altitude above sea level (Latitude N 00 56.779, 110 26 698). A 20m by 20m sample plot (figure 2) was established and sub divided in 10m x 10m sub plots (see figure below). In each plot species name, diameter at breast height and use was recorded. The GPS coordinates were recorded and placed as below. The gradient was +30.

N 00 55 958 E 110 26 379 140m elevation Plot 2	N 00 53 977 E 110 26 372 139 elevation Plot 1
Plot 3 N 00 55 958 E 110 28 369 129m elevation	Plot 4 N 00 55 569 E 00 26 219 130m elevation

Figure 2: Sketch of forest assessment plot.

2.4 The Sustainable Livelihoods Framework

The analysis and discussion of our findings is based on the Sustainable Livelihood Framework (SLF). The SLF cannot be used as a model of reality, but it provides a checklist of important aspects to consider when investigating livelihoods. Figure 3 illustrates DFID's interpretation of the SLF:

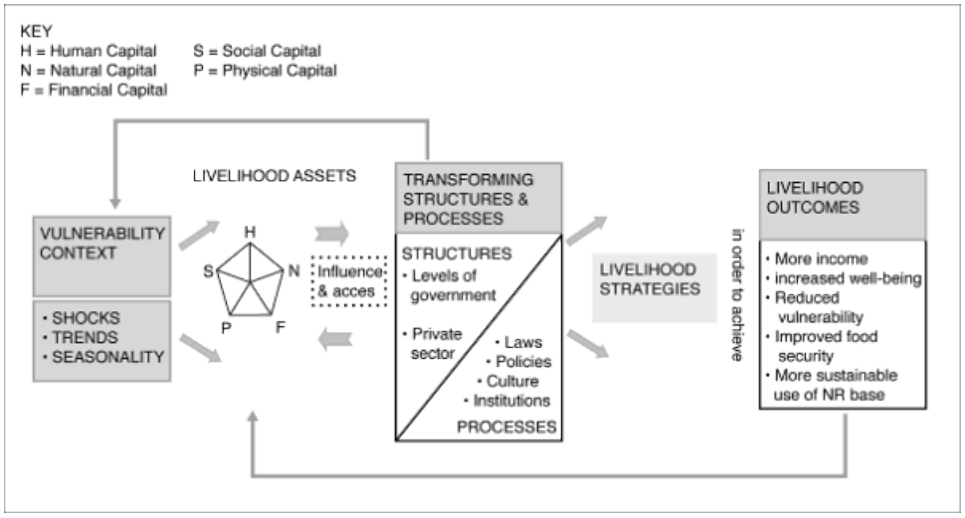


Figure 3: The Sustainable livelihoods framework (DFID 1999).

In this report, we focus on the livelihood assets for households in Kujang Sain. The livelihood assets comprise of five different capitals available on an individual, household or community level and they shape the context from which different strategies can be pursued (figure 3). We furthermore discuss some of the barriers encountered in the village in relation to the lack of assets, as well as the vulnerability context that influences the villagers current and potential livelihood strategies. The term *Livelihood* refers to:

> "…the assets (natural, physical, human, financial and social capital), the activities and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household" (Ellis 2000: 10).

A livelihood is sustainable if it can cope with stresses and shocks and recover in a way that maintains or enhances its assets and capabilities (Chambers & Conway 1992). In many cases households pursue a range of activities to obtain a sustainable living. Ellis (2000) defines rural livelihood diversification as:

> "…as the process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and to improve their standard of living" (p. 15)

The discussion of potential livelihood diversification opportunities will be based on this definition.

3. Livelihood strategies – Results and discussion

In the following section we will analyse and discuss the data collected during the field work in Kujang Sain. In order best to answer our overall objectives the analysis and discussion will be divided into sections on past, present and future livelihood strategies. Furthermore, we will present and discuss the history and dynamics of the village resistance to large-scale plantations, as well as some of the barriers and vulnerabilities facing the people in Kujang Sain.

3.1 Kujang Sain: From past to present

In order to understand the present it is important to look to the past for indicators of change. Since its inception in 1951, Kampung Kujang Sain has seen as series of developments and changes. In terms of agricultural changes, the timeline session participants highlighted the introduction of government subsidized fertilisers and pesticides in the 1960s and 1970s. This enabled the villagers to increase production of cash-crops, namely pepper and was pointed out by the participants as a driver of positive change within the agricultural crop-production (see Community Timeline, figure 4).

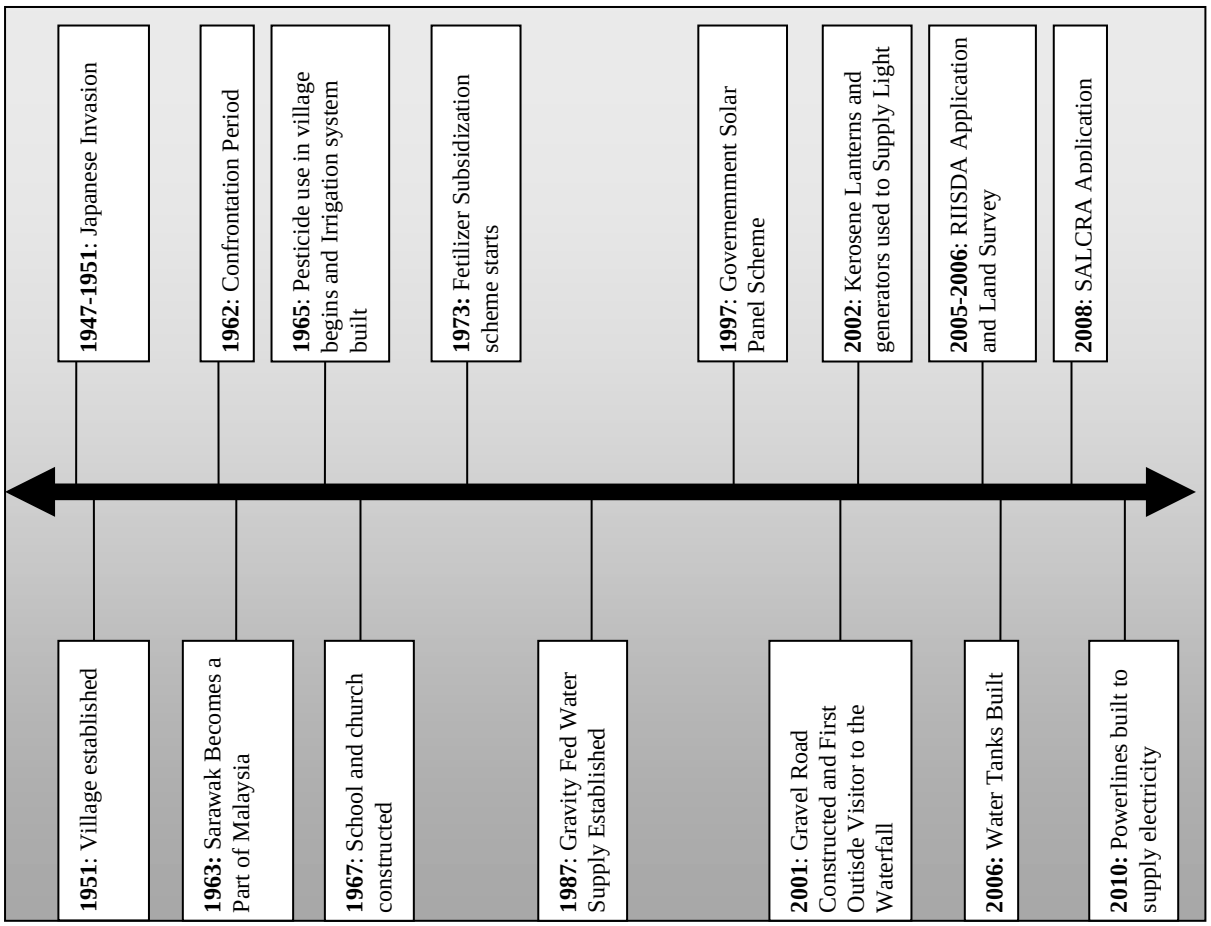


Figure 4: Kujang Sain community timeline, adapted from the Kujang Sain community timeline mapping session.

Other significant events in the last ten years have been mainly infrastructural such as electrical power line and water supply. Prior to the construction of the gravel road 2001 a jungle pathway provided the only access way to the village. Many of the participants indicated this to be a driver of changes in the village, as their lives improved in terms of transportation of goods and market access.

3.1.1 History of the Resistance

One of the underlying drivers for past, present and future change in Kujang Sain seems to be a resistance and on-going internal dispute in relation government plantation schemes targeting the community's NCL.

As mentioned in the introduction the Malaysian state of Sarawak has been trying to promote economic growth and reduce poverty through the establishment of commercial plantations on Native Customary land (NCL) and substitute the traditional ways of land cultivation (Cooke 2002; Ngidang 2002).

The community of Kujang Sain has, however, been reluctant to engage with these rural development schemes. According to the participants in the community timeline session, the village applied for a RISDA rubber estate in 2005-2006. Apparently, private surveyors contracted by the Sarawak Land and Survey Agency surveyed the targeted land for rubber plantation and subdivided it into to smaller plots. However, the plans have been stalled. According to one informal conversation on the first day of the field study with our interpreter Ivong, the scheme was not approved by the Ministry for Rural Development. However later on, contrasting information was obtained both from Ivong and from other sources, stating that some villagers did not want to go through with the rubber plantation, because of land rights issues and especially the fear that the government might take away the land.

In 2008 the oil-plantation agency SALCRA approached Kujang Sain by sending a representative to promote oil palm plantation to the community. According to Mr Malong SALCRA is generally looking for large tracts of land over 10,000 acres, and thus try to get villages to group their land together so that large coherent tracks of land can be obtained (pers.comm. Malong, R., 01.03.2011). Despite the reluctance of the majority of the community members, the Headman thought oil palm plantation was a good idea for the development of the village. Such a major land decision should however be unanimous and his opinion did not hold. He stated that he in theory could proceed without everybody's approval but this would cause tension in the village (headman). At the moment no large-scale plantation is under way in Kujang Sain. The dynamics of the resistance will be further discussed in Section 3.3.

3.1.2 Changes in livelihood strategies

To narrow the focus of this study, only the past ten years will be analysed in more detail. Therefore, questionnaire respondents were asked to rank past and present livelihood activities in order of importance. Figure 5 show the results of the rankings:

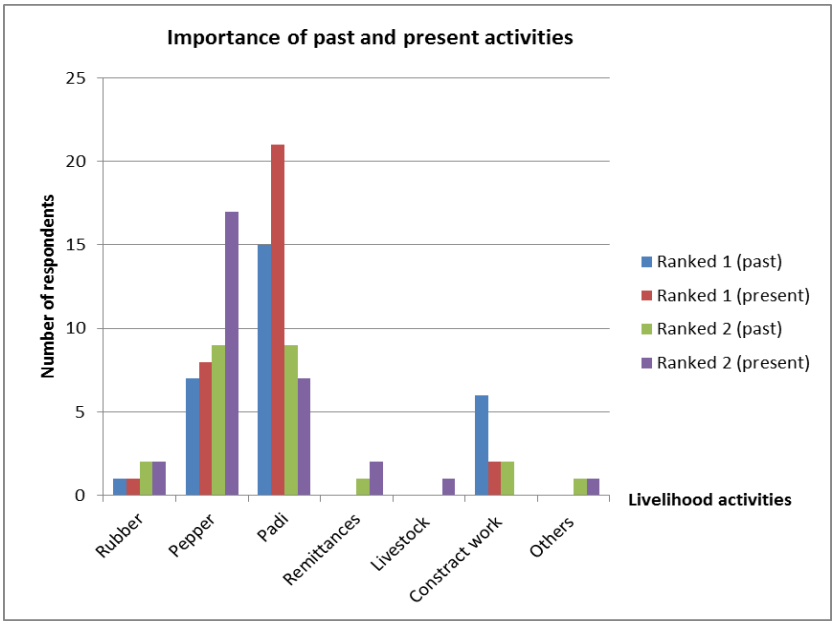


Figure 5. Importance of livelihood activities today and 10 years ago. (From questionnaire survey)

Looking at figure 5, it seems that there has not been much change in the livelihood activities over the past ten years. Ten years ago rice was the most important livelihood activity, followed by pepper and contract work. Today, the main livelihood activity is still rice cultivation, followed by pepper cultivation. The reason why little change can be observed might be due to the importance of rice as a primary source of food, which will be elaborated and discussed in Section 3.2.1.

The importance of off-farm contract work has decreased and rubber replaces it as the third most important activity. The main reason given by the younger respondents for this change was that the off-farm activities enabled them to save money in order to later be able to return to Kujang Sain and settle down. Younger families also found themselves engaged in off-farm labour (contract work) 10 years ago because they had small children, who were not able to help the family cultivate the main crops. This trend is still present within the village, as supported by the group of young males in our focus group session.

More respondents ranked pepper as the second most important activity now, than 10 years ago, and indicated that the reason for the change, was the increasing pepper prices during this period. This links up with an overall trend in Sarawak, where an increase in prices of pepper has resulted in increase in production (Wadley & Mertz: 2005).

3.2 Current livelihood strategies

The results from the questionnaire, interviews and PRA sessions show that the livelihood strategies in Kujang Sain are based on agriculture and therefore mainly dependent in natural resources. All survey respondents engage in rice cultivation, while 87% engage in pepper production and 48% engage in rubber production.

Rice is the staple of the diet and main subsistence crop for Southeast Asia, and it holds serious importance, not only for food, but also spiritually and socially (Padoch et al. 2007). This also holds true for Kujang Sain. Due to the increase in international prices for pepper during the last years, and the availability of subsidies for pepper gardens (Wadley & Mertz 2005), this crop has become the main source of income for the peoples of Kujang Sain.

Rubber is also a cash-crop, though less cultivated than pepper, although rubber prices reached historical heights in January 2011 (Index Mundi 2011). The reasons for this could be that many trees were cut down some years ago, when rubber prices were very low. Fears from the farmers to new prices drops could be a limiting factor when deciding whether or not to plant rubber trees, due to the time gap of 5-10 years between planting and tapping of rubber.

Some of the villagers are engaged in other activities as contract work, livestock or fish ponds, but in most of the cases they combine these activities with the cultivation of rice and in some cases with pepper and rubber.

3.2.1 Description of farming system

The farming system use by the people of Kujang Sain could be defined as shifting cultivation combined with pepper and rubber trees gardens. Normally plots in this system are left fallow for 4 to 8 years after cultivation. After this time, the fallow is cut down and burned, and rice is sowed. Sometimes rubber or pepper is planted at the same time as rice and they grow together for the first year. After the rice have been harvested, rubber or pepper keep growing alone in the plots for the next years while rice is cultivated in a new plot. In some cases rubber or pepper are planted just after the rice have been harvested. Another variation to the system is the incorporation of corn or cassava in the second year after the rice cultivation and before the establishment of pepper or rubber trees in the same plot.

The figure 6 shows the seasonal calendar for the cultivation of the three major crops cultivated by the villagers. The information presented in the table was collected from the seasonal calendar PRA session, and from the informal interviews with farmers.

