



An assessment of the development opportunities in Alit, Sarawak



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Supervisors:

Andreas de Neergaard

Michael Eilenberg

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Group members:

Jen Bond (ADK07002)

Rikke Hansen (EN06007)

Flavia Nakaggwa (EMA07006)

Martin Aubanton (NDI08004)

Alexander Roscher (NDI08082)

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Abstract

Alit is an Iban coastal village within the Betong Division of Sarawak comprising two longhouses and 197 *bilik* members. This study investigated the past and present utilisation of the natural resource base, human and social capitals and income-generating activities of the community through the use of both qualitative and quantitative methods. It was found that the land and water utilisation has changed progressively since settlement 110 years ago moving from subsistence production to a cash crop system with an outlook to focus on oil palm. Environmental constraints such as flooding, heavy rain, soil constraints and coastal erosion currently limit the productivity of the land and the community are looking toward a bund to improve this. An important income generating activity for both cash spending and agricultural investment is the remittance received from migrant family members who've left the village for employment. This has ramifications for the community left behind where *biliks* miss family members and the more innovative people and their resources are drawn away from the community. Although 70% of the population didn't complete high school, those with no or only primary education were found to be those who remain in Alit as farmers or fishermen. This lack of capacity among the residents and the headmen is a limiting factor to their involvement in development projects. Yet, the community is endowed with a large land area and strong social networks and with a focus on boosting the education level and capacity of residents, potentially enticing the more innovative members to remain in the community, they have the potential to improve their livelihoods into the future.

Introduction

Author: Rikke Hansen

In the Betong Administrative Division, Sarawak, Malaysia there is an area situated on the coastline of the South China Sea, called Alit and within this is the Iban village. In this area a former Lemanak Iban population settled 110 years ago and the village now comprises two longhouses, *Rumah* (Rh.) Ek and Rh.Bettie, housing 115 people living their daily life. The land use in this region is linked to the hot and humid climate (Jen-Hu Chang, 1968), which affects the choice of crops grown; rice, oil palms, rubber tree, maize and vegetables. Because of the peat swamp in the area, drainage is required before the land can be used for agriculture; a step that is still to be taken in many areas of Alit. On top of that Alit experiences major problems with flooding in October-November every year partly due to the vast coastal erosion, which affects crop production and minimizes the choice of crops able to grow under these conditions.

Different schemes have taken place in Alit: coconut and sago, which are no longer used for commercial purposes, and the current orange scheme which is yet to yield fruit. Besides those previously mentioned, the people get their basic needs covered by growing rice and vegetables as well as catching fish and crabs in the sea and surrounding rivers. These days, the people in Alit are intrigued by the success of oil palms grown in the surrounding areas, wanting a large-scale oil palm plantation on their own land, but so far Sarawak Land Consolidation and Rehabilitation Authority (SALCRA) has not replied to their requests.

The village in itself is characterized by being less developed compared to other villages in the area. Not until a few years ago did they get electricity, treated water, road access, and whereas other villages in the area have a fairly larger monthly income, many of the people in Alit have to find work outside of their birthplace to make ends meet. Because there are currently no income generating development schemes functioning in Alit the youth tend to move away from the village in search of jobs, having ramifications for the community. Since most children go to boarding school in either Alit or Kabong, a large proportion of this demographic group (both

children and youth) is not present in Alit. When this research team visited the village the children were home for vacation, but the daily life in Alit is somewhat quieter, where everybody is more or less going about their own business.

Problem statement

This research team assumes there are several factors impacting the development of Alit. Among these are land quality, which has an impact on the village's ability to attract external investment, and rural-urban migration.

Therefore, this study intends to assess the development potential of Alit by investigating how the sustainability of land use management and welfare of the villagers could be enhanced.

Objectives and research questions

The main objective of this study is to assess the development opportunities in Alit village. Under this broad objective, three research questions have been identified:

1. What is the natural resource base and how has its utilisation changed?
2. To what extent do social and human capitals impact development?
3. What are the income generating opportunities?

Each of these three research questions draws on further issues related to the land use management, political climate, ability to attract outside interest, social cohesion, economic factors, community history, gender, labour and migration issues of the community and will be discussed separately below.

Specific objectives:

- Identify the changing patterns of natural resource use in Alit

This objective aims to investigate the history of the natural resources in Alit and to make an assessment of the quality of those available. The objective deals broadly with the areas of land-use history, land quality, availability and accessibility of natural resources, land tenure, economic aspects, political restrictions or plans for natural resource management, gender and labour force issues. The data required will

incorporate the major events and land-use changes, soil physical and chemical properties, water chemical characteristics and climate factors.

- Investigate the impact of social and human capital on the community

The focus will be on education, ability to attract outside investment, employment opportunities, migration, family structure as well as the political structure. More specifically, the data required will address the ambitions and concerns of the community, local planning and accessibility to essential services.

- Identify the income generating opportunities in Alit

This research team intends to use the data collected in the first two objectives to make suggestions on income generating opportunities for Alit which are appropriate in terms of the natural resource base and social welfare of the community.

Methodology

Authors : Jen Bond & Martin Aubanton

Study design

The research team consisted of five Danish and two Malaysian students with a sampling frame of the Alit village and individual households (*biliks*) as the unit of analysis, involving the entire community. The methods undertaken are summarised in the table below.

Table 1. Overview of methods employed during the field work in Alit

<ul style="list-style-type: none">• Secondary data collection• Questionnaires• Semi-structured interviews• Key informant interviews• Group discussions• Focus group discussions• Preference ranking• Informal conversation	<ul style="list-style-type: none">• Soil sampling• Water sampling• Transect walk• GPS• Seasonal calendar• Community mapping• Personal observation
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Data collection methods

Secondary data

Secondary data were collected during the pre- and post-field trip period through various sources such as journals, internet, reports and textbooks for supporting information.

Questionnaires

Questionnaires were conducted with 27 *biliks* in both longhouses, which covered all households residing in Alit at the time of the study. A pre-test was carried out and the questionnaire revised accordingly. The information gathered was in relation to basic

demographics, education, migration, natural resource utilisation, agricultural production and income.

Key informant interviews

The 6 key informants interviewed were the headmen of the two Alit longhouses, the headman of an Empayang longhouse, a Saratok Administrative Officer (SAO), the headmistress of Alit school and Rossy (interpreter). The topics covered were historical data and major events, Alit lobby work, agricultural production and land use, development projects in the area and future plans for Alit. The headmistress of Alit school was interviewed in regard to the flooding and Rossy provided information on attending university in Malaysia.

Semi-structured interviews

13 semi-structured interviews were conducted throughout the two longhouses, each with a different focus based on the initial data collected through the questionnaire survey. The range of interviewees represented the various livelihood strategies in Alit including farming, fishing, construction worker, lorry driver and families receiving remittance. Respondents were also targeted for migration, education, parenting and historical information.

Group discussions

One group discussion was held in Rh. Bettie on the topic of 'What is development?' with a range of people of different gender and ages participating. A second discussion was held on Rh. Ek beach with members of that longhouse on the topic of coastal erosion. The dominant personalities were grouped together for a discussion with the dual purpose of providing information on resource use in Alit and being preoccupied while the two preference ranking sessions were being undertaken.

Focus groups

Four focus groups were held with the children, male youth, female youth and an informal session with the women. The groups were divided by gender to maximise the comfort and security of the groups in order to obtain information. The topics for discussion were education, migration, difficulties faced in Alit and future aspirations.