Rubber		Pepper		Padi	
6th Year - Onwards	1st year	3rd year – Onwards	1st – 2nd year		
Rubber tapping♀/♂	Apply fertilizer ♂			Flowering	Jan.
Rubber tapping ♀/♂	Apply fertilizer ♂			Ripening	Feb.
Rubber tapping ♀/♂	Apply fertilizer ♂		Plant pepper (same plot as rice) ♀/♂	Harvesting, processing and celebration ♀/♂	Mar.
Rubber tapping ♀/♂	Apply fertilizer ♂	Pepper ripens			Apr.
Rubber tapping ♀/♂	Apply fertilizer ♂	Harvesting, processing, selling ♀/♂			May
Rubber tapping ♀/♂	Apply fertilizer ♂	Spray pesticide/ herbicide ♀/♂	Spray pesticide/ herbicide ♀/♂	Grass and trees cleared ♀/♂	June
Rubber tapping ♀/♂	Apply fertilizer ♂	Spray pesticide/ herbicide ♀/♂	Spray pesticide/ herbicide ♀/♂	Grass and trees cleared. Residues dry on the ground ♀/♂	July
Rubber tapping ♀/♂	Apply fertilizer ♂	Fertilizer and spray pesticide/ herbicide ♀/♂	Fertilizer and spray pesticide/ herbicide ♀/♂	Burn and clear plot ♀/♂	Aug.
Rubber tapping ♀/♂	Plant seedlings, applying fertilizer ♂	Spray pepper flower, apply fertilizer ♀/♂	Spray pepper flower, apply fertilizer ♀/♂	Construction of wood house in the field, use as storage. Clearing and planting ♀/♂	Sept.
Rubber tapping ♀/♂	Cutting grass, applying fertilizer ♂	Spray pepper flower with herbicide, spray grass with herbicide, apply fertilizer ♀/♂	Spray pepper flower with herbicide, spray grass with herbicide, apply fertilizer ♀/♂	Weeding and herbicide application ♀/♂	Oct.
Rubber tapping ♀/♂	Apply fertilizer ♂	Apply fertilizer ♀/♂	Apply fertilizer ♀/♂		Nov.
Rubber tapping ♀/♂	Apply fertilizer ♂			Weeding ♀/♂	Dec.

Figure 6. Seasonal calendar of rice (padi), pepper and rubber. Red = No. 1 ranked busiest month(s), Green = No. 2 ranked busiest month, Blue = No. 3 busiest ranked month(s).

From the data collected in the seasonal calendar, one factor was the most prominent in influencing the farmer's rationale in determining their activities; the cultivation of rice shapes the other agricultural activities that households engage in. For example, due to its timely nature, the whole family engages in rice sowing and harvesting, leaving little spare labour to be allocated towards other activities, especially cash crops. As seen in the seasonal calendar session the busiest times of year for pepper and rubber cultivation does not overlap those of rice cultivation. This makes this combination of crops very interesting as enables families to grow different crops simultaneously.

Timing of the different activities in the crops varies depending on weather conditions. For example, rain could postpone the burning period and consequently the whole cycle, or can influence the rice harvesting time. Weather conditions are very important in the rubber tapping since it is not possible in rainy days. If not rainy, the taping of the rubber tree can be done daily, early in the morning, and all year round.

The shifting cultivation of a plot helps the nutrient regeneration of the soil, and provides natural fertilizers to the crops, which contribute to maintain high yields (Bruun 2006). The use of commercial fertilizers makes possible the intensification of the agriculture, but their use depends on the subsidies provided by the government. As shifting cultivation allows the farmers to maintain high yields because of the fallow system, and adult rubber gardens do not need fertilisation, the fertilizers are prioritized for the pepper gardens, where yields according to the farmers are more dependent.

Padoch *et al.* (2007) argues that this kind of farming system is environmentally sustainable, because secondary vegetation following shifting cultivation has a diversity of species comparable to more mature forest. Furthermore, the ecology of rubber gardens integrates well in the Bornean systems (Dove 1993). There is also a mutual buffer effect between price fluctuations in pepper and rubber, and shifting cultivation of rice among the farmers (Cramb 1993), which support the flexibility and economic sustainability of this farming system.

3.2.2 The importance of natural resources

Image 4: Catching snails and crabs in the Ruben River.

The greatest strength of this community lies in its natural resources. Thus, the abundant forest, rivers and good agricultural soil strongly influence the livelihood strategies in Kujang Sain. The following paragraph will discuss these natural capitals.

Water:

The two rivers, River Ruben and River Sain, flowing through Kujang Sain are primarily used for domestic purposes according to questionnaire respondents. Irrigation of padi rice was the second most important, even though only done once a year.

Ranked third was “other uses” collection of snails and crabs (Image 4). There was little difference between the water quality test results at upstream and downstream locations (see Appendix 2 for results of water analysis). However, a high *E.Coli* count[1] was found at both downstream sampling points (Point 2 & 4), as well as a small upstream pool (Point 1), which served as a bathing area.

Although shallow, all the rivers have high water velocity, which quickly flushes everything downstream.

Box 1. Room for improvement

The high e-coli levels found at Points 1, 2 & 4 can be attributed human and animal waste products entering the river. Pigsties with bamboo floors are built close to rivers (pictured below) and streams allowing untreated solid and liquid waste to enter directly into waterways. The same applies for human waste. Current household septic systems are unsatisfactory causing some human waste to enter directly into the water.

Forest:

The forest type surrounding the community is tropical rainforest with three stories to a maximum of 60m (Image 5). There are some mature forests surrounded by secondary forest under fallow and some patches under cultivation. A fairly thick canopy indicated by strong shade and sparse undergrowth on the forest floor. Sixty-eight species were identified from the forest-resource assessment, indicating biodiversity richness. Furthermore, the use of the forest plants was determined.

Image 5: Primary forest in Kujang Sain

According to the forest assessment and informal interviews the forest is important for the households as a source of food, firewood, construction and materials for mat-making or basket making. There are three species of bamboo and

[1] According to USEPA

various fern species, which are used as a source of vegetables and are the most frequently harvested products. See Appendix 3 for more details. To indicate the role of the NTFP in Kujang Sain figure 7 indicates how bamboos are used in the processing of rice and pepper.

The forest products are available all year round and according to questionnaire respondents collection is on daily, weekly and monthly basis depending on the use. Furthermore they are not very far from the village within 1km walking distance.

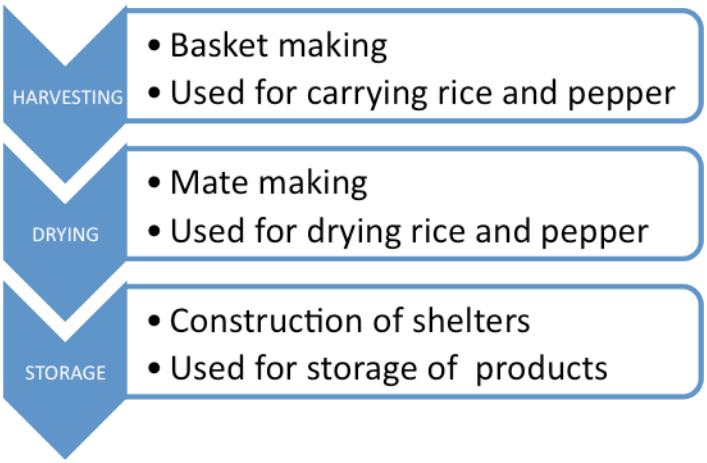


Figure 7. Use of bamboo in rice and pepper processing

Soil:

Soil types in the village could be divided into two categories according to the community resource map. In general the soils furthest away, near and on the mountain, were described as fertile, black soils. The soils surrounding the Kampung were described as yellowish-red soils with lower relative fertility, although still very suitable to the cultivation of the three main crops.

Image 6: Composite soil samples

The soils tested in Kujang Sain were acrisols (Image 7) (FAO, 2000) generally comprising between 20-30% of clay. Although testing occurred on slopes between 21.5 and 28.5˚ very little or no erosion was found, indicating good soil stability, even when exposed. Although land use affects the soil (Appendix 4), there were no stark differences between sites regardless of previous land use history.

Overall soil quality is attributed to a variety of physical, biological and chemical factors. Factors such as total carbon content, nitrogen, C:N ratio, and fertilizer/pesticide/herbicide were considered. Despite chemical weathering and leaching due to heavy rainfall (Webster *et al.* 1998), as well as long-term land use (mostly shifting cultivation), and a limited cation-exchange capacity (FAO 2000) these soils were assessed

through the Soil Management Assessment Framework as productive agricultural soils.

However, one thing that stands out: the soil pH tested is at the lowest possible range for rice, rubber and pepper cultivation[2] (Table 3). More will be discussed on how potential future land use changes could affect the soil quality in Section 4.

Table 3. Soil pH content				
Sampling site	0-10cm	10-20cm	pH range	Optimal pH range
Rice	4,53	4,59	4,5-8	6-7
Rubber	4,4	4,64	4-8	5-6
Pepper	4,42	4,63	4-7.5	5.5-6.5
Pepper fertilizer point	4,51	4,41	See above	See above
Forest	4,4	4,89	N/A	N/A

Table 3. The table presents the result of the analysis of soil quality in the four selected fields (Suseela et al., 2010; Webster et al., 1998).

Land

Information about the land resources in Kujang Sain was obtained through the resource mapping session. Figure 8 show the result of the session. Most of the land in the hills surrounding the village is dominated by shifting cultivation of uphill rice with scattered fields of rubber and pepper. The participants pointed out that location of individual fields was related to topography, soil and history of cultivation.

The distribution of fields in the surrounding hills contains the accessibility of some pieces of land and poses a problem for some farmers in terms of time allocation between transportation and actual farming. It was indicated that the walking distance to some of the fields amounted to more than two hours, thus reducing the hours possibly put into farming activities.

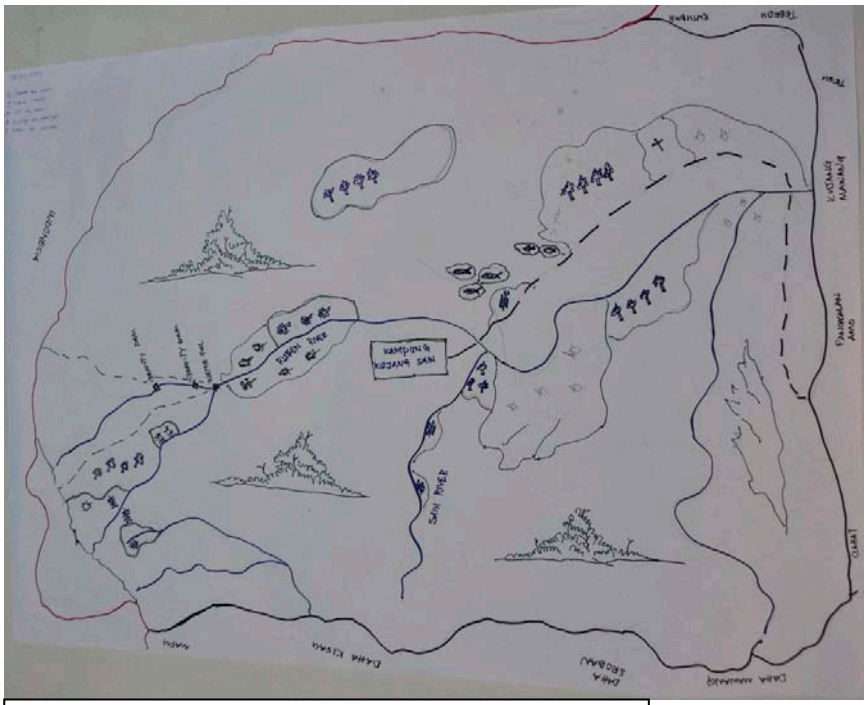


Figure 8. Community resource map, from PRA session.

Furthermore, according to the data collected each family has at least one piece of land for cultivation, and there were no indication of land scarcity within the village. It was however difficult

[2] However, sampling took place at the end of rice season, thus pH may be lower than at the beginning of the season (pers.comm., Brunn, T.B., 27 March 2011).

to determine the size of household landholdings, as many survey respondents did not know the exact sizes of their plots. However, the questionnaire data showed that large differences in sizes of landholdings exist within the community.

Land rights

The livelihood of the people in Kujang Sain is tied around the use of the land since they are mainly dependent on natural resources.

From the resource mapping session, it became evident that the villagers have a very clear idea of the boundaries of the village land and the location of their various resources. Most of this land is Native Customary Land (NCL), while some of the land is Pulau Galau, which means land reserved communal use. None of the survey respondents had land titles.

Land rights through NCR were established in the *Sarawak Land Code* in 1958, which gave native populations in Sarawak usufruct to their land, while the state government retained the formal ownership (Bulan 2006; Ngidang 2005). NCR are based on traditional custom, which implies that villagers generally gain access to land through inheritance or through the headman, who is the custodian of the village land with the authority to demarcate boundaries between land plots. Today, state government, the native court system and the headman interact in the management of NCR land, as illustrated in the venn diagram in figure 9.

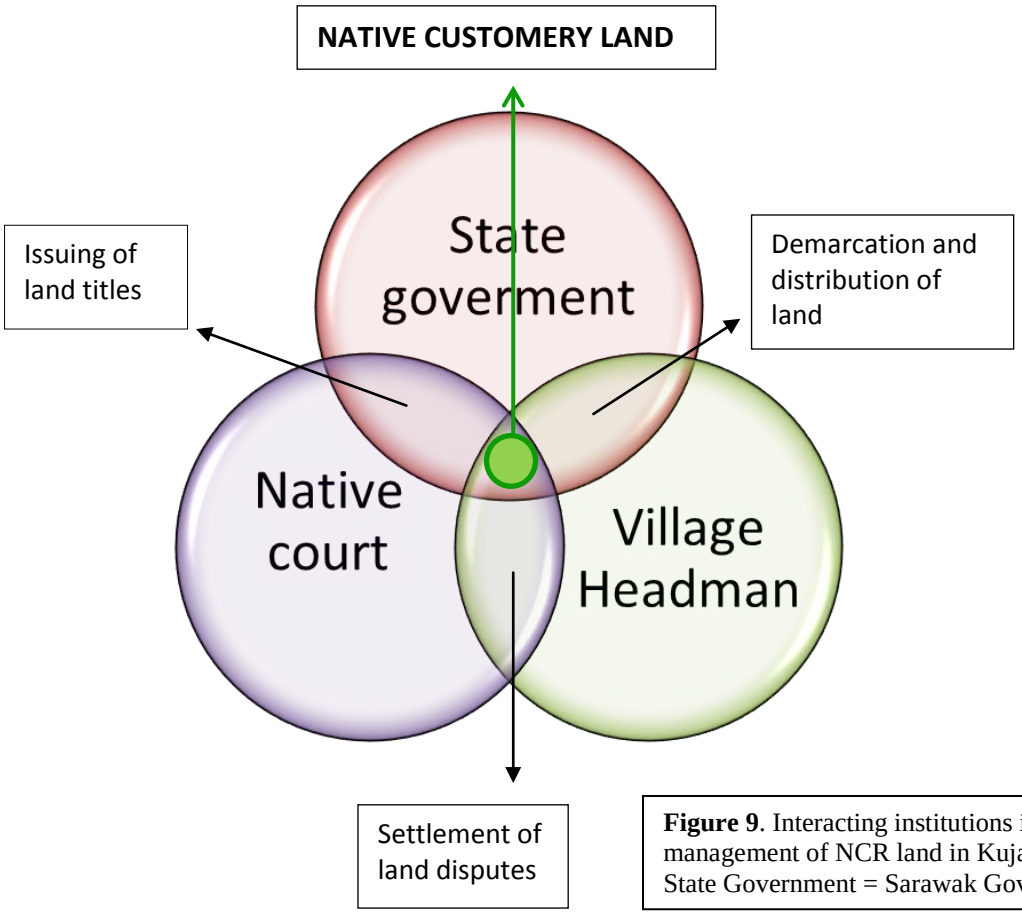


Figure 9. Interacting institutions in the management of NCR land in Kujang Sain. State Government = Sarawak Government.

In Kujang Sain, 61% of the survey respondents felt secure about their land, see figure 10. The reasons indicated included that their ancestors were the first to clear the land, that they had inherited the land or that their land is currently under cultivation or planted with rubber trees. These justifications are exactly some of the factors used to determine NCR land rights in the *Sarawak Land Code 1958* (Bulan 2006).