Transect walk

A transect walk through Alit started from the south-east boundary and ended at Rh. Bettie crossing the most important zones of the area. The exercise allowed discussion with the people about their use of the natural resources (Appendix 5).

Mapping

Early in our field work, we asked the people of Alit to draw for us the map of their community as they perceive it in order to have information about spatial distribution and social organization. The discussion that came out during this exercise was of particular value.

Seasonal calendar

In order to have a broader idea of the activities undertaken throughout the year, seasonal calendars were used. After dividing the men and women, they were asked to discuss their main monthly activities, for example farming, fishing, ceremonies, etc. (appendix 6).

Preference ranking

This method was employed to gather the perceptions of the community and to accomplish this, dominant personalities of the community were set another task. After dividing the men and women, they were asked their perception about the main problems in Alit, and to rank them. The process was then repeated for the opportunities they think exist in their village.

Sample collection

To assess the potential of the area, both soil and water samples were taken. Four soil samples were taken for three different layers in each of; a paddy field, uncultivated land and an old and new oil palm plantation. The nutrient contents, pH, conductivity and texture were analysed to compare the agricultural capacity of each of these areas. Concerning the water sampling, the main interests were salinity, turbidity and nutrient content of the water used on Alit land. The villagers stated they had salinity problems in their river that influenced their crops and therefore the likelihood of the nearby oil palm plantation negatively impacting the water resources was investigated.

Four water samples were taken from each of; Alit River, the drainage, a paddy field and two in the sea. Four samples were taken; two during high and low tide respectively to assess the influence of the sea on those areas.

Informal conversations and personal observations

The above methods were combined with direct observations and informal conversations to improve triangulation and were used by all group members throughout the entire field study including socialization time.

Data Analysis

Soil samples were analysed using a test kit in Alit however additional samples were analysed in Denmark. The water samples were analysed at a facility in Kabong and the remaining data was analysed using the SPSS and GPS software programs.

Iban History, Religion and Culture

Author: Jen Bond

Iban history

Approximately 30% of the population of Sarawak are Iban, the largest indigenous group of the state (Ministry of Tourism, 2008) originating from Kapuas River in Kalimantan, Borneo. They lived there for a long period and mythical members of Iban genealogy including Sengalang Burong, the bird god of war in addition to the customs the Iban still live by today can be traced back to this period. In the sixteenth century the Iban migrated to the Undup River, Skrang, Batang Ai, Paku and other areas of Sarawak (Padoch, 1982).

The Iban live in longhouses where each family resides in its own apartment (*bilik*) connected to a central passageway (*ruai*). Each family is responsible for their own economic success but can rely on other households in times of crop failure (Wadley, 2007). The longhouse occupies a geographically defined territory in relation to neighbouring communities and has an elected headman whose authority is based on the consent of the longhouse community (Freeman, 1960). Despite the communal living, society is both egalitarian and individualistic where activities such as headhunting and weaving allowed men and women to aspire to ranks of distinction within the longhouse often resulting in a level of inequality between households and individuals (Wadley, 2007).

Iban religion and culture

Although the majority of Iban are now Christian, they still maintain close cultural connections with their traditional beliefs of supernatural and unseen gods and spirits which send messages to them through omens, particularly birds (Nyamggau, 2006). The cultural system of *adat*, which are the moral and social norms by which the Iban live their daily lives are derived from an encounter with a representative of the gods (Nyamggau, 2006) (More information can be found in appendix 4).

Bejalai

Bejalai is a cultural institution connected to the adat where young men leave the longhouse to journey to foreign lands, an activity which is supported by the Iban value of individualism. The men find employment to further the economic status of the household while also gaining respect and experience of the outside world (Kedit, 1991).

Agriculture

Iban have traditionally based their agricultural production on the swidden cultivation of rice within the longhouse territory on long-fallowed forest and swamp areas and short-fallow fields. The cultivation of rice is not only a form of subsistence but a reproduction of adat where the ancestors' souls are transformed into the dew that nourishes the rice plant (Wadley, 2007 and Davison and Sutlive Jr, 1991). Typically households cluster their fields together to reduce risks of pests and diseases and minimise labour costs. Since the twentieth century households have diversified into rubber tapping, pepper and oil palm production as well as wage labour to supplement their subsistence, where this was previously restricted to hunting, fishing and collecting forest products (Wadley, 2007).

Gawai Day

Gawai Day or Gawai Dyak is a social and religious festival celebrated in Sarawak on June 1st as a thanksgiving to the gods for the completed rice harvest and the ritual was first officially celebrated in 1965. The various indigenous groups of Sarawak cast away the spirit of greediness and after an offering ceremony they welcome the spirits. Rice wine and celebratory food are eaten, the festival may last several days where the longhouse is open to visitors and many weddings may take place (Wikipedia, 2008).

History of Alit

Author: Jen Bond

The data for this section was collected through semi-structured, key informant and informal interviews in addition to resource mapping.

Migration to Alit

Iban Alit was settled in 1898 by Janau and his family. Janau, a great warrior, was renowned for his headhunting making him an attractive trophy for enemy warriors (appendix 4). His family worried about their safety which led them to move from Lemanak to Igan, only for his reputation to precede him compelling them to settle in a previously unsettled area of poor soil, wild boars and close proximity to pirates. The genealogy of the Alit Iban can only be traced back to this initial family, which contrasts with the Iban culture of having extensive ancestral knowledge of between 15-25 generations ago (Padoch, 1982).

Community's perception of their history

The residents of Alit have retained traditional Iban beliefs with respect to the supernatural realms of Gods and spirits and have moved longhouses three times due to inauspicious bird omens.



Photo 1: Food offering

Over the years seven headmen have been elected and various activities have occurred in Alit (Figure 1) according to the Alit residents. The first headman, Nyaing was appointed by the Sarawak government in 1945 and since then the community has moved longhouses several times within their boundaries. The two current headmen were elected within the last 12 months.

The History of Alit

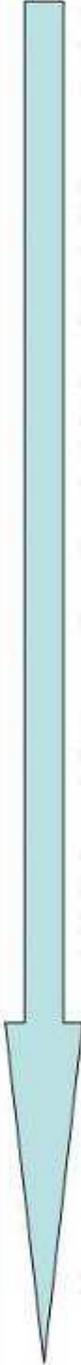
- 
- 1898 – Alit settled by Janau anak Jingga and his family
 - 1941 – Japanese occupation
 - 1945 – Japanese surrender
 - Sarawak Government installed
 - Nyaing anak Junau (Junau's son) appointed headman of Alit by the government
 - 1948 – Land covered Alit river
 - 1950's – Sago scheme
 - 1957 – Settlement of boundary with Malay neighbours
 - 1963 – Federation of Malaysia formed
 - 1965 – Nyaing anak Junau died
 - Angok (Nyaing's brother) became headman & during this period a bird omen to move longhouse appeared.
 - 1967 – Jambai (Angok's nephew) became headman and built a new longhouse
 - 1969 – Formation of 'security' group against communism
 - 1971 – Sabang became headman
 - 1973 – Irie anak Anjar became headman & during this period the longhouse splits into two and moves because of the bird omen (half the longhouse didn't want to move)
 - 1982 - Cocoa introduced
 - Coconut scheme
 - 1983 – Longhouse 1 (current Rh. Bettie) built
 - Pepper introduced
 - Community forest divided
 - 1985 – Longhouse 2 (current Rh. Ek) built
 - 1994 – Application to SALCRA
 - 1997 – Oil palm project extracted sand from the sea for construction purposes
 - Asian financial crisis
 - 1998 – Bumbus river mouth changed direction
 - 2000 – King tide
 - 2003 – Electricity connected, road constructed
 - 2005 – Treated water connected
 - Application to SALCRA
 - Malays allowed to log the community forest (2005-2007)
 - 2007 – Irie anak Anjar died & Bettie anak Untang headman
 - Flood caused erosion (Oct – Nov), river mouth moved 2-3km due to 3 king tides
 - Bund (boundary with Malays) built
 - Application to SALCRA
 - Applied to Department of Irrigation and Drainage (DID) for drainage project
 - Applied to Land & Survey Department (Betong) for land survey
 - Ek became headman of Longhouse 2
 - 2008 – Applied to Saratok Administrative Office (SAO) for land clearing of new longhouse site. Granted RM20,000
 - Applied to Land & Survey Department (Betong) for land survey

Figure 1. Timeline of Alit since settlement

Current demographic information

The population of Alit grew to the size of approximately 40 people in the 1950's to its current number of 197, divided into two longhouses comprising 39 *biliks*. Table 2 shows the demographic data for Alit.

Table 2. Demographic information of Alit

Number of Longhouses	2
Number of <i>biliks</i> in Rh. Bettie	16
Number of <i>biliks</i> in Rh. Ek	23
Number of empty <i>biliks</i>	8
Percentage Females	46%
Percentage Males	54%
No. of male head of <i>bilik</i>	25
No. of female head of <i>bilik</i>	3
Percentage of <i>bilik</i> members who no longer reside in Alit	42%
Average age when leaving the longhouse	21
Percentage of the population who left school before completion	68%

Alit is characterised by a shortage of young people in the age bracket of 16-29; majority of children (6-18years) living at boarding school during the weekdays and youth migrated or on bejalai (figure 2).

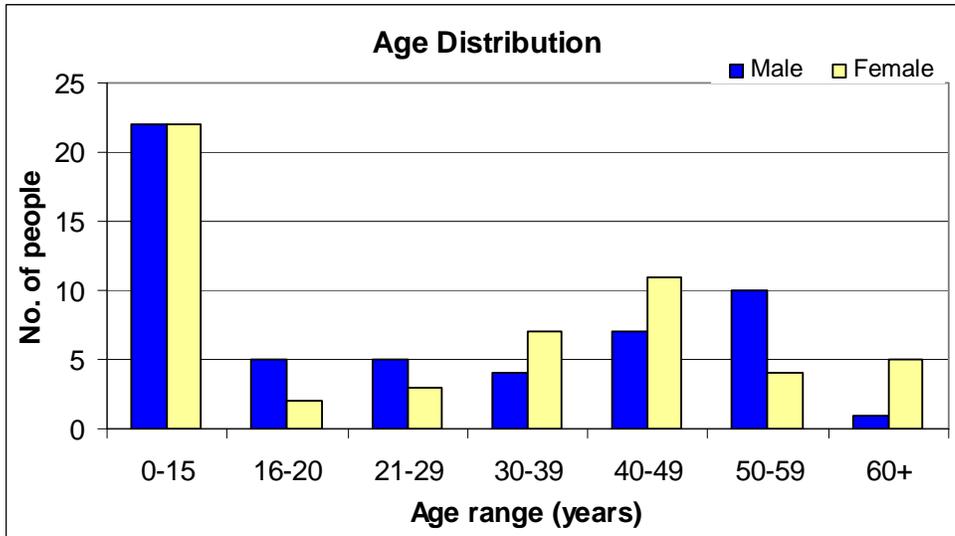


Figure 2 The age distribution of *bilik* members still residing in Alit

The various occupations undertaken in Alit are represented graphically in figure 3.

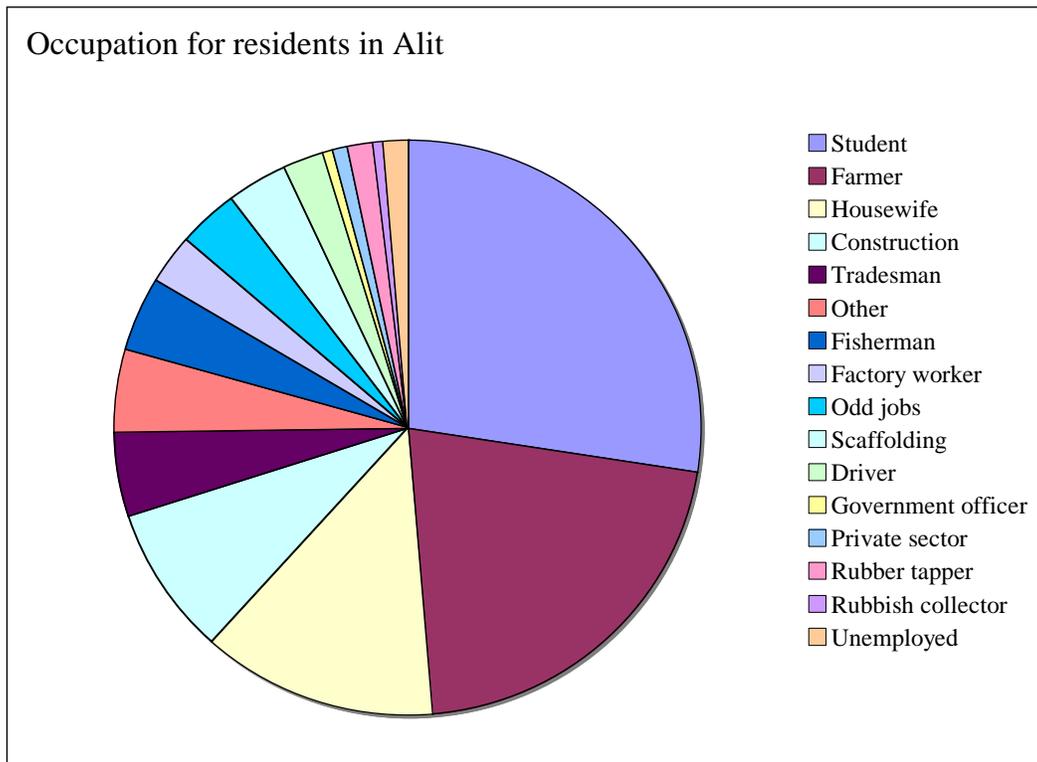


Figure 3. The range of occupations of the people living in Alit.

Further to figure 3, table 3 shows the income ranges for the various income generating activities and gives an outline of monthly *bilik* expenses.

Table 3 Monthly income ranges and expenses

Income RM/month	Expenses RM/month
Farming: 0-300	Electricity: 15-40
Fishing: 300-600	Water: 20-30
Remittance: 50-600	Student: 5-50
Wage work: 260-700	Motorbike: 50-60
Bejalai: 500-4830	

Natural resources and Land use changes

Author: Martin Aubanton and Flavia Nakaggwa

The methods used in this chapter are the community map, transect walk, seasonal calendar, soil and water sampling, questionnaires and interviews.

Land tenure

Alit is Native Customary Right (NCR) land and comes under both the Mixed Zone Land and Native Area Land as it is so called “State Land” which is effectively administered and occupied by native communities (Cramb, 2007).