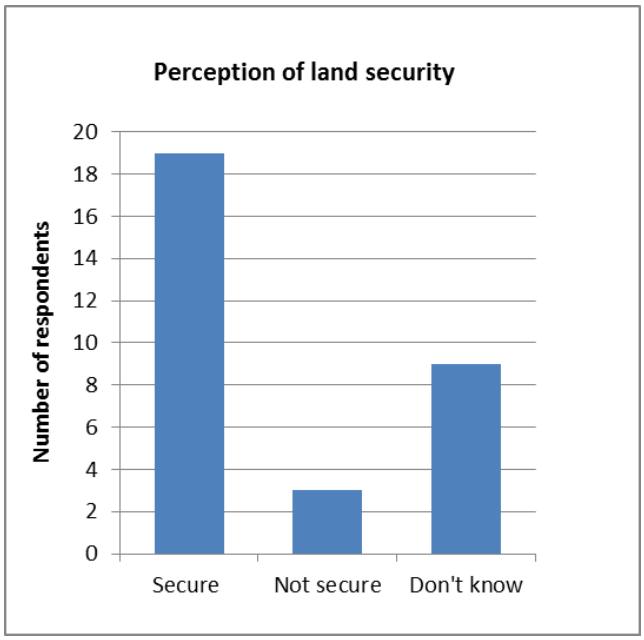


Figure 10. Perception of land security by number of respondents. (From questionnaire survey).

However, up to 40% of the respondents felt insecure or did not know how they felt about land security. When asked why, the answers reflected the insecurity connected to lack of titles and a fear of the government seizing their land. Some respondents seemed to be uncomfortable with the question, which might indicate the difficulty and sensitivity connected to this subject. Furthermore, there might have been issues regarding the translation and understanding of the question, as some respondents indicated that the question was confusing. The insecurities regarding NCR land are further discussed in Section 3.2.4.

3.2.3 Barriers to livelihood activities

Besides the importance of the natural resources, a variety of other capitals also contribute to the livelihood strategies of the villagers in Kujang Sain. A detailed assessment of the physical, social, human and financial capital is outside the scope of this report, however figure 11 display the main available assets that influence the livelihood strategies in Kujang Sain. In the following section we will discuss some of the barriers and vulnerabilities associated with the presence or lack of these other capitals.

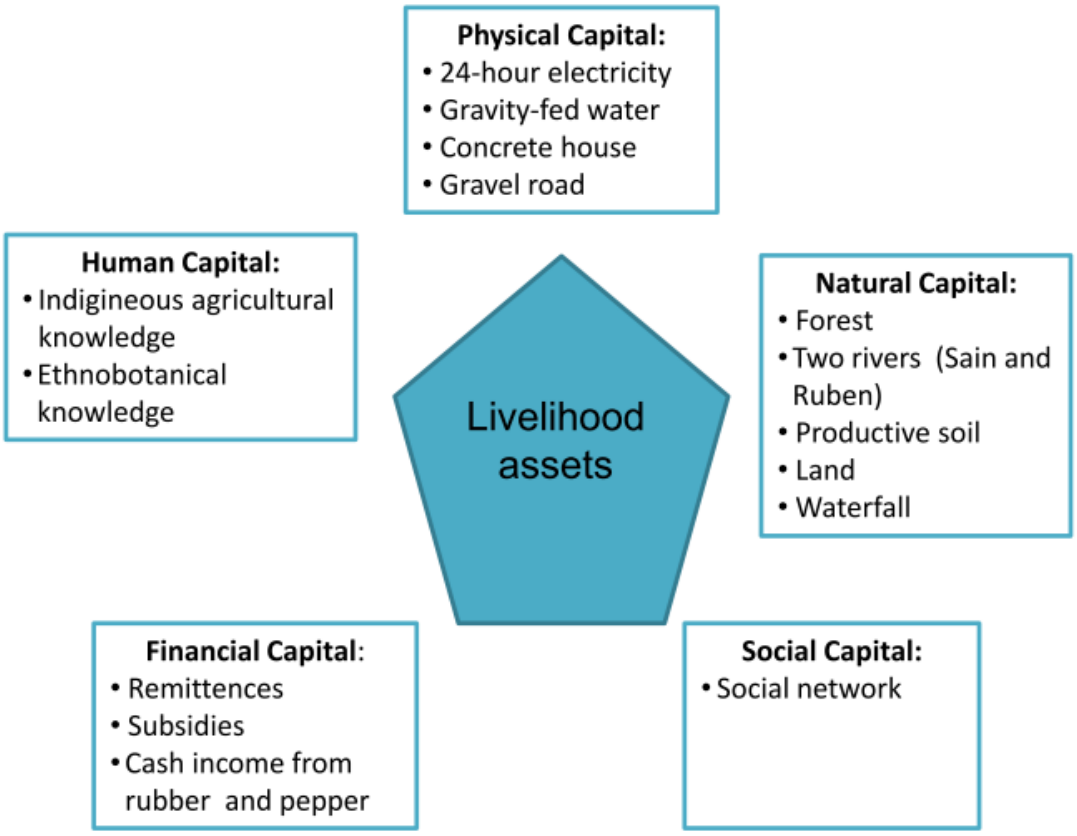


Figure 11. Livelihood assets available in Kujang Sain. From general observation, interviews and questionnaire.

Physical:

In order to understand some of the infrastructural barriers to livelihood strategies in the village, questionnaire respondents were asked to rank the services they thought were in urgent need of improvement. The general result was, in order of priority, the road, water treatment, telecommunications, and waste management. This result indicated that for the people of this village the road was the most important of the physical infrastructure. According to informal interviews the villagers involved in aquaculture were looking forward to the completion of the road construction as it was going to enable them to sell their fish in the Serian and Tebedu the nearest towns to the village. "Communities without road access continued to rely on hill padi cultivation to ensure their subsistence needs" (Windle & Cramb 1997). Therefore lack of a tarred road is a limiting factor to livelihood diversification.

Rural roads represent the link between the urban centers and the rural areas (Windle & Cramb 1997). According to Mr. Bai, SAO-Tebedu, a Class 3 road will be constructed leading to the village (approximately 5km). This government-funded project was planned to start in March 2011, but currently, the only visible preparations is the reconstruction of the bridges. A tarred road might improve the market access and employment opportunities for the villagers. According to Windle &

Cramb (1997) "access to a large urban centre provided a market for both food and labour, which gave households more opportunities of earning cash income".

Social:

Since many of the agricultural activities (eg: harvesting, processing, planting) are dependent on many helping hands, social cohesion and social networks are very important within the village. Social capital, in this sense, is important for rural households, as it can act as an informal security net in case of illness or death in the household (DFID 1999). We observed that there is good cohesion within related family, where members of extended family helped each other with i.e. the cultivation of rice. However, this does not extend to the community as a whole. As presented in the methodology chapter it became evident that the community was divided by an on-going dispute that created barriers to cooperation in various aspects.

We encountered, what Olivier de Sardan (1999) terms a *back to back society*, where internal conflict restricts community collaboration and networking. Furthermore, as short-stay visitors and "guests" of one of the conflict-parties we had difficulties in investigating the issue thoroughly. Firstly, villagers might be reluctant to discuss openly the sources of a conflict that involves the people of power in the village. Secondly, if underlying social conflicts are discussed too openly they risk becoming more substantial and may damage the social relations that need to be revived between parties in the future (Oliver de Sardan, 1999).

From observation throughout the field study, it became apparent that many positions of power were held by the one extended family: the headman, many members of the village council, the catechist, the school bus driver and the school security guard all belonged to the same family. This might indicate that closeness to the village leadership is important in order to gain access to the few income diversification opportunities within the village.

According to Lasimbang (2000) the traditional methods of selecting the village leadership has been changed and become a system of government appointment. Though her findings are based on a case-study in Sabah, the trend seems to be transferable to the present situation in Kujang Sain. According to the SAO the sub-district has the final say regarding appointments of headmen. New headmen will be chosen based on personal merits and that they most importantly must be "development oriented" (pers.comm., Dunak, B., 1 Mar, 2011). The current headman in Kujang Sain inherited his position and has held it for the past 35 years (pers. comm., Chakam ak Mawi, 28 Feb, 2011).

The village decision-making structure is concentrated in the JKKK (or Village Security and Development Committee) (see Appendix 5 for JKKK organizational chart). The headman acts as the head of the JKKK, a position he has to be renewed by the district office every 4 years.

Community affairs are first discussed within the JKKK. Then before making the final decision a public meeting is held. Generally, 50% of community must agree for any major decision to be taken. However, a unanimous decision is required for matters concerning land in order to limit conflict within the community (pers.comm. Chakam ak Mawi, 3 Mar., 2011). As the chair of the JKKK, however, the headman could proceed with a project if he thought it beneficial to the community.

However when asked about perceived involvement in decision making many of the people in the household survey indicated that they did not feel "highly involved", see figure 12. The majority indicated some level of involvement in the decision-making, but when asked "How?" the most common answer was "I just sit and listen".

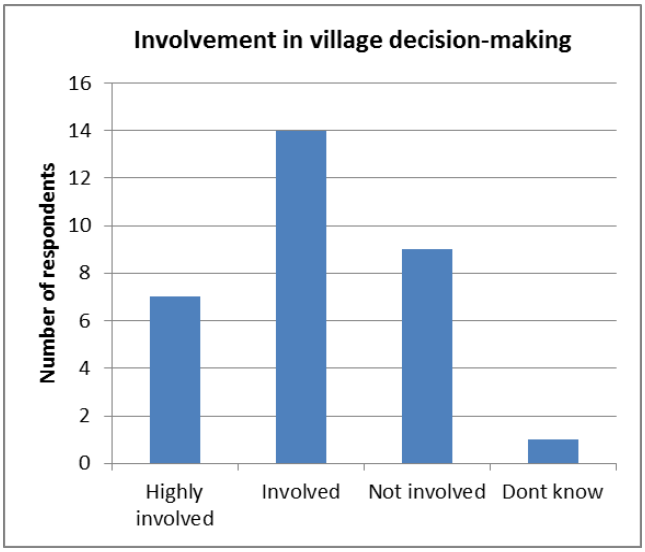


Figure 12: Level of involved in decision-making processes perceived by questionnaire respondents (From questionnaire survey).

Furthermore, some respondents noted that they just follow the decisions made, and that in the end the JKKK and the Headman takes the decision anyways. Fifty-seven per cent of those who feel highly involved are members of the committee.

Castro & Nielsen (2003) stresses the importance of participation in decision-making processes, especially regarding natural resource management. Lack of participation in decision-making is often a major source of conflict (Castro & Nielsen 2003). This stresses the fact that consensus at village level on decisions that effects villager's livelihoods is needed. In Kujang Sain the source of the conflict may be related to land, this will be further discussed in Section 3.3.

Human and financial:

Although a census was not completed general observation seemed to indicate a lack of working-aged (or middle aged) community members. The population in the village comprised mainly of

young, primary school aged children and the elderly. This trend is common for most rural areas in Sarawak. According to Windle & Cramb (1997) throughout rural areas in Sarawak, farming is the dominant activity but, increasingly, young people are seeking employment in urban areas. If this trend continues rural areas will have no labour to invest in farming activities. The clearest impact on agriculture is linked to the effects that non-farm work has on labour availability in the household and, more widely, in the village (Jonathan Rigg, 1998).

Therefore with the current demography, labour may in the near future become a limiting factor to the sustainability of current livelihood strategies which are mainly agriculture based. Furthermore, the current farming activities are reliant on the transfer of indigenous technological knowledge from generation to generation, which might be lost if the youth seeks employment outside the community.

The farmers in Kujang Sain do not have access to agricultural loans and are therefore highly dependent on government subsidies. This was exemplified in the questionnaire, as 81% said that governmental district programs could positively develop Kujang Sain and 66% of these famers think positively of this program due to subsidised fertilizer and pesticides. Increases in agriculture production were significantly assisted by subsidies from the Department of Agriculture (Windle & Cramb 1997). Although these subsidies have greatly increased the potential yields of farmers, a possible dilemma may result in the future if allocation of subsidies is greatly reduced. The vulnerability linked to allocation of subsidies will be discussed in more detail in the next section.

3.2.4 Vulnerability context

Reliance on agricultural activities as main livelihood activities increases the susceptibility of the villagers of Kujang Sain to vulnerabilities caused by external influences. The following discussion focuses on three prominent aspects that influence the vulnerability of households in the village. These are namely dependence on subsidies, market fluctuation and security of land tenure.

Application of fertilizers has allowed farmers to greatly reduce the fallow length in plots under shifting cultivation. Subsidies are applied for at the household level; however, the amount of subsidies available at the sub-district level is dependent on federal government allocation.

According to farmers the present pepper yields are almost impossible to reach without the use of subsidised fertilizers, herbicides and pesticides. Although there has been an increase in fertilizers subsidies for pepper in the last years, a decrease in their allocation would ultimately cause a decrease in farmer's yields, and subsequently a reduction in their main income source.

According to the District Agricultural Officer (DAO) in Tebedu there has been a trend towards the reduction of rice fertiliser subsidies in the past couple of years due to the allocation of fertilizers to pre-existing and newly formed agricultural boards, such as the cacao board and rubber board (figure

13). If this trend continues causing a reduction in fertilizers for subsistence rice cultivation farmers could be forced to increase fallow length in the shifting cultivation system and cultivate plots further away from the village in order to guarantee food security. This reduction in subsidies would, most likely, hit the poorest villagers the hardest (Firdausy 1997).

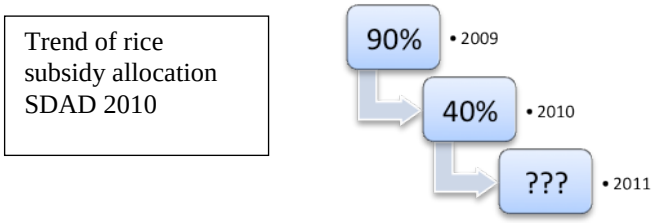


Figure 13. Trend in rice subsidy allocation in the past 3 years. (Pers.comm., Tebedu Sub-District Agricultural Officer, 01.03.2011).

Market price fluctuations are the second main aspect making the livelihood strategies of villagers in Kujang Sain vulnerable. Cash-crops are the main source of income for many of the households; however these are subject to price fluctuation which reduces household resilience to shocks when prices fall. As price takers, these rural farmers often cultivate cash crops in line with market trends (i.e. when rubber prices are high they tap more rubber). According to farmers, a fall in rubber prices during the years 1998 and 2002 influenced many farmers to cut down their rubber trees and plant pepper (See figure 14). However, shortly after rubber prices began to rise again to their present level (RM 10/kg), and famers began planting again. Also, the time lag between planting of rubber trees and to tapping can begin makes the farmers vulnerable, as prices might drop before they can reap the benefit of these new rubber gardens. The increase in farmer production is inversely related to price movement (Dove 1993), which makes farmers vulnerable to price fluctuations.