Table 4. 1957 Land Code of Sarawak

Categories	Description
Mixed Zone Land	Everybody can potentially acquire a land title in it
Native Area Land	Reserved for Natives such as Iban or Malays
Reserved Land	Mainly forest reserves held by the government
Interior Area Land	For tall the other land that doesn't fit in the previous categories

Table 4 shows the codes by which land is differentiated in Sarawak (Cramb, 1990)

The status of NCR land is insufficient to claim property rights due to the lack of land titles, which is the situation in Alit. In the 1960's the Land and Survey Department of Betong offered free surveys leading to land titles, but Alit refused the offer due to a lack of understanding and fear of loosing their land. Without titles the land can be claimed by the government and the farmers can be destitute (Cooke, 2002) and for this reason both the previous and current headmen have applied for land surveys.

Present Natural Resources

When asked about land use, respondents stated they rarely use acres or hectares as unit of measurement preferring “two arms length” called *pajah* and from this, estimations of land area are given in table 5.

Table 5. Division of land area

Land	Area	% of People
Estimated total land of Alit	400 ha	
Estimated zone they want to drain (mainly the forest reserve)	200 ha	
Mangrove forest	16 ha	
Land used		
	Paddy 19 ha	70
	Sago 11 ha	26
	Oil palm 5 ha	26
	Coconut 10 ha	33
	Oranges 4 ha	19
	Home garden 6 ha	33
	Total 55 ha	
Uncultivated land	Sago 36 ha	
	Total 129 ha	

Table 5 shows the division of land area (The 36 ha of sago are characterized as uncultivated land because the people don't actively maintain the crop)

From speaking to people it is interesting to note that old landmarks and measuring systems are used rather than more recent units such as acres, or hectares. This shows that perhaps land acreage isn't important provided they have landmarks to represent their boundaries. This was evident from the land proportions drawn on the community map.



Photo 2. Community mapping

Box 1. Organisation of the map

- They drew the sea only as a boundary rather than a natural resource.
- The rivers were drawn as small and they didn't say anything about them even though they fish in them.
- The various crops drawn were not to scale perhaps representing the different values placed on the various crop types.

Box 2. Social power dynamics

- Everybody was invited to draw the map but the Advisor of Rh Ek started drawing and nobody reacted. While he was adding the roads and boundaries, everybody stayed quiet for fifteen minutes.
- This shows that this man and few others in the village are respected by the rest of the community. We understood afterwards that he was a particularly innovative and resourceful person and he was one of the few who don't farm anymore and have their own business in town.

Soil characteristics

The soil samples were taken from strategic places in the village to have scientific information about the soil fertility and its main characteristics.

Table 6. Soil characteristics

	pH	Conductivity ($S \cdot m^{-1}$)	Total Carbon (%C)	Phosphorous (g/L)
Oil palm old Layer 1	5.0	0.07	2.478	No reaction
Oil palm old Layer 2	4.2	0.07	0.5971	No reaction
Oil palm old Layer 3	3.9	0.14	0.3658	No reaction
Oil palm new Layer 1	5.2	0.05	0.2776	0.09
Oil palm new Layer 2	5.2	0.04	0.3560	0.09
Oil palm new Layer 3	5.2	0.01	0.2432	0.09
Paddy rice Layer 1	4.6	0.50	1.287	No reaction
Paddy rice Layer 2	4.3	0.91	0.9060	No reaction
Paddy rice Layer 3	4.7	1.31	0.9061	No reaction
Uncultivated Land Layer 1	5.2	0.04	0.2812	0.09
Uncultivated Land Layer 2	5.2	0.02	0.1270	0.09
Uncultivated Land Layer 3	5.4	0.00	0.04335	0.09

Layer 1: 0-20 cm, Layer 2: 20-40 cm, Layer 3: 40-60 cm

Table 6 shows the chemical composition of the soil sampled from various locations.

The average pH is 4.8 (table 6) which is acidic with the lowest pH in the paddy field, perhaps due to the waterlogged conditions that favour anaerobic conditions. The low pH justifies the low content of phosphorus and lack of potassium that was noticed in the analysis of those nutrients. The relatively low level of nutrients could be attributed to the heavy rainfall that has been prevalent in the area, frequency of fertilizer application, vegetation type or soil texture.

The samples collected from the uncultivated land and the new oil palm plantation were very sandy, enhancing the leaching of nutrients to deeper layers which when coupled to prevalent rains justifies the lack of nutrients. Fertilizers weren't applied to

paddy rice while the new oil palm field was last fertilized 1.5 months ago, the uncultivated land has been left to fallow for 2 years and having soils under non-nitrogen fixing plants also leads to nutrient drain.

The results show there is more carbon in the top layer especially in the old oil palm due to canopy cover and weeds being left to rot reducing the amount of light reaching the soil thus reducing the rate of decomposition. The other soils under lighter canopies are exposed to greater light penetration increasing the speed of decomposition resulting in low organic carbon content. This low content of total carbon, particularly for the uncultivated land, illustrates the lack of organic matter of the soil, which is a key component in regard to the soil structure and the nutrient availability.

Conductivity represents the level of salinity of the soil and it is only greater than 0.5 in the Paddy rice field and even around 1.00 for the third layer although this soil cannot be considered as saline while the conductivity is under 2.00. It means that the proximity to the sea doesn't result in high soil salinity and the problems that it can bring. Although perhaps when there is flooding, the sea comes into the fields and kills or considerably retards crop growth.

All in all, the soils are poor in nutrient content and structure thus providing a better assessment for land suitability for crop production. This result may not be a surprise when compared to the 1982 vision of the Department of Agriculture (DoA) regarding the Alit area in terms of Agriculture capability. It is registered on the maps as "Land with such severe limitations that agriculture is not feasible". (EuDASM, 2005).

Farming

In spite of the trends of migration and off-farm work, farming still remains a main activity in terms of time consumption, as 85% of the *biliks* still farm. As previously explained, land use has changed as have the crops grown and according to the elders, when they arrived they only grew paddy. Due to the flat area, hill rice has never been cultivated.

Even though some people stated they grow sago, coconut, and oranges (table 5), it is believed from the interview and transect data that time is not spent working in those fields. Coconut and sago are harvested sporadically whereas the orange trees were given by the DoA three years ago and haven't reached harvest. Due to flooding, the absence of fertilizers and poor soil characteristics, tree growth has been hindered resulting in the crop being left idle.

With paddy as the principal crop, farmers harvest approximately 1t rice/acre, which will support them for a year, despite rodents, monkeys and other pests. The organization of the work for this crop is presented in the Table 7.

Table 7. Table of seasonal farming activities for both men and women

Action	Period	Men	Women
Clearing/Weeding/Spraying	July-January	X	
Planting/Transplanting	October-November	X	X
Maintenance of the Bund	Whole year	X	
Harvesting	March-May	X	X
Processing	May	X	X

Table 7 shows the division of labour between the sexes and the time of year for the various farming activities.

The women are also involved in many aspects of farming. During the less farm demanding periods of the year, particularly January, February and June, time is devoted to off-farm activities such as Gawai, fishing and casual labour.

The sago (1950's) and coconut schemes (1982) both stopped a few years after implementation because the market prices dropped and subsidies were removed. Further to this, the schemes are now far from the longhouses, the work is too hard, the floods reach the schemes which reduce production potential and the sago is now seen as a primitive crop. Iban usually prefer to grow rice rather than sago as a staple food because they don't want to be seen as poor or primitive like other tribes, so they now use the sago to feed the livestock. The subsidy program for paddy (1980) allowed the

community to receive inputs to increase production, however since 1990 only fertiliser is provided.