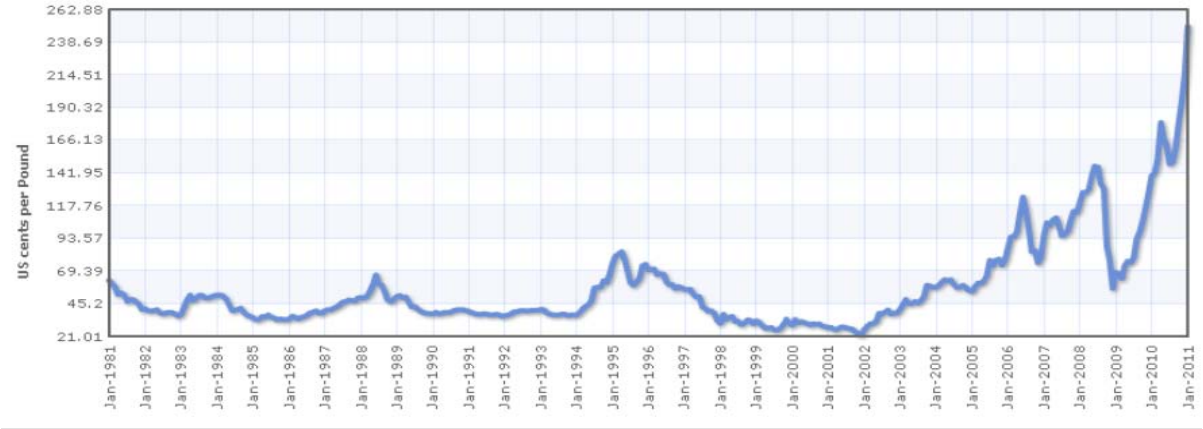


Figure 14. Trend in rubber prices since 1981. US cents per pound (Source: Index Mundi 2011).

The last point of vulnerability we are going to discuss here is related to the insecurity of land tenure. With the present lack of formal land rights, the community of Kujang Sain is faced with uncertainty

with regards to land security. The informality of the usufruct rights, as presented by Bulan (2006) and Ngidang (2005), makes rural communities vulnerable because the state can decide to claim their land for development projects. Especially, since the state government is currently targeting NCL for agricultural development schemes, because the shifting cultivation system with large tracks of uncultivated fallow land is perceived to be unproductive (Ngidang 2002). The sustainability of this subsistence practice, which forms the backbone of the livelihood strategies of the villagers in Kujang Sain and other rural communities, depends on these secondary forest areas.

The push for economic development and commercialisation of agriculture by the Federal Malaysian Government and the Sarawak State Government in, for example, the Vision 2020 Development Plan might make the livelihood strategies of the villagers in Kujang Sain vulnerable, should the government decide to develop the area.

3.3 Dynamics of the resistance

As presented in Section 3.1.1 no large-scale plantation schemes has been developed in Kujang Sain, despite the approach by SALCRA and the villagers' application to RISDA. Several authors point out that the push for large-scale plantation development by the Malaysian government has been opposed by local communities throughout Sarawak, who view the development schemes as a way for the government to extend its control over land and resources (Cooke 2002; Barney 2004; Doolittle 2007, for Sabah). Furthermore, plantation resistance has often been portrayed as a united community protest assisted by local and international networks of activists and NGO's (Barney 2004).

In order to investigate the dynamics relating to the resistance to large-scale plantations in Kujang Sain, survey respondents were asked about their perception of different development agencies. Results show, that a general opposition to the plantations schemes exists among the surveyed villagers. In relation to SALCRA, 81% of the respondent respondents felt that SALCRA could not positively develop their community, while only 3% thought it would have a positive influence to village development. Several respondents answered that no one wants to work in oil-palm plantations, because the wages are too low and the work is too hard. Some respondents also stated that they did not have land to put into an oil palm scheme and one respondent expressed fear of price-drops on oil palm products in the future if the market becomes oversupplied. In the community timeline session it also became apparent that some villagers did not want to give up their NCL, in fear of government seizing their land.

Survey respondents were more positive towards rubber plantations, with 29% of respondents indicating a positive perception of RISDA as opposed to 45% stating a negative attitude towards the agency. This more positive attitude could be due to the fact that the farmers are familiar with rubber production, and know that it is a viable crop for the area. Furthermore, according to the participants

in the community timeline session and to our interpreter Ivong, it was the villagers themselves who approached RISDA in 2005. The main reason given by positive respondents was that prices are high at the moment and that it is a less labour intensive crop than oil palm. However, answers by negative respondents resembled the ones for oil palm and mentioned the lack of land to enter into the scheme, as well as the low wages in the plantations.

During several informal interviews with farmers, it was also mentioned that rubber was favoured in the area because both men and women can work in rubber plantations, while oil palm harvesting is a man's job, see box 2. Another concern and reason for the opposition, is according informal interviews and questionnaire data, that the soil quality could be negatively affected by the large-scale plantations, especially oil palm, for example if the area should be terraced.

As mentioned in Section 3.1.1 the RISDA rubber plantation fell through due to problems regarding internal cooperation in the village concerning the project. Besides feeling insecure about the future of their land security if entering the rubber scheme, one informant also pointed towards problems with the distribution of the first rate of dividend from the Headman to the rest of the community. Apparently, some villagers felt cheated and thus pulled out their land from the rubber scheme causing the project to stall. Another informal informant pointed out, that this problem concerning the rubber plantation schemes was one of the main reasons behind the on-going community dispute and the source of the conflict between the longhouses. This information has however not been verified elsewhere.

The refusal of most of the community towards SALCRA plantations in 2008 could possibly therefore be linked to this problem regarding the rubber plantation money, and the general dispute in the village. Based on our research the resistance seemed to a very sensitive issue closely related to an on-going community conflict and disagreement.

Therefore, based on the findings regarding this community conflict, the resistance towards the governments' plantation schemes seems to be a result of internal disagreement, more than actual collective opposition towards state control over resources.

Box 2.
Pictures illustrating the difference in harvest practice between rubber and oil palm fruits.

Rubber tapping

Source: http://amscoextra.blogspot.com-/2010/05/king-leopolds-ghost.html

Oil palm Harvesting

Source: http://mypalmoil.wordpress.com/ category/uncategorized/page/2/

In the following section, we are going to discuss some potential diversification strategies for the villagers in Kujang Sain.

3.4 Potential livelihood strategies

As seen in the previous sections the villagers in Kujang Sain engage in a range of livelihood activities and different households within the village pursue different diversification strategies. However, due to the relatively high dependence on three main crops the villagers are vulnerable to changing circumstances as discussed in Section 3.2.4 and coupled with the changing development context facing the rural societies in Malaysia as discussed in the introduction, further diversification of activities and strategies might help the villagers to become more resilient to changes in circumstances.

In order to investigate the desired future livelihood activities of the villagers in Kujang Sain, we asked people to rank their preferred livelihood activities for the next 10 years in the questionnaire. Figure 15 shows the result of the ranking exercise:

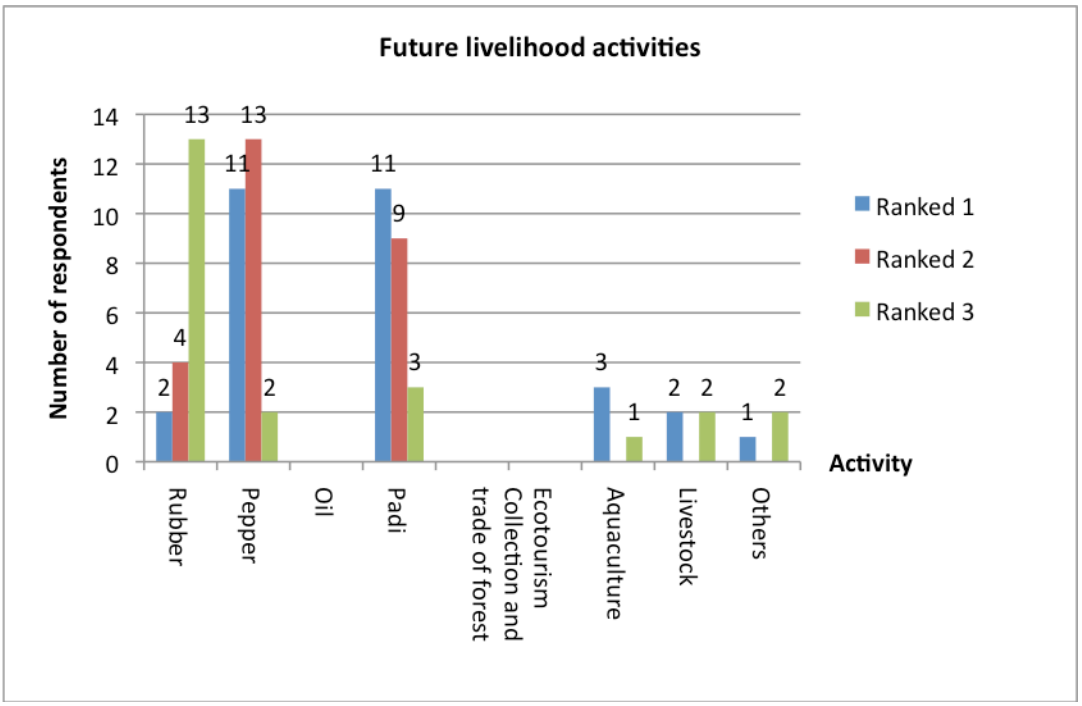


Figure 15. Desired future livelihood activities, by questionnaire respondents. (From questionnaire survey).

As can be seen from this figure, the majority of the respondents prioritise rice (padi) and pepper as their primary activity in the next 10 years. Furthermore, the majority of the respondents ranking padi or pepper as first priority, ranked the respective other as second. The results show that the villagers are quite conservative in relation to household livelihood activities and that they have few aspirations that are not linked to activities they are familiar with. This trend also apply to the households who are ranking livestock as a future livelihood activity – both of them are already engaged in production of livestock and has ranked the activity as the third most important current activity. The households who see a future in aquaculture have not indicated any engagement with

the activity at the moment, though we know from triangulation with other information from formal and informal interviews that two of the households in question already engage in aquaculture. This shows that some household within the community is already trying to expand their sources of future income and livelihood strategy.

It is interesting to note, that none of the respondents in the 31 households prioritised oil palm cultivation or eco-tourism as main livelihood activity. Of these two activities only oil-palm has been pointed out to us by the Headman in the preliminary study as potential activities for the village in the future, but these results give a clear indication that the idea might be confined to certain "power-people" in the village. These results could however be biased by the limited number of respondents in our survey. Another bias could be related to age since a relatively large group of respondents were elderly people, and several respondents did not see any point in the question due to old age. They preferred to leave the decisions about the future to their children or the younger community members. This prompted us to carry out a focused group discussion with youths to get their views on this issue as discussed below.

3.4.1 Youth's views on potential livelihoods strategies

The two focus group discussions and one semi-structured interview with village youth provide information about their view on potential livelihoods strategies. This age-group is interesting because they are the future of the community, and because most of them work or study outside village but all wanted to go back to the village.

The female youth were in school and wanted to continue their education. Furthermore, they indicated a desire to keep their primary residence in the village. The male youth participants were not in school, and stated a great overall desire to make money. However, they also expressed desires to keep the village as their primary residence in the future. This links to the trend of change in livelihood for young villagers, as discussed in Section 3.1.2, and their desire to save money from the off-farm activities that enables them to come back to the village and start a household.

An interesting point in the focus group interview with the young was that they indicated a positive attitude towards large-scale plantation schemes as a potential alternative livelihood for Kujang Sain. The opinion was held especially by the young boys who stated that some of their hopes and dreams for the future of their community are to establish large rubber plantations and modern agriculture. This opinion might be linked to their desire to make money. According to Mr. Bai the government is trying to get keep the young in the villages by promoting the idea that "agriculture is business" (Pers.comm. Mr. Bai, 01.03.2011).

3.4.2 Large-scale plantation schemes

Despite the results from the questionnaire that show that most of the villagers do not think that development schemes could develop Kujang Sain in a positive way, the young boys as mentioned above consider large-scale plantations and a more modern agriculture is a potential livelihoods strategy.

According to the SAO, the government is trying to get people to realize the benefits of cash-cropping and the government policy on promotion of cash-crops is about bringing development to the farmers and local communities.

It is known that in other areas of Sarawak some of this beneficial outcome of engaging in large-scale plantation schemes such as SALCRA has been an improvement in income and livelihood (Ngidang 2002). The villages engaging in SALCRA plantation schemes have also benefited by getting basic amenities, health clinics and improved infrastructure and they are furthermore able to continue cultivation of their traditional cash-crops on the land, which is not used in the plantations (Ngidang 2002). The Headman shared these views on the government plantation schemes and thinks that those programmes will bring development to the village and will improve the wellbeing of people. He also thinks that people are ignorant and lack understanding benefits of SALCRA, and indicated that this might be the reason for the project being rejected in 2008. It should be noted however, that it could be in the headman's own interest to promote plantations, either because of pressure from the government level or due to of private economic interests.

At the moment the main barrier to development of large-scale plantations is, as discussed in depth in Section 3.3, the negative attitude towards the schemes of many villagers and the on-going dispute within the community.

3.4.3 Livestock and aquaculture

The result of an informal animal count in the village shows that there are currently approximately 68 pigs in the village. The pigsties are distributed behind the houses and along the rivers in the village and the animals are kept for home-consumption. From observations it seems that the villagers also keep a fairly large amount of chickens. We know from some of the questionnaire respondents and informal interview that some households would like to produce pigs or chicken and one household mentioned cows as a future source of income. Furthermore, two households have started aquaculture projects on their land, currently there are five fish-ponds in the village. The outcome of the fish-ponds is supposed to be sold outside the village and generate income for the respective households.

Despite the presence of livestock and fish-ponds in the village, two different traders selling chicken, pork and fish still come to the village two and three times a week respectively. Both traders had been coming to the village regularly for more than 10 years. One of the traders also functioned as a

middleman for the sales of pepper and rubber, and noted that his sales of meat depended on the villagers having money from the sales of cash-crops. Thus, there seems to be a potential for expanding livestock production for many households since this would decrease dependence on the outside traders for protein supply. Therefore the money generated from the sale of cash crops could be directed towards other household needs.

According to one of our key informants, when the new paved road is built, there might also be a potential for producing livestock for local markets in Tebedu or Serian town.

However, livestock and aquaculture production requires specialised knowledge and experience, knowledge which might be lacking in the village at the moment. From the questionnaires it is evident that some of respondents are interested in the government's livestock and fish-ponds programs as a way to get started.

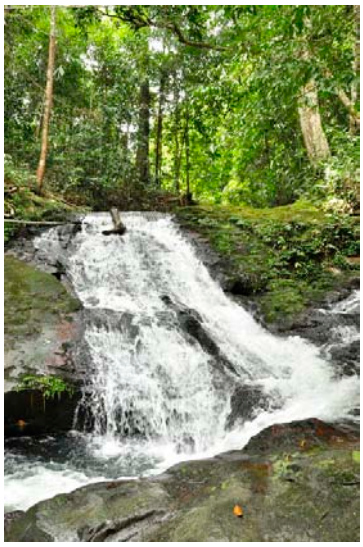
3.4.4 Ecotourism

Ecotourism could potentially be a viable diversification strategy for the village. The focus of ecotourism, as compared to tourism in general, is the natural and cultural environment of a particular place. Some argue that the development potential of ecotourism is based on the desire of "the eco-tourist" to learn about the attraction visited, as well as to contribute to environmental and socio-cultural sustainability in a given area (Perkins & Grace 2009; Weaver 2002). Furthermore, in a study on the community-based trans-boundary ecotourism in the Kelabit Highlands in Sarawak, Hitchner et al. (2009) show that the eco-tourists visiting this kind of destination have a "*desire to stay with local families and to trek in the jungle with local guides*" (194).

The ecotourism potential of Kujang Sain is primarily linked to its remote location; the hilly, natural surroundings and the waterfall, which a 30 to 45 minutes trek from the village on a small jungle path. According to the Headman and Ivong the waterfall is already a local attraction bringing in day-visitors from Serian and Kuching, who have learned about the site by word of mouth. At the moment no fees are charged and it is often young people or children who take people to the waterfall. The JKKK have apparently discussed whether a parking fee could be claimed to ensure revenue generation for the community. Moreover, there exists a potential for combining the ecotourism with "agro-tourism," including homestays in the longhouses and agricultural experiences around the village. The shifting cultivation practice and subsistence rice-farming might attract international tourists wanting to learn about more "traditional" ways of life.