Box 3. SALCRA

(Sarawak Land Consolidation and Rehabilitation Authority)

Created in 1976, SALCRA is one of the public agencies in charge of the development of Native Customary Land. It declares land as “development area” and proposes to the owners to improve their land by building infrastructure (roads, drainages) in order to grow commercial crops such as oil palm, rubber or tea. Since 1999, SALCRA has established almost 42 000 ha of oil palm, 1000 ha of rubber and 188 ha of tea. Even though it is supposed to be a native agency of Sarawak, it continues to be plagued by allegations of inefficiency and corruption (Cramb, 2007).

SALCRA and Federal Land Consolidation and Rehabilitation Authority (FELCRA) in addition to commercial companies are operating in the area developing land, particularly oil palm plantations. Alit applied by letter to SALCRA in 1994 together with the other Iban headmen but were rejected. It is likely that SALCRA would have undertaken a suitability assessment and found the soil to be too poor and waterlogged for commercial production yet an alternative or compounding reason is that internal conflict within the community over the desire for SALCRA may have persuaded SALCRA to reject the proposal for Alit. Applications were also made in 2005 and 2007 although no reply has been received.

Attractive oil palm prices and uncultivated land have encouraged the people to contemplate oil palm production, even without the backing of a large organisation and those who have enough money through remittances or their off-farm employment have begun planting trees. These farmers use the SALCRA planting standards and apply chemicals every 5-6 months, sometimes more often. They also want to convert the ‘idle’ land and even the mangrove and forest reserve to oil palm as a means of showing that the land is being used to prevent it being taken over (Majid Cooke, 2002).

Box 4. Farmer of Alit, growing oil palm on his land

700 trees

Initial expenses

- RM15430

Additional expenses until first harvest (4 years)

- RM2400/year

Harvest

- RM8400/year

General costs

- RM420/year, fertilizer
- RM900/year, transport of fruit to SALCRA

Predicted monthly income: RM590

Due to the initial capital required, not all farmers are in a position to move into oil palm yet as draining is required. The yearly flooding is destructive to the crops and is the major reason the people want funding for a bund, as found in the preference ranking exercise. An application for the bund was made in January 2008 of RM200,000 to the Department of Irrigation and Drainage (DID) office through an official form with the result pending.

In terms of farming, the poorness of the soil may partly explain the situation in Alit as the people see farming as mostly a way of food supply. They don't really pay attention to the soil fertility or yield on their land as long as they harvest enough to support the household's needs. However, this tendency is slowly changing with the opportunity of commercial crop plantations as sources of income.

Forest resource

20 years ago, the forest was used to obtain Rattan, vegetables, timber and hunting more than today because longhouses have moved away from the forest. Evidence of this was found during the transect walk as the paths were overgrown with grass to a height of about 1.5m and from observation few *biliks* had handicrafts.

Tree species composition is the same but certain tree populations have reduced. The dominant tree species are listed in box 5

Box 5. Tree species and their use

- Jerutong used for making planks
- Magris and Emplaie for planks for piling during construction
- Bakao (mangrove)
- Muranti for planks and roofing and so on
- Maramli
- Emprawan (hard wood tree for making ships)
- Munua
- Ubah nyeli (*Eugenia lineate*)
- Puwi
- Pulayi
- Nyaruntung
- Puramu

The Muranti (*Antidesma orthogyne*) tree population has reduced because of high prices and demand (1200RM per tree in the late 1980's). The Mangris tree is also said to be scarce. The rate at which trees were cut down has increased due to the change from a dependence on the river as transport to the increased use of roads, but the migration of able bodied people to do the felling has reduced the rate of cutting.

The sale of trees in this village is on demand from a potential buyer. From 2005-2007, the locals sold off their trees to a, mainly Malay, logging company and each *bilik* (18) with land there was paid 400RM and unknown outsiders are illegally cutting down trees from the forest. Alit people claim the lack of machinery, effort required and unstable demand inhibit them from cutting and selling trees themselves. One respondent noted that he allows anyone to sell his mangrove because he doesn't want to waste his energy on it.

Changes in land boundaries

In 1957, conflicts between the Ibans and Malays arose concerning the eastern boundaries of Iban Alit which led to the redefining of the Alit boundaries through a verbal agreement following a cultural ceremony.

The surrounding Malays have encroached on approximately 100m of land in south-eastern Alit and approximately 50m from the south boundary, attributed to the drainage constructed by DID on the Malay land (Appendix 5). However, there is no intention to dispute the breach to maintain peaceful relations with their neighbours yet they are increasingly utilising the areas close to the boundaries to prevent further encroachment. Additionally, there is also internal conflict within the community over land distribution although little detail was obtained as to how the forest reserve was divided among the *biliks* as certain households have been left out.

Water resources

The Bumbus river has progressively changed colour indicating a high turbidity due to continued rainfall leading to erosion and higher levels of sedimentation while also being saline, as is River Alit due to flooding that brings sea water to the river. There was agreement among respondents that the river water sometimes tastes salty and is the reason why water samples were collected from the river (table 8).

Table 8. Water characteristics

Parameter	Alit River	Drainage	Paddy	SEA
Salinity	0.228	0,06	0,102	27.06
pH (1- 14)	7.04	6.1	6.96	7.48

The results indicate that the pH range (5.90 to 7.48) is similar among the samples and is almost neutral. Besides seawater, no samples were saline which implies that there was no direct relationship between the sea and river systems. The results show that people's claim of salinity of river Alit, affecting crop production next to the river, cannot be justified although the samples were taken during the non-flooding period and may show a different picture if the samples were taken in October-December.

Fishing

In the past people fished in the rivers trapping cat fish and crabs although sea fishing was taken up by the men approximately 20 years ago through observation of the Malays and trial and error. The men are very proud and enthusiastic to share their experiences with visitors. The full-time fishermen prefer the sea because the high value of the fish (Appendix 7), greater diversity and close proximity to the longhouses.

Even though the village is situated on the coastline only 4% characterise themselves as full-time fishermen. This may be attributed to traditional Iban settlements being inland thereby restricting resource uses to on-land activities. 63% of *biliks* (all members) are involved in fishing for own consumption but there is a trend to focus more on the commercial aspects of fishing as compared to 20 years ago.

Box 6. Rules to fishing

Regulations for fishing prohibit the catching of protected fish species or the use of poison. There are no regulations on the age, size of fish to be caught or size of the fishing nets.

The local people are not allowed to go further into the sea than beyond 3 miles from the shore unless they received certification from the fishing department.

Problems associated with fishing

There are less fish in the sea compared to 5 years ago as it used to take 5 hours to catch 1kg of fish but now it can take a day. Less fish in the river is said to be due to the heavy rainfall in the area that raises the water level and increases the turbidity which is a result of erosion from the near by fields.

There is competition with the trawlers that get as close as 1 mile to the shore past their limit of 3 miles. Locals cannot go far out to sea because they don't have permission or the big boats to compete. One full-time fisherman let his engine rust and boat rot because he was tired of having disputes with other established fishermen. He now doesn't go to the sea and only traps fish from the river.

Flooding and Coastal Erosion

Author: Alex Roscher

Informal conversations, group discussions, semi-structured and key informant interviews, GPS, observation and the community map were used to gather information for this chapter.

As mentioned previously Alit has several problems with loss of land from both boundary disputes and coastal erosion, which distresses the people in terms of safety and economic security. There are several reasons for this; natural processes and climatic effects, which have an impact of the shoreline, and also man made problems, resulting in the current situation.

Global warming is one reason for coastal erosion, but not only in Malaysia, everywhere in the world. In the past 100 years the sea level has risen about 10- 25 centimetres and it will continue rising (Evans, 2004).

Focussing on Alit we first have to look at the climate process there. This region is dominated by two different monsoon periods, which are characterized by strong rain and wind. In general Malaysia is dominated by the northeast monsoon in winter (October- March) and the southwest monsoon (May- September). The latter is named because of the windward from West-Sarawak (Kühne, 1970), which results in less rain in this season. Alit is situated in the North West of Sarawak and the maximum condensation in this area is during January in the time of the Northeast monsoon. The average annual rainfall for Alit is between 3000- 3500mm (Kühne, 1970) and the closest station to the study place is Kabong with the following data:

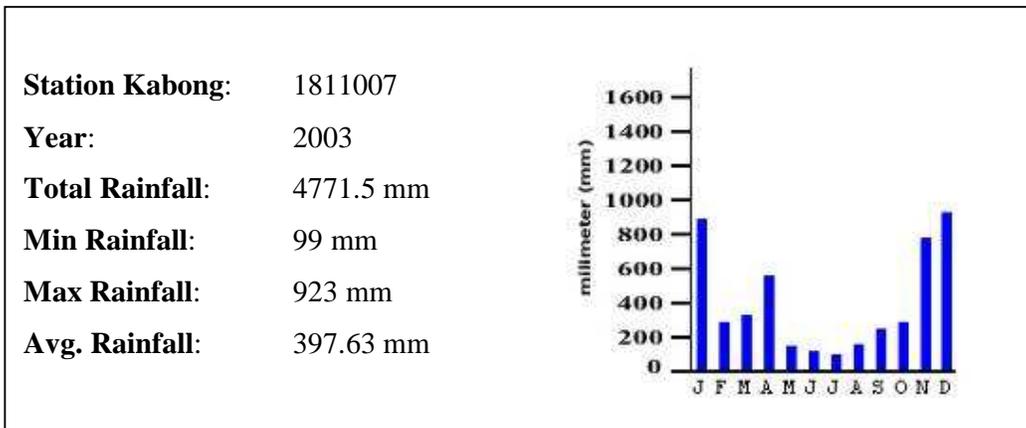


Figure 4: Rainfall data for Kabong meteorology station 2003

(Rainfall distribution, 2003)

It can be seen that in the Alit area November, December and January have the highest amount of rainfall which corresponds to the statements of the people concerning the worst flood. The flooding is more severe during this period because of the natural processes of the monsoon interacting with the sea.

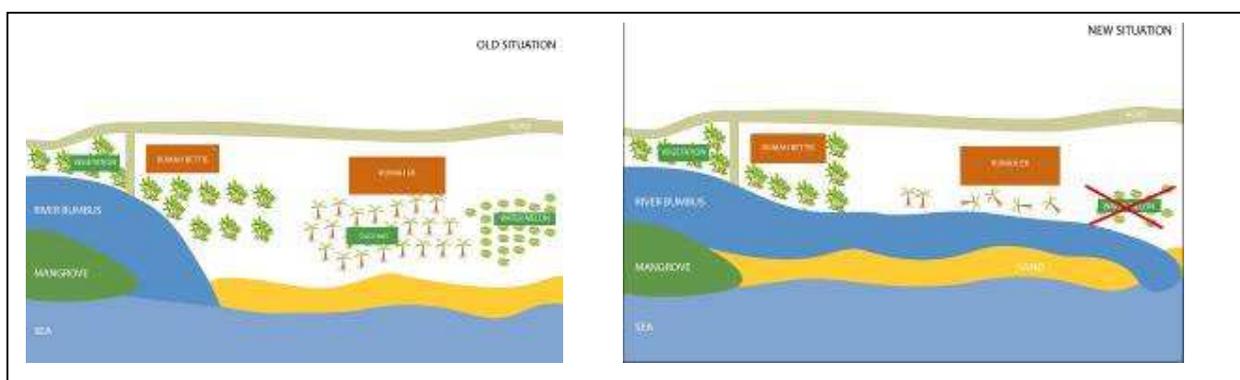
The location of Alit on the mouth of River Bumbus adds complexity as when the sea and river meet brackish water results which is very turbulent although this is dependent on the density of the salt water (Geyer, 2004). The position of the land on the coastline has also a big influence as the area is very flat allowing flood water to go further inland. During observations and transect walks, respondents showed how far the sea came onto their land in 2007, which they claim was approximately 300m, yet the GPS Data shows the distance of flooding to be between 500-600 meters which had a greater impact on Rh. Ek. One side of the beach was washed away (in front of Rh Ek), while the other area of the beach was less damaged. Additionally, the thinning of the mangrove forest and removal of vegetation minimizes the natural silting/aggregation process and the protection of the natural coast (Kühne, 1970). Further analysis of the specific area of coastline would be maximised with knowledge of the presence and magnitude of sandbars, submarine mountains and other structures close to the coast.

Table 9: Major flooding events in Alit

Date	Place on coastline	Happening
1997	Between Malay Alit and Iban Alit	<ul style="list-style-type: none"> Unknown tonnes of sand were dredged by a nearby oil palm research centre to use it to build the infrastructure for oil palm plantations Since this happening, people said that the changing of coastline and the estuary started
1998		<ul style="list-style-type: none"> River Bumbus mouth started changing Oil palm research centre attempts to dredge the sea again but is stopped by both Iban and Malay armed blockade.
1999/ 2000 (8/9 years ago)	Rh. Ek	<ul style="list-style-type: none"> Mangrove forest in front of both longhouses was removed by the sea. They lost protection as well as an easy and healthy supplementary food source from the crabs collected.
2000	Only Rh. Bettie	<ul style="list-style-type: none"> Flood at Rh. Bettie, stayed 4 hours and reached the Alit River Height of water: waistline (around the longhouse) A car was damaged The crops weren't damaged as paddy is very resilient
2003/ 2004		<ul style="list-style-type: none"> Major flood
24/ 25 th of November 2007	Mainly Rh. Ek	<ul style="list-style-type: none"> 3 days of rain and big waves making it a major event in Alit history. around 12 meters of the beach were removed by the sea in one day the mouth of the river changed several crops, which were close to the coast, were removed (Coconut, melon) some of the <i>biliks</i> lost there livestock (pigs)

The events of last December were the most important for Alit residents but they also mentioned that the rate of coastal erosion increased dramatically after the dredging of the sea in 1997.

Figure 5. Changes of river mouth according to the people



What they do know is that last year it took them one hour to walk to the river mouth and now it takes 2 minutes. Where there is now water, there was land where they grew crops, kept livestock and one man lost 200 oil palm trees as well as an old coconut plantation. They fear for their safety and have applied to the SAO and were granted RM20,000 for clearing land for a new location of Rh. Ek further inland but they are waiting to move due to financial constraints.

Coastal erosion is occurring along a large stretch of coastline in the Alit area including in front of the local school that lost 80-100m of land. The school has applied and been granted RM1.2 million to build a safety wall for protection against future flooding.

Education

Author: Jen Bond

Semi-structured and key informant interviews, questionnaires, focus groups, group discussions, preference ranking and observation data were used in this chapter.

The Malaysian education system comprises pre-school, primary, secondary and post-secondary education (Appendix 9) including special education and sports schools.

Within Alit, 17% of people have never attended school, the majority of which are female and 68% of the population left school before completion, which is considered Form 5 in this study. There was found to be no significant difference at the 5% level between level of education and longhouse of residence or level of education and gender. However there was a significant difference (5% confidence level) between the level of education and both whether the person still resides in Alit and their occupation (figures 6 and 7).