Box 3. Jungletrek to the waterfall

As part of our assessment of the eco-tourism potential in Kujang Sain, we went on an observation trek to the waterfall with our interpreter and two young people from the village as our local guides.



The small path used to reach the waterfall took us through some dense secondary forest, past several uphill rice fields and a few small wet-rice fields, through a young rubber garden and involved 13 river crossings in shallow to "mid-leg"-deep water.

Furthermore, the path is used by the villagers to reach their fields and we encountered several farmers carrying large sacks of rice home on our way back. According to our local guides the trip normally takes 30 minutes, but due to several photo and botanical pauses it took us around 1 hour.

In order to investigate the eco/agro-tourism potential of Kujang Sain, a SWOT analysis of the tourism attractions was conducted. The SWOT-analysis is based on the research-teams perception and experience as potential eco-tourists in Kujang Sain as well as on informal conversations with different villagers. A diagram of the SWOT analysis can be seen in figure 16.

If carried out with caution and deliberate planning ecotourism could bring alternative income generation to the village from, for example, homestay revenues, guide-fees and sales of crafts and local produce. The distance to Kujang Sain from Kuching might be a strength that offsets the relative disadvantage of the competition with other highly promoted tourist attractions in Borneo, such as the "Heart of Borneo" conservation initiative (Hitchner et al. 2009), which does not include the southern part of Sarawak.

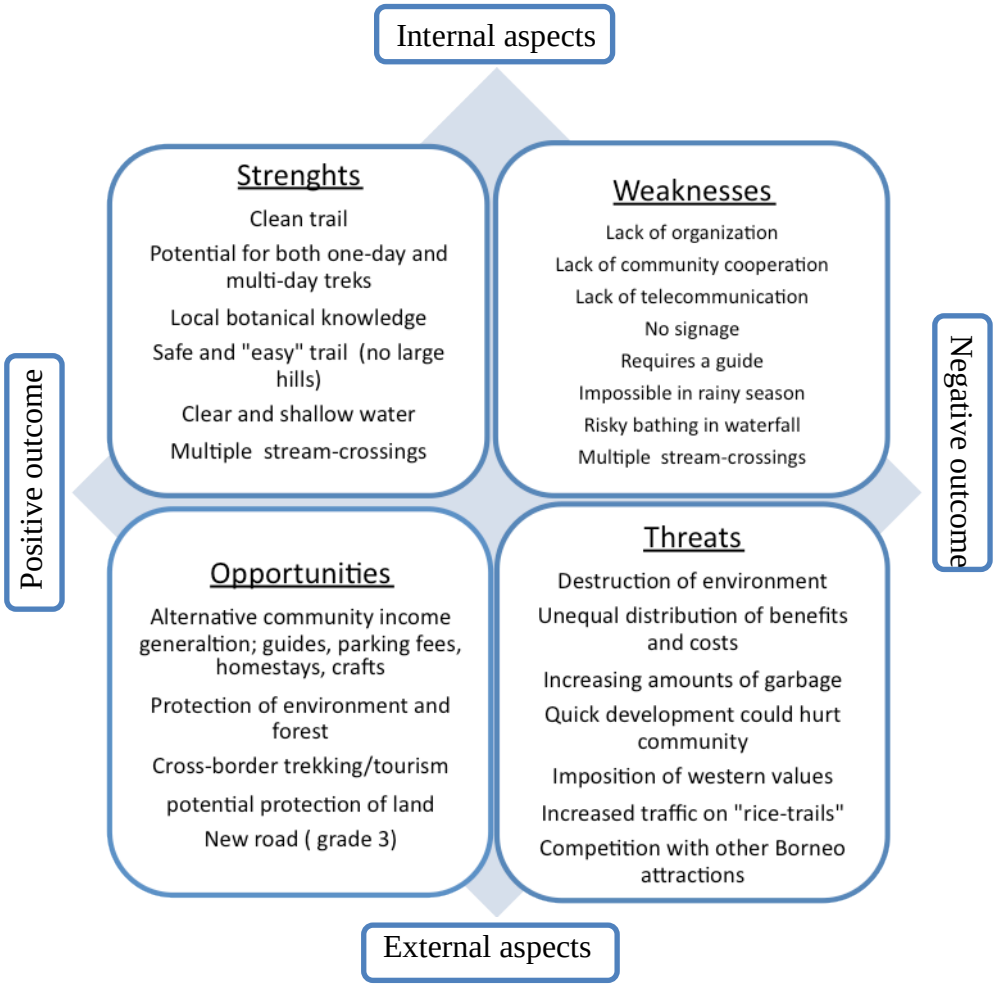


Figure 16. Strength, Weaknesses, Opportunities and Threats (SWOT) of ecotourism development in Kujang Sain. Based on observations, interviews and literature (Harris 2009; Hitchner et al. 2009; Lee & Jamal 2008).

Based on the questionnaire responses the largest barrier to ecotourism development in Kujang Sain at the moment seems to be the lack of community support indicating that it is an idea confined to a few individuals in the JKKK. Benefits of potential increasing tourism in the village are therefore likely only to be accrued by certain individuals within the village, as well as the more prosperous families with space time and energy or families with members with English skills.

4. Reflections

The analysis of the current livelihood activities of the villagers in Kujang Sain showed that the combination of rice, pepper and rubber functions well, as the crops can buffer each other in times of low market prices, as also discussed by Wadley & Mertz (2005) & Dove (1993). Additionally, the combination of rubber, rice and pepper are said to fit well within the traditional Dayak agricultural

cycle (Cramb, 2009). So, although there is external pressure to develop the current agricultural system, it appears to be relatively sustainable for the time being.

This functionality of the system might also be a reason why the villagers have resisted large-scale plantations, as the system they employ now is working fairly well. The establishment of a large-scale plantation on village land would in turn have a direct effect on the total amount of land under rice cultivation. Such land use changes could therefore limit household food security.

Furthermore, changes in land use from shifting cultivation to large-scale plantations will ultimately have an effect on the long-term productivity of the land. As nutrient cycling is a major part of the current shifting cultivation system discussed in this paper, a change to continuous cultivation and mono-cropping of the soils in Kujang Sain, where the fallow is reduced or abandoned altogether, would limit the long-term sustainability of the soil. Trends have also shown that the conversion of tropical forest into intensive palm oil plantation schemes increases landscape fragmentation, loss of biodiversity and increased erosion (Abdullah, 2008).

Another important aspect, when discussing changes in land use or livelihood diversification strategies, is the fact that many of these activities cannot be carried out simultaneously. There is an opportunity cost to developing some of these activities. For example, it is plausible to say that eco-tourism and large-scale plantation schemes cannot go hand in hand, as eco-tourism depends on well-preserved nature to attract outside visitors, while oil palm demands large tracts of cleared land (Apu, *et al*, 2010). Also, there seems to be a conflict between developing large-scale plantations and maintaining the current farming system, as desired by the villagers themselves.

No matter the choice, any future livelihood strategy that affects the community as a whole will be subject to difficulties, when it comes to group consensus. This study reveals that Kujang Sain is not a “face-to-face” society as discussed by Olivier de Sardan (1999) build on solidarity and cohesion, but instead a divided society, where conflict affects many aspects of the community cooperation including the resistance to large-scale plantations.

Because we only skimmed the surface of this issue greater reasons as to how and why the resistance occurred were difficult to uncover. This is mainly due to deep-rooted social complexity of the matter of the resistance. Looking back, the social structure encountered in Kujang Sain also put great restrain to our social science methods, especially the PRA’s. PRA assumes an openness and cohesion in a community, which would enable all community members to participate earnestly in the discussions. However, this was not the case in Kujang Sain.

Interestingly, we originally designed our research perceiving the resistance as an anti-plantation, anti-government act; however, it is now clear that there are some underlying matters that demonstrate linkages of this resistance to an internal conflict, much less than an external one.

5. Conclusion

The household livelihood strategies represented in Kujang Sain are natural resource based. Agriculture is the main livelihood activity and is primarily based on the cultivation of subsistence rice, and cash cropping of pepper and rubber production.

The Government of Malaysia's Vision 2020 strategy promotes oil palm as the main means of developing rural areas. As a result rural communities have surrendered large tracts of Native Customary Land to such plantation schemes. However, there are no large-scale plantations in Kujang Sain. Additionally, the general opinion of villagers to such schemes was found to be negative.

Based on the research conducted in Kujang Sain it was established that livelihood diversification was important if the villagers wanted to minimize the vulnerabilities associated with their current livelihood strategies. However, it was found that the resistance to change, especially in terms of governmental plantation schemes, was rooted in underlying social issues and conflict. Thus, the potential and alternative livelihood strategies discussed in this paper are only plausible if the community addresses its most significant barrier to development, which is the lack of social cohesion.

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Appendix 1

Household Questionnaire - template

Kujang Sain HH number: _____ Date:_____
Name of interpreter: _____
Location (on map): _____

General observation:

1. Household data

1.1 Household distribution

No	Relationship to respondent	Gender M=1 F=2	Age	Education Level	Activity in the HH								HH is primary place of residence?	Provides remittances?
					Pepper	Rubber	Padi	Collecting Forest Products	Student	Constract Work	Livestock	Other		
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														

2. LIVELIHOOD (present)

2.1a Which elements are the most important to your household (Rank the top 3):

	Current	10 Years Ago
Rubber		
Pepper		
Padi (upland and lowland)		
Remittances		
Livestock		
Constract work		
Other (Specify)		

2.1b If change, why?

2.2 How much land do you cultivate? What kind of tenure do you have?

Crop	How much land? (In acres, approx.)	Do you have titles for your land?
Rice		
Rubber		
Pepper		
Fallow land		
Other		

2.3a Do you feel that your land is secure?

Yes	No	Don't know

2.3b Why?

2.4 How often do you use the forest?

Product	Daily	Weekly	Monthly	Yearly	Never	Can't remember
Food						
Medicine						
Timber						
Household products						
Other						

2.5 How often do you use the river for?

Use	Daily	Weekly	Monthly	Yearly	Never	Can't remember
Domestic						
Irrigation						
Aquaculture						
Processing crops						
Fishing						
Other						

4. FUTURE POTENTIAL LIVELIHOOD STRATEGIES

4.1 Which of the following would you like to engage in over the next 10 years?

	Rank (Top 3)	Don't know
Rubber production		
Pepper production		
Oil Palm production		
Padi plantation		
Collection and trade of forest products		
Ecotourism		
Aquaculture		

Livestock		
Other (specified)		

4.2 Which of the following agencies do you think could positively develop the community of Kujang Sain?

Agency	Yes	No	Don't Know	Why?
1) SALCRA				
2) RISDA				
3) Private companies				
4) District Agricultural Department Programs				
5) Other				

4.3a Do you think that agricultural projects implemented by other agencies for the neighbouring communities are beneficial?

Yes	No	Don't know

4.3b Why?

4.4 Which of the following services do you think should <u>most urgently</u> be improved? (Rank top 3)

	Rank	Don't know
Road		
Waste Management (Garbage)		
Treated Water		
Sewage (Toilets)		
Telecommunications		
Postal Services		

4.5a Do you feel that you are involved in community decision-making processes?

Highly involved	Involved	Not Involved	Don't know

4.5b Why? How?

5. If we have more questions, can we come back another time?

Appendix 2

Results of the water analysis

Location	Measurement	Point 1	Point 2	Point 3	Point 4
Area		Upper River Sungai Ruben	Lower River Sungai Ruben	Upper River Sungai Sain	Lower River Sungai Sain
Time		12.02pm	12.46pm	1.06 pm	1.35 pm
Date		04.03.11	04.03.11	04.03.11	04.03.11
GPS Coordinates	GPS Map CSx (Garmin)	N 00.56.775 E110.26.693	N 00.56.775 E110.26.693	N 00.56.775 E 110.26.693	N00.56.794 E 110.26.760
Level above	metre	85	78	85	84
Temperature		25.38	26.39	27.06	27.22
Conductivity	ms/cm	0.073	0.076	0.078	0.077
Total Dissolve Solid		0.047	0.048	0.049	0.048
Salinity		0.03	0.03	0.03	0.03
Dissolve Oxygen	%	99.9	102.9	100.6	95.8
Dissolve Oxygen	mg/l	8.3	8.3	7.99	7.62
Depth	metre	0.171	0.546	0.063	0.061
PH		6.55	7.19	6.95	6.98
Turbidity	Ntu	1.2	2.2	1.8	1.0
LAB RESULT	**METHOD**				
Ammonia	Nessler (NHz)	0.13908	0.09394	0.0244	0.05856
Phosphorous		0.1141	0.0326	0.08476	0.04564
Total suspended solid		0.074 - 0.073g 0.001 g/0.3L	0.081 – 0.080g 0.001g/0.3L	0.081 – 0.080g 0.001g/0.3L	0.073 – 0.073g 0.0001g/0.3L
BOD		6.92mg/l 6.90mg/l	6.34mg/l 6.46mg/l	6.40mg/l	8.30mg/l

Appendix 3

Result of the forest assessment

The tables list the species found in each sub-plot of 10x10m

PLOT 1

No	Scientific Name	Local Name	Diameter at Breast Height	Height	Use
1	Baccanea spp	Tampoi	5.5	5	Friuts
2	Dacryodes costata	Kemayan	6	5	Food
3	Xanthophylum annonum	Langyir	25	15	Fruit and shampoo
4	Kaema spp	Kumpang	10	12	Timber
5	Calophylum spp	Biutang	6.5	7	Timber
6	Dialium	Kerauji	45	22	Fruits
7	Eugenia spp	ubah	5	6	Timber
8	Barringtonia spp	Putat	8	5	-
9	Kaema spp	Kumpang	48	23	-
10	Garcinia	Karlia	7	6	-
11	Artocarpus	Cempedare	6	7	-
12	Glucinieo Dendron	Bantas	28	20	-
13	Malotus spp	?	7	8	-
14	Aporusa	Kayumasam	7	4	-
15	Aglaia	Segera	6	5	-
16	Labisia pumula	Kachip fatimah	shrub		medicine
17	Rotan		climber		Mat making
18	Goneo thalanus	Selukai	sapling		Mosquito repellent
19	Pincing		sapling		bitternut

PLOT 2

No	Scientific Name	Local Name	Diameter at Breast Height	Height	Use
1	Mengifera seotida	masaga	6	6	
2	Baccanea spp	Tampoi	5.5	6	
3	Litsea spp	Medang	10	15	
4	Dialium spp	Keraiji	15	15	
5	Litsea spp	Medang	6.6	10	
6	Paratocarpus spp	mingi	18	12	
7	Autocarpus interger	cenpedae	7	8	
8	Baccaurea spp	Tampoi	9	7	
9	Dacryodes spp	Kemagan	12	10	
10	Autocarpu interger	cenpedae	6	10	
11	Dacryodes spp	Kemagan	65	15	
12	Xanthophylum annonum	Langgir	7	6	Fruits and shampoo
13	Elaterio spermuacarpus	kelampai	7	10	friuts
14	Nephelium cuspiratum	Rambutan	25	15	fruits
15	Linopera spp	mok	5	8	
16	Koupassia meliakansis	menggem	15	18	
17	Pincing		sapling		bitternut
18	Rotan		climber		Mat making

PLOT 3

No	Scientific Name	Local Name	Diameter at Breast Height	Height	Use
1	Mengifera seotida	masaga	10	12	
2	Diospyrus pbena	kayumalam	15	15	
3	Dacryodes costata	Kemagan	23	22	
4	Xanthophylum annonum	Langgir	10	8	
5	Calophyllum spp	Buitangor	7	6	
6	Artoncarpus Borneensis	pingan	8	10	
7	Autocarpus interger	cenpedah	33	10	
8	Baringtonia spp	putat	9	8	
9	Dacryodes spp	Kemagan	45	25	
10	Camna spp	Sepiyan	6.5	7	
11	Eugenia spp	Ubah	7.5	7	
12	Autocarpus interger	cenpedah	38	15	
13	Espienium lidus	Rejang			
14	Rotan		climber		Mat making
15	Pincing		sapling		Bitter nut

PLOT 4

No	Scientific Name	Local Name	Diameter at Breast Height	Height	Use
1	Autocarpus interger	cenpedah	15	13	
2	Knema spp	kumpang	35	20	
3	Aglia spp	segera	5	8	
4	Baccaurea spp	Tampoi	9	8	
5	Magristica spp	kumpang	18	18	
6	Dacryodes spp	Kemagan	7	9	
7	Litsea spp	Medang	65	8	
8	Litsea spp	Medang	21	15	
9	Castanopsis	Berangan	7	8	
10	Xanthophylum annonum	Langgir	37	22	
11	Mangifera spp	makang	48	28	
12	Xanthophylum annonum	Langgir	13	10	
13	Canarium spp	?	6	8	
14	Xanthophylum annonum	Langgir	15	8	
13	Oncosperm tigeraria	Nibong			Panel,construction,food (short)
14	Rotan		climber		Mat making
15	Pincing		sapling		Bitter nut
16	Labisia pumula	Kachip fatimah	shrub		medicine

Ethnobotany data from informal interview

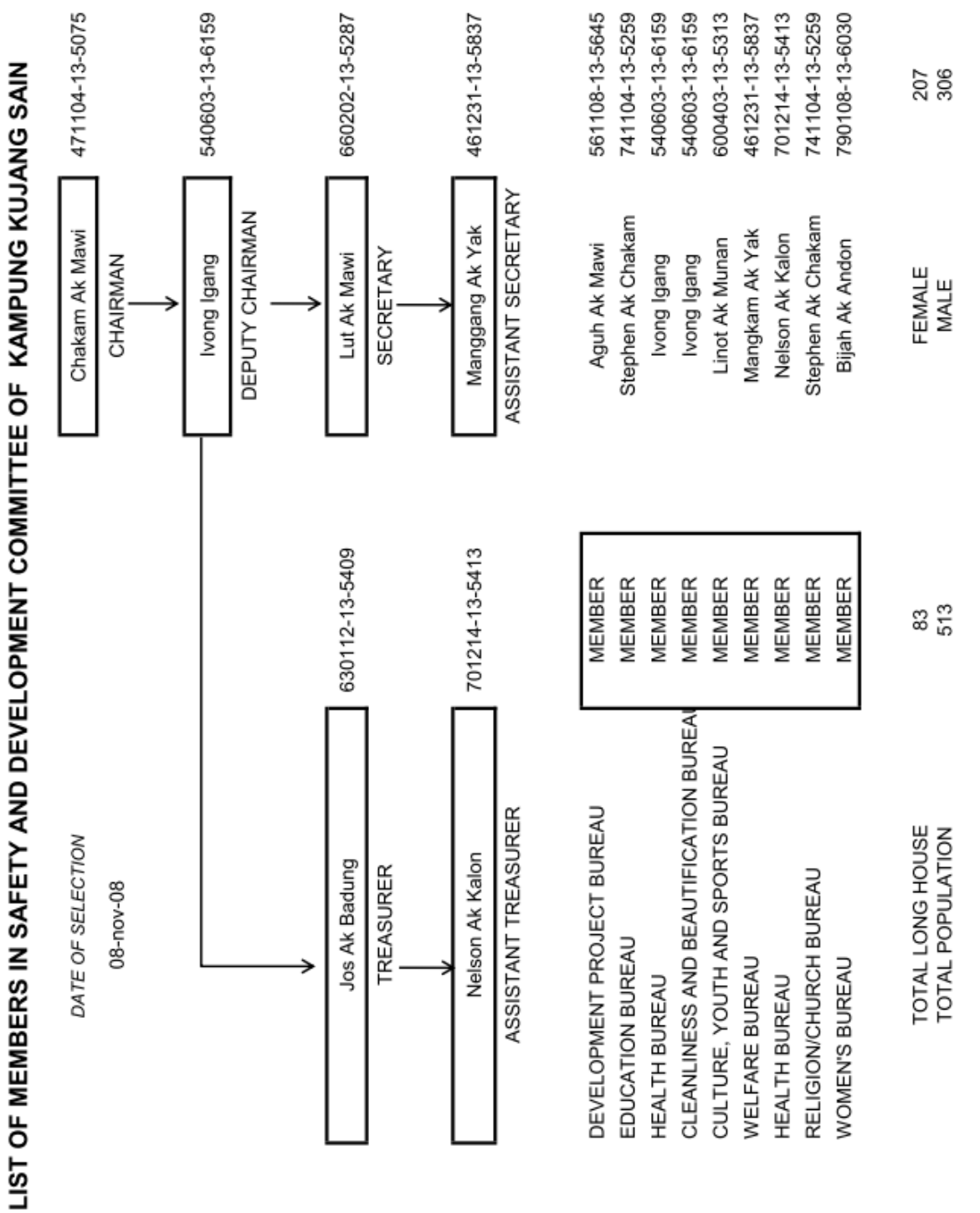
Local Name	**Plant part**	**Use**
Bamboo	Short	vegetable
Bamboo	Stem	Cooking rice
Bamboo	stem	Hanging clothes
Bamboo	stem	Making drying platform
Bamboo	stem	Floor construction
Bamboo	stem	Basket,mate,making
Bamboo	stem	Table making
Tapu	short	vegetable
Tikase	clipper	vegetable
Pakusaua	Tip of fern	vegetable
Paku	fern	vegetable
Jeringa	Fruit (available in oct)	vegetable
Palm tree	short	vegetable
Rotan	stem	Mate making
Abau	Bark	cuts
Palise	Bark	Mosqouto coil
Juwa	Leaves	Stomach ache

Appendix 4

Soil Management Assessment Framework											
				Forest		**Rubber**		**Hill Rice**		**Pepper**	
Attribute (Property)	**Indicator**	**Indicator Type**	**Method of Measurement**								
Soil Texture	% Clay	Physical	Touch	20% clay (sandiest of the soils)		30%		25%		30%	
Soil Structure Stability	Relative Visible Erosion	Visual	Conversation with farmer and visual observation (exposed subsoil)	None		None		Low		None	
Slope	Gradient (Degree slope)	Visual	Clinometer	28.5˚		22.5˚		23˚		21.5˚	
			Depth (cm)	0-10	10-20	0-10	10-20	0-10	10-20	0-10 Fertiliser point 0-10	10-20 Fertiliser point 10-20
Total Nitrogen	Nitrogen	Chemical	%	0,281	0,159	0,253	0,121	0,175	0,087	0,186 0,248	0,163 0,142
Total Organic Carbon	Organic C	Chemical	%	3,412	2,002	3,421	1,903	2,517	1,409	3,236 3,920	2,657 2,283
Nitrogen Availability	C:N Ratio	Chemical	Ratio	12:1	13:1	13.5:1	16:1	14:1	16:1	17:1 16:1	16:1 16:1
Biological and Chemical Activity	pH	Chemical	pH	4,4	4,89	4,4	4,64	4,53	4,59	4,42	4,63
Soil Exposure	Leaf and other decomposable litter	Visual	Visual observation	80%		90%		10%		0%	
Pest Control	Presence of Pests	Visual	Conversation with farmer and visual observation	Natural forest		Termites destroy roots; holes in leaves (source unknown)		Small worms eat new growth		Approx 2% crop eaten by pests annually year	
Hydraulic conductivity	Relative Compaction	Visual	Visual observation and conversation with farmer	Low		Low		Medium		High	
Soil fertility indicator species	Relative density of *Stenochlaena Palmstris* sp.	Biological/Visual	Visual observation	High		High		Low		Medium	
Inorganic chemical input	Use of pesticides	Quantitative	Conversation with farmer	None		None		1 application		24 yearly applications = 1,44 L pr year	
Inorganic and organic chemical inputs	Use of fertilizer	Quantitative	Conversation with farmer	None		None		1 application (1 bag = 20kg)		Approx. 400 kg pr year, compost applied to base of plants	
Inorganic chemical inputs	Use of herbicide	Quantitative	Conversation with farmer	None		None		1 application		Approx. 3,362 L pr year	

Appendix 5

Organisational chart for the village council (JKKK) in Kujang Sain



Appendix 6

List of methods applied in the field:

- 1 community walk
- 4 PRA sessions:
    - Community mapping
    - Community timeline
    - Resource mapping
    - Seasonal calendar
- 12 key informant, semi-structured interviews
- 31 households qustionnaires
- 10 soil samples collected and analysed, composite sampling, 4 fields
- 6 water samples collected and analysed, 4 sampling points
- 1 forest assessment, 1 plot

Appendix 7

Final synopsis

Appendix 7

Beyond resistance: The current and potential livelihood strategies of Kampung Kujang Sain, Sarawak Malaysia.

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Synopsis
ILUNRM Sluse field course 2011

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1. Introduction

During the past four decades, the Malaysian state of Sarawak, located on the island of Borneo, has tried to promote economic growth through different agricultural and land development schemes. The target of these programmes has been the development of Native Customary Land (NCL), which has been considered unproductive and "idle" land by the political economic elite in Sarawak (Cooke 2002). The land development schemes are supposed to generate wealth and reduce poverty through the establishment of commercial plantations on NCR land, and thus, substitute the traditional ways of land cultivation (Cooke 2002; Ngidang 2002).

Between 1964 and 1974 the Sarawak government carried out a range of resettlement schemes that involved clearing of land and resettling natives on large plantations with different kinds of cash crops. This initiative failed due to lack of management and organisation (Bulan 2006; Ngidang 2002). In 1976 the government created the Sarawak Land Consolidation and Rehabilitation Authority (SALCRA), a government agency intended to bring development to poor rural longhouse communities. Under SALCRA schemes communities hand over their unregistered parcels of NCL to the government, who will establish commercial plantations, mainly oil palm plantations, on the land. The landowners submit their land to SALCRA for a 25-year period, approximately one crop cycle, and in exchange they are provided with jobs in the plantation, though at relatively low wages. Furthermore, at the termination of the period the landowners are promised a title to their land. SALCRA manages the production, processing and marketing of the crops. In recent years, cheap Indonesian labour has been imported to the plantations, as the Malaysian landowners seek their income elsewhere (Ngidang 2002). The rules and laws on this issue are ambiguous and in many cases the local landowners agree to participate without understanding the full implications. Landowners are sometimes pressured into complying with a decision made by community leaders and local politicians (Ngidang 2002).

The most recent land development schemes is the Joint Venture Company (JVC), where landowners have to sign a trust deed to assign their rights, interest, shares and estate in the land to a government agency. The government agencies (Land Consolidation and Development Authority and Sarawak Land Development Board) will then enter into the joint venture with the private corporation. The minimum size of a land plot for a joint venture is 5.000 ha, thus the JVC are dependent on landowners agreeing on joining their land and reach the minimum area required to participate in the programme. The long term implications of these deals are not yet clear, for example, in relation to inheritance or lack of agreement among the involved landowners, and the lack of title or formal documents could mean the loss of land and Native Customary Rights (NCR) by the local landowners (Bulan 2006).

Despite the official goal of the land development schemes as a means to reduce poverty and produce wealth in the communities, some communities experience problems when engaging with both SALCRA and JVC schemes. Despite the fact that some communities

have benefitted economically from the SALCRA schemes, there is also evidence of communities who have never seen the dividends of the SALCRA oil palm production, as well as little evidence of landowners actually receiving private titles to their land as a result of entering into the oil palm schemes.

Kampung Kujang Sain is a village with a population of 457 people in 83 household located about 40 km of Serian town in Sarawak. The population of Kujang Sain consists of subsistence farmers, mainly rice cultivators, whose chief sources of income are cash crops and remittance from labour migrating household members. According to villagers there is an eco-tourism potential in Kampung Kujang Sain, which is located in the mountainous landscape close the Malaysian/Indonesian border and which has a waterfall located up one of the two rivers surrounding the village. The villagers also engage in cross-border trade with an Indonesian village in a short travel distance from the village.

Although the villagers have been approach by SALCRA, who wanted to invest in the land of Kampung Kujang Sain, the negotiations failed due to resistance within the village. The reasons for this resistance of the community are not clear, though this might be contributed to bad experiences with SALCRA by neighbouring villages. Moreover, the village has been approached by the Rubber Industry Smallholders Development Authority (RISDA), who wanted to establish a rubber plantation on village land but here the negotiations stopped as well.

As has been shown by the villagers in Kampung Kujang Sain, local landowners are not always willing to change their livelihood strategies and lease their land to government agencies. The government land development schemes might not be the only path for rural development of the communities and alternative livelihood strategies such as other cash crops, forestry, eco-tourism, migration and continued subsistence farming might be viable options for alternative strategies for rural communities in Sarawak.

1.1 Problem statement

The issues addressed above have led us to propose the following problem statement:

> Why have the villagers in Kujang Sain resisted the SALCRA oil palm schemes, and what are their current and potential livelihood strategies?

1.2 Objective

The objective of the project is threefold:

1) To understand the history and dynamics of resistance by the villagers of Kampung Kujang Sain to the SALCRA plantation scheme;

2) To assess the current strategies that the community members in Kampung Kujang Sain engage in;

3) To investigate and discuss alternative and potential livelihood diversification strategies that is possible for the community members

1.3 Research questions

In order to meet the objective of our study and answer the overall problem statement, the following research questions have been developed:

1. What is the history of resistance in Kujang Sain?
    a. How, who, when, what?
2. What affects the decision-making process in Kujang Sain?
    a. Institutions
    b. Power structures within the village
    c. Perception of external development projects
3. What are the natural resources available in Kujang Sain?
    a. Land
    b. Water
    c. Forest
    d. Utilization? Users?
4. What are the factors affecting access to resources in Kujang Sain?
    a. Land tenure
5. What are the existing livelihood strategies of the people in Kujang Sain?
    a. Sources of income
    b. Use of assets
    c. Cross-border interactions
6. How do the people of Kujang Sain perceive their future livelihood possibilities?
7. What would be the consequences of these future possibilities?

2. Project design

Table 1 illustrates the connections between the problem statement, the objectives and the research questions. Furthermore, the information needed to answer the different research questions are listed and linked to the methods we would like to apply in the field.