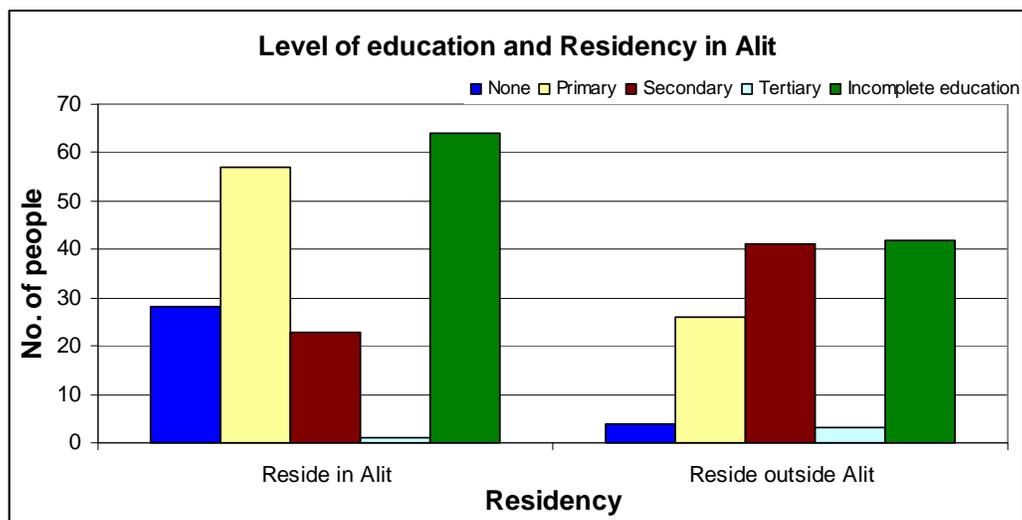


Figure 6. Level of education and residency in Alit

Of the people who have never attended school, 88% still reside in Alit and are more likely to be unemployed, farmers or fishermen. Students comprise 28% of the

population which is the largest occupation category and of the tertiary graduates, 75% reside outside Alit although it should be noted that the 1 person remaining in Alit is there on a short-term basis while waiting for feedback on job applications (figure 6).

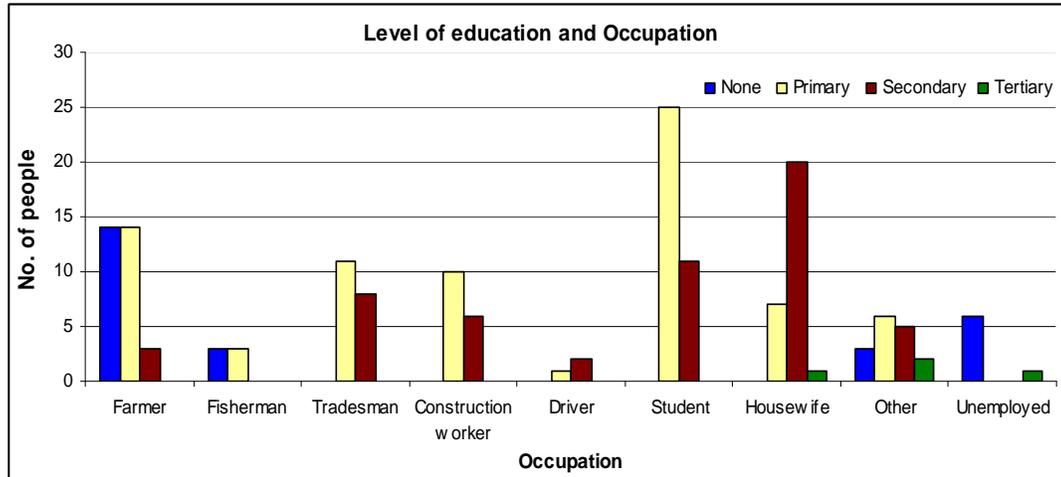


Figure 7. Level of education and occupation of all longhouse members of Alit

Of the five study villages investigated, it appeared at the surface level that Sessang was the more opportunistic village and for this reason a snapshot of the educational background of the residents was taken. Although the Sessang research team used different parameters to measure education basing their assessment of the occupation of the residents rather than their school level, comparisons can still be made. In Sessang the population was divided into categories of either educated or non-educated, with examples of each given in table 10 and it was found that 49% of the residents were ‘educated’.

Table 10: Examples of occupations in the educated and uneducated categories (Sessang data)

Educated	Uneducated
Government worker	Farmer
Teacher	Plantation worker
Headmaster	Tractor driver
Policeman	Tailor

Although it is somewhat presumptuous to assume one is not educated simply because they're a farmer, there is some value in the data where 49% of respondents were found to be educated and 11% of the respondents work or previously worked for the government including the DID (Sessang data). This suggests that Sessang as a community has greater links with government and industry, as 51% work off-farm, than Alit and this is likely to be a contributing factor to their greater ability to attract development opportunities.

Limitations to Education

A study from 1992 investigating the limitations to academic success of students in rural Sarawak found that the major factors involved were related to infrastructure, school facilities, home environment, poverty, syllabus and textbooks and inspiration (Chee-Beng, 1993).

Infrastructure

In Alit the road from the further longhouse is of poor condition making the outside world less easily accessible than for other towns in the surrounding areas. Several people stated that it takes 20 minutes by motorbike to get to school but before the road was built (in 2005) the children would have to walk for an hour along the beach. The closest secondary school for Alit teenagers is located in either Kabong or Roban and for this reason several students live on campus, which has serious implications for the social capital of the community they leave behind.

Often primary schools in major cities have computer classes, better facilities, kindergarten classes, more experienced teachers, easier access by mode of transportation whereas rural schools may lack electricity, have poorly designed buildings and be located in more rugged terrain only accessible by boat or on foot (Chee-Beng, 1993). This forces students to live on campus and can make it problematic to send basic necessities such as chairs and desks (Chee-Beng, 1993).

Home environment

Alit received electricity in 2003, meaning students before this time would have either had to study by daylight or kerosene lamp (Chee-Beng, 1993). Also there were very few desks observed in *biliks* in either longhouse during the field study with several *biliks* having no furniture of any kind, posing a hindrance to the study environment. Often in the longhouse there are a lack of desks and chairs, endless distractions from other individuals and often little guidance and interest from parents (Chee-Beng, 1993). Many of the current students' parents either didn't attend or complete school themselves. However, several parents were very keen for their children to go to school because they wanted their children to have better opportunities for employment yet their parenting capacity or use of discipline didn't promote this. One mother gives her children 1RM/day to spend on sweets, as a small bribe to make them go to school. However other youth of secondary school age have left school before completion, with some girls citing bullying by other students as a reason or wanting to spend time at home. One 16 year old male left school and is currently unemployed, residing in Alit while his family live in Bintulu, providing a discipline-free environment.

Box 8. Joshua, Male, 23 – Diploma of Civil Engineering

- Attended primary school in Alit and secondary school in Kabong.
- Began his university education in 2004 and finished his diploma classes in November 2007. He is currently awaiting his results and will go to Saratok check them via the internet.
- He is currently applying for jobs and residing in Alit in the interim. He is looking for temporary work to save money and continue his studies to degree level.
- His family was very encouraging of him to pursue his studies and this was a major contributing factor to his academic achievement.
- The rest of the community was also encouraging, wanting him to do well and be a role model for the younger generations.