Problem statement	Objectives	Research questions	Data required	Methods	Theory
Why have the villagers in Kujang Sain resisted the SALCRA oil palm schemes, and what are their alternative livelihood strategies? (OR: current and potential livelihood strategies?)	1. To understand the history and dynamics of the village resistance to SALCRA oil palm scheme	1. What is the history of resistance in Kujang Sain?	How, who, when, what?	Interviews with key informant – the Headman Community timeline including interaction with SALCRA (PRA) Semi-structured interviews with households (PRA)	Sustainable Livelihoods Framework (SLF) (Structures and processes)
		2. What affects the decision-making processes in Kujang Sain?	Power structures Institutions Perception of external development	Interviews with key informants Semi-structured interviews with HH Secondary data	SLF (Structures and processes)

			projects		
		4. What are the factors affecting access to resources in Kujang Sain?	Land tenure Physical access Socio-political-cultural-economical access	Semi structured household interviews (PRA) Questionnaires Collection secondary data from institutional sources, policies, rules and regulation	SLF (Influences and access)
	2. Understand the current livelihood strategies used by community members in Kujang Sain	3. What are the natural resources available in Kujang Sain?	Land Water Forest Utilization Users	Village walk with key informant (PRA) Soil sampling – testing soil quality Water testing Semi-structured interviews with key informants – the Headman Community map – social and resource mapping (PRA) Questionnaire Focus group discussion with soil and crop mapping (PRA) – farmers	SLF (Livelihood assets) Soil Quality Assessment Framework (SQAF)
		4. What are the factors affecting access to resources in Kujang Sain?	Land tenure Physical access Socio-political-cultural-economical access	Semi structured interviews – key informants and households Questionnaires Collection secondary data from institutional sources, policies, rules and regulation	SLF (Influences and access)
		5. What are the existing livelihood strategies of the people in Kujang Sain?	Sources of income Use of assets Cross-border interactions Available capital	Interviews with key informants – the Headman Questionnaire Semi-structured interviews with households Ranking of natural resources – importance in term of time, value Seasonal calendars Community timeline (land uses, important	SLF (Livelihood strategies)

				events, etc.)	
	3. To investigate potential livelihood diversification strategies	4. What are the factors affecting access to resources in Kujang Sain?	See above	See above	
		6. How do the people of Kujang Sain perceive their future livelihood possibilities?	Hopes Dreams Possibilities	Questionnaire Ranking – matrix, pairwise	
		7. What would be the consequences of these future possibilities?	Tourism potential Soil quality Crops Land tenure Remittances Forestry Water quality	Observations Trip to the waterfall Interviews with key informants Questionnaire Secondary data collection Soil quality testing	SFL (Livelihood outcome) SWOT framework

3. Theoretical Framework: The Sustainable Livelihoods Framework

The Sustainable Livelihoods Framework (SLF) will form the theoretical framework for our project. This framework presents a way of organising a study of various livelihood strategies pursued by rural households and communities. The SLF cannot be used as a model of reality, but it provides a checklist of important aspects to consider when investigating livelihoods. The United Kingdom's Department for International Development (DFID) states that: "*[The SLF's] aim is to help stakeholders with different perspectives to engage in structured and coherent debate about the many factors that affect livelihoods*" (DFID 1999: 2.1).

We will use the SLF to structure our analyses and interpretations of the collected data on livelihoods. The SLF focuses on the livelihood assets that are comprised of different capitals available to an individual, household or community. These five forms of capital (Figure 1) shape the context from which different strategies can be pursued. The possibility of a household or community to pursue a certain livelihood strategy is influenced by its vulnerability context: the different structures and processes governing the aspects of access have an impact on the actions of the household and community. Figure 1 illustrates DFID's interpretation of the SLF:

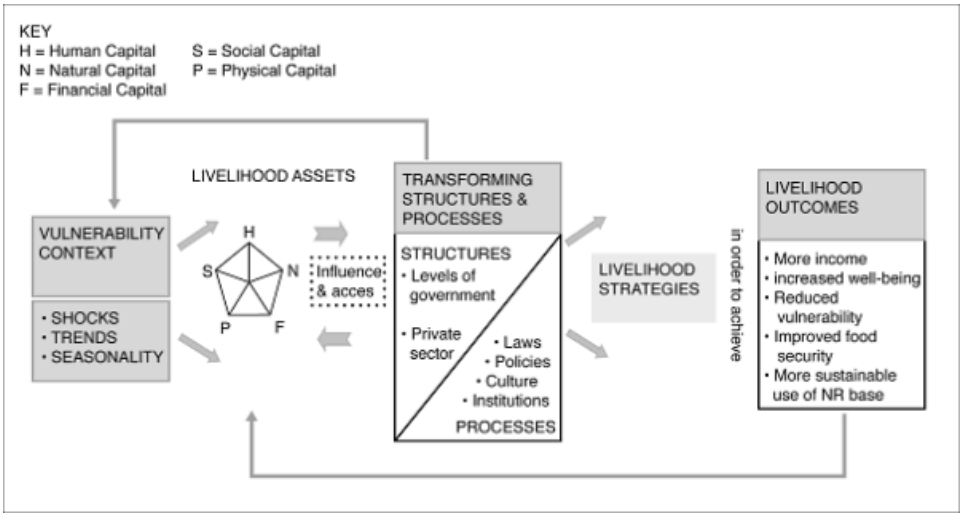

Figure 1: The Sustainable livelihoods framework (DFID 1999).

The widely used definition of a *livelihood* developed by Chambers & Conway (1992) says, "*A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living*" (p. 6). Chambers & Conway (1992) furthermore states that a livelihood is sustainable if it can cope with stresses and shocks. It is also deemed sustainable when it can recover in order to maintain or enhance its assets and capabilities, meaning that it can cope with the vulnerability context as defined in the SLF. In 2000, Ellis modified this definition in order to place stronger emphasis on the importance of access to assets, activities and resources.

A livelihood:

> *A livelihood comprises the assets (natural, physical, human, financial and social capital), the activities and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household* (Ellis 2000: 10)

Based on Ellis' development of the definition of livelihood (as seen above), this project will use this modified definition throughout the research process. When dealing with our second objective of assessing the existing livelihood strategies of the villagers in Kampung Kujang Sain aspects of the availability of and access to the different resources will be of key importance. Research Question 3 and 4 are posed in order to inform the second objective. We will furthermore use Ellis' definition of rural livelihood diversification (see below) to assess and discuss the different livelihood strategies of the villagers of Kampung Kujang Sain.

Rural livelihood diversification:

> *"Rural livelihood diversification is defined as the process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and to improve their standard of living"* (Ellis 2000: 15)

4. Methods

Natural and social science methods will be used in this research, and both will use qualitative and quantitative methods. Triangulation will be employed through the use of primary and secondary sources.

The methods below were chosen and tailored to best suit our research objectives and overall research question. Also, time was taken into consideration when selecting the natural and social science methods. Selected methods are as follows:

Method	**Type**	**Tools**	**Justification**	**Sampling/Selection**
Community Walk	Qualitative	- GPS - Camera - Notebook	1) To have a general initial overview of Kujang Sain and note places and objects of significance to the villagers	N/A
Direct Observation	Qualitative	- Eyes & Ears - Notebooks	1) To note human interactions with their assets in relation to their livelihood strategies and role in community	N/A
Focus Group Session - Social and Resource Mapping	PRA (Qualitative)	- Flip chart paper - Coloured felt pens - Camera - Notebooks	1) To understand Kujang Sain from a social and resource perspective, though the eyes of the villagers; 2) To create a village map that will be used to select households for semi-structured interviews and questionnaires	Gatekeeper approach (5 women & 5 men of various age groups)
Focus Group Session - Community Timeline	PRA (Qualitative)	- Flip chart paper - Coloured Pens - Camera - Notebooks	1) To chronologically map significant community events; 2) To understand the events which effected the village resistance movement	Gatekeeper approach (5 women & 5 men of various age groups)
Focus Group Session – Community Soil Map	PRA (Qualitative)	- Flip chart paper - Coloured Pens - Camera - Notebooks	1) To identify soil types and general soil fertility; 2) To identify the potential and existing crops on the different soil types	Gatekeeper(6-7 farmers selected)
Key informant Semi-structured interviews	Qualitative	- Interview guide - Pens - Paper - Camera - GPS	1) To understand their role in the community, land tenure and past/present/future livelihood strategies; 2) To understand the general community sentiment towards rural development programs	Gatekeeper approach

Household Questionnaire	Quantitative	- Printed questionnaire - Pens - GPS - Camera	1) To assess the livelihood strategies and resource use of 30 households in the village 2) To understand the livelihood diversification strategies within and between households in Kujang Sain	Stratified systematic, from community map
Household Semi-structured interviews (With matrix ranking and seasonal calendars)	Qualitative(PRA)	- Interview guide - Flip chart paper - Pens - Camera - GPS	1) To investigate the resource use and livelihood strategies of selected households[1] in depth; 2) To understand the prioritization of household livelihood strategies and use of assets; 3) To understand the distribution of livelihood strategies over the course of a year; 4) To investigate the effect of seasonality on livelihood strategies	Purposive Sampling
Soil Sampling	Natural Science	- Auger (1) - 2 x buckets (large) - 1 x buckets (small) - String - Measuring tape - Clinometer - Small bags - Hand spade - Shovel - Small tarp	1) To measure the effect of soil management on sustainable agricultural productivity 2) To evaluate overall soil health and productivity and role it plays in determining current and potential livelihood strategies	stratified systematic, from community soil map
Water sampling	Natural Science	- Water sampling kit	1) To assess the water quality in the two rivers in the city	Purposive sampling

4.1 Limitations

The limitations of these methods can be narrowed down to three categories: time, expense and expertise. Due to the allocation of 8 days in the field these methods were chosen for their ability to provide the most relevant information in the shortest amount of time. They were also chosen due to their relative expense. Although we are allocated interpreters and other tools (auger for soil sampling, etc.) the methods will not incur the research team any additional costs. This, in term, limits the level of technology, in terms of methods, that can be used. Additionally, these methods were chosen because at least one group member is

[1] Selected as households of interested from the 30 households surveyed in the household questionnaire

knowledgeable about them, and by our willingness to accept the knowledge of the various experts that will visit the village to help us carry out our methods.

Although great care and discussion occurred in the selection of these methods, other combinations might be possible under different constraints.

4.2 PRA Methods[2]

PRA methods are used as a participatory approach to research. These methods will be employed in order to involve the community in the research by trying to see the village through the eyes of the community members. We will act as facilitators of the different PRA methods used in this study.

Focus groups will be used for the creation of community maps and timelines. Matrix ranking and seasonal calendars will be included in the household semi-structured interviews. See the Appendix 1 for more information on our PRA methods.

4.3 Semi-structured interviews

Semi-structured interviews will be conducted both before and after the distribution of questionnaires. The semi-structured interviews will be conducted with key informants (see interview guides in Appendix 2).

The reason for applying this method is to gain more insight into various issues and to tailor the questionnaire according to the context. After carrying out the questionnaire survey the semi-structured interviews will be conducted with selected households for issues that will require more probing. Interviews guides are included in Appendix 2 and further developed in the field.

4.4 Questionnaires

The purpose of the questionnaire is to quantify the data collected from the semi-structured key informant interviews. The aim is to do approximately 30 questionnaires in order to achieve the minimum number of households for statistical data collections purposes. We want to validate the information gathered about the livelihood strategies through triangulation as well as get an overview of the intra- and interrelations of livelihood strategies within the village. From the questionnaires a number interesting households will be identified for the semi-structured interviews as explained above. The Questionnaire-interview will start with a short introduction of us and our study and motivation for doing the questionnaire and we will facilitate them in conjunction with our facilitators.

4.5 Natural science methods

4.5.1 Soil sampling

The Soil Quality Assessment Framework (SQAF) will be used to analyze the effect of soil management on the sustainability of agricultural production. The use of various visual,

[2] The description of the PRA methods are adopted from Mikkelsen (2005).

physical, biological and chemical indicators this framework will help to answer Objectives 2 & 3, by evaluating overall soil health and productivity and role it plays in determining current and potential livelihood strategies used in Kujang Sain.

The headman of Kujang Sain, through the use of the "gatekeeper" strategy, will facilitate the selection of participant farmers for a community soil map focus group session. The community soil map will identify soil types (and local names), crops, potential crops, and general soil fertility. Sites for measuring the chosen indicators (below) will be determined from the community soil map.

Composite samples at each site will be taken by the use of an auger. Field size will be mapped through the use of the GPS. Soil Quality Assessment Framework for Kujang Sain:

Analysis	Function	Process	Attribute (Property)	Indicator	Indicator Type
Effect of soil management on the sustainability agricultural production	Support Plant Growth	Maintenance of stable soil structure	Organic Matter	Total Organic Matter	Chemical
			Soil Texture	% Clay, Silt, Sand	Physical
			Soil structure stability	Visible Erosion	Visual
			Slope	% Gradient	Visual
			Soil aggregate stability	Earthworms/m^3	Biological
			Nitrogen	C:N Ratio	Chemical
		Ability to release nutrients	Soil Organic Matter	Total Organic Matter	Chemical
			Nutrient adsorption	Cation Exchange Capacity	Physical
			Organic carbon availability	Organic C	Chemical
			Biological and chemical activity	pH	Chemical
			Plant micro- and macro-nutrient deficiencies	Leaf colourings & markings	Visual

4.5.2 GPS

The global positioning system (GPS) will be used to mark the position of households and natural resources in relation to the importance to their livelihoods. It will also be used for mapping the community and areas were soil and water sampling will be conducted.

4.6 Sampling strategy

A variety of sampling strategies will be used to select the informants and site for different methods. For key informant interviews we will try to interview the headman of the village, a SALCRA officer, and agricultural expert in the village or others relevant people that could help to answer our research questions.

For the first focus group session we will invite a group of men and women of different ages, (Approximately 10) and we will use the gatekeeper strategy to select them. The same goes for the second focus groups session with the community soil mapping, where a group of farmers will be invited to map.

For the questionnaires we will use stratified sampling strategy, where we will try to sample people from different households within the village using the community map from the first focus group session. After analysing the results from the questionnaire, purposive sampling will be used in order to select the relevant households for our study.

Using the information obtained from interviews and the soil types mapping resulted from the group discussion we will try to have an idea of the different soil types in the village. A stratified-systematic sampling strategy will be used to select the different field site for our research. Purposive sampling will be carried out in order to take water samples from the rivers and waterfall.

5. Malaysian Counterparts

The research in Kujang Sang will be carried out in collaboration with two students from University of Malaysia-Sarawak. Sarius Lee Kim Lye specializes in business studies and Lewiin Ak Roman specializes in marketing. We have already had very good correspondence with Sarius.

According to the correspondence with our counterparts our research agendas are very compatible. They have divided their objectives into two parts, land use and livelihood. Their objectives are as follows:

<u>LAND USE</u>

1. How is land being managed?
2. Is there a clear zoning and management of land?
3. What is their reason and rationale to decide?
4. What are their limitations?

<u>LIVELIHOOD</u>

1. Commercial crop - (tap rubber, grow pepper)
2. Subsistence crop - (grow ginger, local vegetables)
3. Seasonal - Durian Fruit which are sold in nearby town (Serian) but depend on fruiting season
4. Forest - indigene nous knowledge of forest goods

5. Other - Money from working children

6. Is there any government support -subsidies etc.

6. References:

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Appendix 1

Focus group session 1: Community social and resource mapping and community timeline

Participants: A group of approximately 5 men and 5 women; one interpreters; group members

Tools: Big paper charts; different colour pens; camera; notebooks

The session should start with an introduction to the purpose of the mapping session. We want to get an overview of the village and the village resources. Also we would like to know something about the social structure of the village, how the houses and households are distributed in the village, if there are differences between different groups living in different areas of the village.

Community social and resource mapping

Start with very broad and open-ended questions and then narrow them down

- Please map the village households
    - Wealth indications – if appropriate
    - Size (?) – maybe in terms number of people
- Please map the important places in the village
    - School
    - Community hall
    - Church
    - Shop(s)
    - Other facilities
- Please map the important resources
    - Land use
        - Fields
        - Crop types
    - Forests
        - Different kinds
    - Rivers
        - Important spots along the river

Community timeline

- Please note down the important events in the village history?
    - Significant events perceived by the community
- If it doesn't come up naturally – ask about SALCRA and the interaction with other agricultural development programmes (RISDA)

Focus groups session 2: Soil and crop mapping

Participants: A group of interested/interesting farmers, using the Headman as a gatekeeper; 1 interpreter; group members

Tools: Big chart of paper; coloured pens; camera; notebooks

We want to get an overview of the different soil types and soil quality in the village. Moreover, we want to gain information about the choice of crops on the different types of soil and investigate whether the different choices of crops have anything to do with the soil quality and also investigate if there are other important parameters in the choice of location for different crops. The hope is to obtain a soil map of the village to be able to select sites for soil sampling. In the begging of the session the purpose should be introduced to the participants and we should inquire after local names and classification of soils.

Soil mapping:

- Are there different soil types within the village area?
- Please map out the different soil types in the area
- Which crops are grown in the different areas?
- Are the cultivation related to the soil types?
- Are there some crops that you would like to grow?
- If yes, where would you like to grow them?

Appendix 2

Semi-structured interview guides:

Key informant name:_____
Interviewers:_____
Date:_____
General comments:
_____
_____
_____
_____
_____

1) Headman

1. Leadership
    a. What is your role in the village?
    b. Name, age?
    c. How long have you held that position?
    d. What are your responsibilities?
    e. How did you obtain this position?
    f. How big is the territory of this village? How many people?
    g. Are you in charge of it all?

2. Decision making processes
    a. Who makes decisions in the village?
    b. How are they made? What is the process?
    c. Who possesses the land in this village?
    d. How is it distributed? How do you get access?

3. "Livelihood strategies"
    a. What do people do for a living here? What do people do here?
        i. Is that what you have always done? Or has it changed recently?
    b. What are the main economic activities in the village?
    c. What are your food sources?
        i. What is the importance of the forest?
        ii. What is the importance of the river?

iii. What is the importance of the land?

d. How many people are employed outside the community?
e. Are you engaged in cross-border trade with Indonesia?

4. External development projects
    a. Have there been/are there any (community) development projects in the village?
    b. If so, how have they been received?
        i. How have they been implemented?
    c. Have there been any interactions with development agencies?
        i. Were they positive or negative?
    d. Do you know about other rural development projects in other neighboring communities?
    e. Where do you see Kujang Sain in 10 years?
    f. What are is the potential of this village?

2) SALCRA Officer:

Key informant name:_____
Interviewers:_____
Date:_____
General comments:
_____
_____
_____
_____
_____

1. Personal
    a. Name, age?
    b. What is your position at SALCRA?
    c. How long have you held that position?
    d. What are your responsibilities?

2. Decision making processes
    a. What is the institutional structure of SALCRA?
    b. How do you decide where to implement a plantation scheme?
    c. What is your interest in Kujang Sain?

3. "Livelihood strategies"
    a. How does SALCRA contribute to people livelihood strategies?
    b. How many people could SALCRA employ in Kujang Sain?
    c. What type of jobs will you offer?

4. Development projects
    a. Has SALCRA worked on any (community) development projects in the village?
    b. What is your develop plan in Kujang Sain?
    c. If so, how have they been received?
    d. Where does SALCRA see Kujang Sain in 10 years?
    e. What are is the potential of this village?
    f. Why do you think some villages are against accepting SALCRA offers?

3) HOUSEHOLD
(STILL TO BE FINISHED IN THE FIELD)

Semi-structured interviews questions guide

HH # _____
Interviewers _____

1. Household (if applicable)
    a. What is your role in the household? (Are you the head of the household)?
    b. Name, age?
    c. What are your responsibilities?
    d. How many people are they in this household?
    e. How is work distributed among the household members?

2. Decision making processes – village level
    a. Who makes decisions in the village?
    b. How are they made? What is the process?
    c. Who possesses the land in this village?
    d. How is it distributed? How do you get access?

3. Decision making processes – HH level
    a. Who makes decisions in the HH?
    b. How are they made? What is the process?

4. "Livelihood strategies"
    a. What do you do for a living here?
        1. Is that what you have always done? Or has it changed recently?
    b. What are the main economic activities in the village?
    c. What are your food sources?

5. What is the importance of the forest? What products do you derive from the forest?

Semi-structured	Local name	Product	Use of product	Income generation

6. What is the importance of the river?

Product or function	Use of product	Income generation

7. What is the importance of the land? How do you manage their land?
8. What crops do you grow?
    a. What determines the type of crops that you grow?
    b. Given a chance to choose what crops would you like to cultivate?

Name of Crop	Subsistence or own use	Commercial or income generation	Seasonal

9. Do you many have any household members employed outside the community?
10. Are you engaged in cross-border trade with Indonesia?
    a. How?

11. External development projects
    a. Have there been/are there any (community) development projects in the village?
        1. How have they been implemented?
    b. Have been involved in any development project?
        1. Were they positive or negative?
    c. Do you know about other rural development projects in other neighboring communities?
    d. Would be interested in participating in the development projects if they were to be brought to this village.

Appendix 3

Questionnaire

Household Questionnaire

(Approx 30 Households.)

Purpose:

The purpose of this Questionnaire combined with qualitative semi-structured interview questions, is to investigate and indentify a general overview of the households in Kujang Sain about the issues that are identified in our main research question and hypotheses. The aim of this method is to indentify 10 or 15 household where more detailed s semi-structured interview will be carried out. The Questionnaire-interview will be started by a short introduction of us and our study and motivation for doing the questionnaire.

This is questionnaire will be kept confidential and will only be used for the purpose of this research. Your name will not be used, unless we ask for your permission. If you have any questions for us before we start the questionnaire we would be happy to answer them for you.

Kujang Sain HH number: _____ Date:_____
Name of interpreter: _____
Location (on map + GPS)_____

General observation

_____

_____

_____

_____

_____

_____

_____

_____

1. Household data

Name: (confidential) _____

1.1 Gender (respondent)

MALE	FEMALE

1.2 Are you the head of the household?
Yes: ____

No : ____

1.3 Household distribution: SIZE, adults and children?

1.4 Who lives in this Household?

No	**Relationship to head of household** 1 = Wife 2 = Husband 3 = Child 4= Parent	**Gender** M=1 F=2	**Age**	**Education Level** 0 = no formal education 1 = primary education 2 = secondary education 3 = high education (diploma, university)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

2. LIVELIHOOD (present)

2.1 What do this household for a living?

		Rank (all that apply)
Farmer		
Fisherman		
Forest work (e.g. logging)		
Collect forest products		
Migrant work		
Construction work		
Student		
Other (Specify)		

2.1 Is that what you have always done? YES___ NO____

2.2 Has it changed recently? YES___ NO___

2.3.a. IF YES: How long have you worked with your <u>main</u> job for a living

Years	**5-10**	**10-20**	**20-25**	**25-30**	**30-35**	**35-40**	**40-45**	**45-50**	**>50**

2.3.b. IF NO; What did you use to do? (check those that apply)

Farmer		
Fisherman		
Forest work (e.g. logging)		
Collect forest products		
Migrant work		
Construction work		
Student		
Other (Specify)		

2.4 When did you change your livelihood strategy?

Years	**5-10**	**10-20**	**20-25**	**25-30**	**30-35**	**35-40**	**40-45**	**45-50**	**>50**

2.5 Why did you change your livelihood strategy?

_____
_____
_____

2.6 Do you have access to land? YES___NO___

2.6.a. IF YES: How did you gain access to your land?

Inherited it	
First clearance by ancestors	
Gift from relatives	
Gift from Headman	

Other_____
_____
_____

2.7 Does your household own your own land/fields? YES___ NO____

2.7.a. IF YES: How did you get the land?

Inherited it	
Bought it	
Other (specify)	

2.8. When did you get the land/field?

Years	**5-10**	**10-20**	**20-25**	**25-30**	**30-35**	**35-40**	**40-45**	**45-50**	**>50**

2.9 What natural resource land uses do you use the most?

Forest (logging, collecting of food etc)	
River (Fishing, transport etc)	
Agricultural (farming, cash crops etc)	
Other (Specify)	

2.10 What are your top five main food sources?

1_____
2_____
3_____
4_____
5_____

2.11 Where do you get these from?

	Check all that apply	**Ranking/ Importance**
From the forest		
From the river		
From agricultural land		
Traded from other communities		
Buy them in the store/ local market		
Other (specify)		

2.12 Has YOUR HOUSEHOLD been a part of any community development projects in the village? YES____ NO____

2.12.a. If YES, which project(s)?

_____
_____
_____
_____
_____

2.12.b. If YES, what is your general perception of these projects:

Positive	Neutral	Negative

3. CROSS-BORDER

3.1 Are you engaged in cross-border activities with Indonesia? YES__ NO___

3.1.a. IF YES: What kind of cross-border activities do your household have with Indonesia?

		Describe (if applicable)
Trade		
Family		
Cultural ties (same tribe, etc)		
Employment (migrant labour, etc)		
Other (specify)		

4. FUTURE POTENTIAL LIVELIHOOD STRATEGY

4.1 What potential (future) livelihood strategies are you interested in engaging in?

	Check all that apply
Palm oil production	
Collection and trade of forest products	
Rubber production	
ECOTOURISM	
Agriculture production	
OTHER (specify)	

4.2 What do you think about _____as a potential future development strategy of Kujang Sain?

	Positive	Neutral	Negative
1) SALCRA			
2) RISDA			
3) ECOTOURISM			
4) Other			

4.3 Do you know about other rural development projects in other neighbouring communities? YES____ NO____

4.3.a. IF YES: where and which projects?

_____
_____
_____
_____
_____
_____
_____
_____

4.4 In 10 years, which livelihood strategies would you like your household to be engaged in?-

_____
_____
_____
_____
_____
_____

Appendix 4 - Timetable

Dates	Activity	Informant	Result – aim	Tools	Interpreter	Students
25-feb	Meeting up with the Malaysian counterpart		Finalising the synopsis Dos and don'ts in the field			Everyone
	Last minute preparation					Everyone
26-feb	Arriving in Kujang Sain			Cars		Everyone
	Welcome ceremony at 1pm		Introduction to the village Introduction of us – making a good impression			Everyone
	Village walk	Headman	Overview of the village	GPS Camera Pen Paper		Everyone
	Informal conversations	Hosts	Introduction to the village			Everyone
	Gatekeeper "interview"	Headman	Identification of key informants Find the best day for focus groups sessions (27^{th} or 28^{th}?) Start issuing invitations			
	Direct observation			Camera Pen Paper Eyes & Ears		Everyone
	Mapping		Initial plotting of important spots	GPS Camera		
	Groups debriefing		Keeping everyone well informed			Everyone

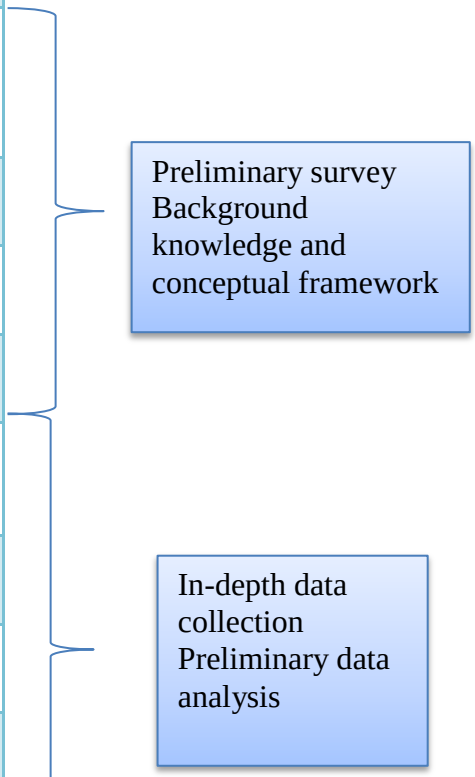
27-feb	Key informant interviews	Headman and more	Introduction to the village structure	Interview guide Pen Paper		
	Mapping		Initial plotting of important spots	GPS Camera		
	Invitation to focus group sessions	The Headman as gatekeeper	Collect the 3 focus groups participants			
	Informal conversations	Hosts	Information on the village			Everyone
	Direct observation			Camera Pen Paper Eyes & Ears		Everyone
	Data analysis					
	Start preparation on the presentation for the 1st of march					
	Groups debriefing		Keeping everyone well informed			Everyone
28-feb	Social and resource mapping	Focus groups - 2 groups; men and women	Identify households for questionnaires	Big papers Coloured pens		
	Community timeline	Focus groups – 2 groups; men and women	Village history and history of the resistance	Big papers Coloured pens		
	Soil mapping	Focus groups; farmers	Overview of the soil and crop patterns of Kujang Sain			
	Informal conversations	Hosts				Everyone
	Direct observation			Camera Pen Paper		Everyone
	Identification of 30 households for			The community maps		Everyone

	questionnaire					
	Make presentation for the 1st of march					Everyone
	Group debriefing		Keeping everyone well informed			Everyone
1-mar	Proposal presentation (Tebedu)					
	Meeting/discussion with related government officers					
	Selection of sites for soil sampling			The soil map		
	Group debriefing					
2-mar	Observation trip to waterfall and natural resources	Guide	Assess the eco-tourism potential	Camera GPS		
	Household survey – questionnaires	30 selected households	Assess livelihood strategies Identify interesting households Resistance and SALCRA	Questionnaire Pen Paper GPS		
	Key informant interviews	???	Resistance Perception of future	GPS		
	Direct observation			Camera Pen Paper		
	Data analysis			Computer		
	Group debriefing		Keeping everyone well informed			Everyone
3-mar	Household survey – questionnaires	30 selected households	Assess livelihood strategies Identify interesting households Resistance and SALCRA	Questionnaire Pen Paper GPS		

	Direct observation			Camera Pen Paper		
	Preparation of new interview guide for households		Maybe more than one			
	Data analysis					
	Group debriefing		Keeping everyone well informed			Everyone
4-mar	Household survey - questionnaires	30 selected households	Select households for semi-structured interviews	Questionnaire Pen Paper GPS		
	Soil sampling		Assessment of soil quality; current and potential livelihoods strategies	Soil map (PRA) Soil sampling kit GPS		
	Direct observation			Camera Pen Paper		
	Data analysis					
	Group debriefing		Keeping everyone well informed			Everyone
5-mar	Semi-structured interviews with households	5 selected households	In-depth on livelihoods strategies Resistance Cross-border issues Natural resource use – with fallow practices	Interview guide GPS Seasonal calendars Matrix ranking		
	Soil sampling		Assessment of soil quality; current and potential livelihoods strategies	Soil map (PRA) Soil sampling kit GPS		
	Direct observation			Camera Pen		

				Paper		
	Data analysis					
	Group debriefing		Keeping everyone well informed			Everyone
6-mar	Soil sampling		Assessment of soil quality; current and potential livelihoods strategies	Soil map (PRA) Soil sampling kit GPS		
	Water sampling		Assess water quality	GPS Water sampling kit		
	Semi-structured interviews with households	5 selected households	In-depth on livelihoods strategies Resistance Cross-border issues Natural resource use – with fallow practices	Interview guide GSP		
	Direct observation			Camera Pen Paper		Everyone
	Data analysis					
	Group debriefing		Keeping everyone well informed			Everyone
7-mar	Presentation of research findings					Everyone
	Flexibility					
	Good bye party	Village members				Everyone
8-mar	Farewell gathering with the villagers					
	Departure from Tebedu					Everyone
	Good bye party	Malaysia group				Everyone

Date	Activity
25-feb	Meeting counterparts
26-feb	9.00 - Depart from Kuching 13.00 Welcome ceremony in Kujang Sain – presentation of us Village walk Mapping (GPS)
27-feb	Key informant interviews – with the headman and others Mapping (GPS)
28-feb	Focus group session: Social & resource mapping, community timeline (2 groups) Focus group session: Soil mapping (groups of farmers)
1-mar	Presentation of research proposal
2-mar	Trip to waterfall Household questionnaire Key informant interviews
3-mar	Household questionnaire Soil sampling
4-mar	Household questionnaire Soil-sampling
5-mar	Semi-structured interviews Soil & water sampling
6-mar	Semi-structured interviews Soil & water sampling
7-mar	Presentation of findings Flexibility
8-mar	Farewell gathering in the village Departure from Kujang Sain



Appendix 5 - Field work schedule

Date / Name	Afton	Cecilie	Emelda	Esben	Lewiin	Sarius	Valentin
26-feb							
27-feb							
28-feb							
1-mar							
2-mar							
3-mar							
4-mar							
5-mar							
6-mar							
7-mar							
8-mar							