Poverty

The cash income in Alit varies quite considerably between *biliks* and many households claim they don't have enough money. An inability to financially support

children to study and a propensity to encourage children to migrate for employment and remittance is a major factor of why so few people in Alit continue with their education. Other parents give their children between 30-50RM a week to buy hair decorations and other accessories in order for the children to not feel economically inferior to the other children at school.

Many farmers in rural areas of Sarawak have access to natural resources but little cash and therefore find it difficult to give their children pocket money while living at school or to provide transport to get them there (Chee-Beng, 1993). Further to this, the funding of tertiary education can often be beyond the reach of many families even if the students have loans or scholarships and those who aren't accepted into government universities have little chance of studying for a higher-level education (Chee-Beng, 1993) (Boey *et al.*, 2003).

Inspiration

Often there is lower motivation and inspiration to study in rural areas, partly due to the lack of financial accessibility of tertiary education and youths opt for income generation over study which in turn encourages their younger siblings to also leave school early to seek employment (Chee-Beng, 1993).

Joshua's academic achievements have made him the role model for the children and youth in both longhouses because he is 'ambitious', studies seriously and encourages them to study.



Photo 3: Focus group with children

Migration

Author: Rikke Hansen

Personal observation, informal conversations, questionnaires, key-informant interviews, semi-structured interviews, focus groups and seasonal calendars were used to obtain this data.

Migration as a general trend

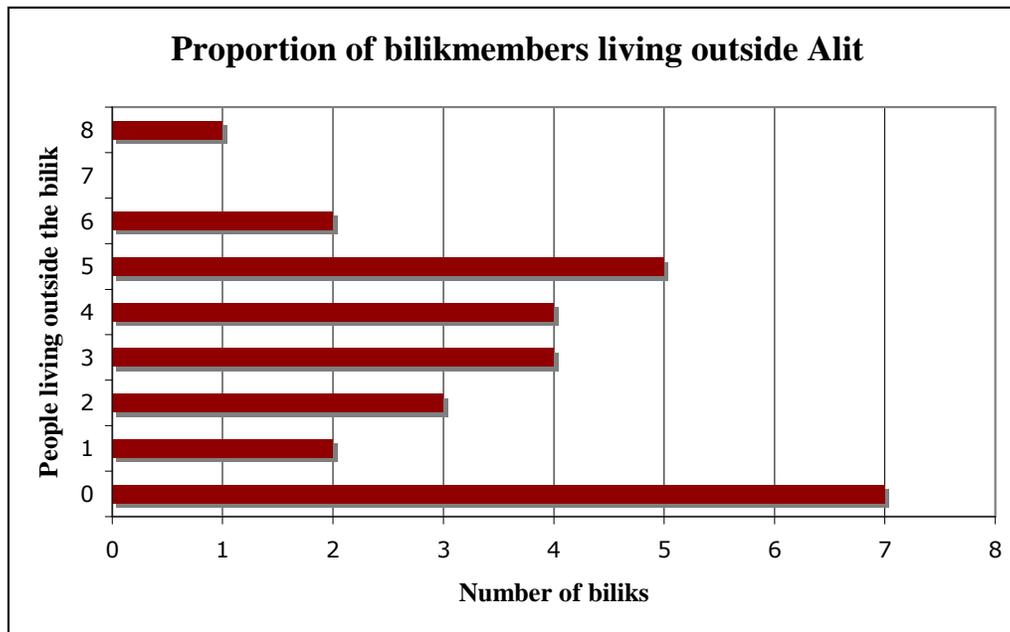
Since the beginning of the 1970's there has been an increase in the number of people living in urban areas, especially between 1980-1990, where the proportion of people living in cities more than doubled from 18% in 1980 to 37.6% in 1991 (Morrison 1996). This increase in rural-urban migration is a common trend in developing countries, and also affects the lifestyle choice of particularly the young generation among Ibans as well as the rest of the rural population in Sarawak (Morrison, 1996 and White, 2007).

Ibans are employed in every major occupational category in Sarawak's cities, e.g. construction, service sector, oil companies (Thompson 2007). It is common that migrants remit money back to the household and sometimes the enticement for migration might be a household strategy (Cheng Sim 2003).

Migration in Alit

Upon arrival in Alit village one can notice the lack of young people in the community. Out of the 197 people in Alit 42% live and work in the cities, mostly Bintulu and peninsula Malaysia but also for oil companies operating in e.g. Sudan. Several *biliks* now have family members residing elsewhere (figure 8). Usually the migrating young people will follow a family member or friend after receiving a job offer to have a network, minimise costs and experience less of a cultural shock as pointed out by interviewees.

Figure 8: Proportion of people from Alit living elsewhere



Box 9. Reasons for leaving Alit

Headman “no job opportunities, especially for well educated people (F5 or more)”

Female age 27 “nothing to do but sit in the ruai and wait for the next day”

Man age 49 “only employment opportunity in Alit is bejalai”

Man age 23 on bejalai “earn a lot of money to make farm investment and put in the bank and save for marriage”

Woman age 51 “no local work for SALCRA or FELCRA (also low wage RM300/month)”

Focus group both girls and boys “want to be educated”

Informal conversation “marry someone outside Alit”

Advantages of migration

This team got the impression that for those who migrate “life is easier in the city”.

They stated: there are many job opportunities, the salary is better, you can get year-round employment, the infrastructure is much better, variable food available, various ways of entertaining as well as learning new skills.

However, young migrants can also build their own human capital if they attend school or skill training in their destinations. An example of this is Ansi, age 23, box 10).

Box 10. Migration history: Ansi, age 23, education level F3, Rumah Bettie, bilik 7

- 16 years old migrate to Bintulu, construction worker, RM20/day
- 18 years old, Bintulu, works as a rigger, RM24/day
- 20 years old, Johor, rigger – semi-skilled worker, RM70/day
- 21 years old, Sudan 6 months, pipe fitter – semi-skilled post, RM170/day
- 22 years old, Qatar 7 months, pipe fitter – semi-skilled post, RM140/day
- 23 years old, attended a course in Miri, now qualified crane operator (RM360/day)
- Now, waiting for friend to call him about work in the Middle East

Disadvantages of migration

When working in the city or overseas the migrant workers are very dependant on their social networks, which helps them in the transition from rural to urban lifestyle. Some of the cons mentioned in the interviews were the fact that they have more expenses in the city; they have to pay rent, they can't utilize natural resources and have to buy everything including rice. Many of them also found themselves in low- or un-skilled jobs with very low salary.

Earning money was the foremost purpose of migration for the household strategy as claimed by the remaining spouse. Even though the family members are missed and needed, the general responses from the interviews were that it was necessary for the family members on bejalai to remit money back in order for the household to maintain their current lifestyle.

Parents sometimes frowned upon children wanting to drop out of school and follow their other family members or friends after discovering the “easy way to make money” and hearing the success stories from other migrants in the family or community. From other members of the community it was argued that it would be good for the children that are academic to get an education and for the non-academic to find work outside Alit.

Impact on the community

Much migration, in various parts of the world, is circular: migrants maintain strong links with their area of origin over extended periods, and family and other personal networks are crucial in maintaining links between their home village and new location (Thompson 2007). Strong links between young migrant



Photo 4: Preference ranking

workers and areas of origin are expected in traditional Iban society. For example many family members return to Alit during harvesting of the rice and the following Gawai festival, which is a major event in the community. Normally it is decided among the adult children in the household who will be responsible for the caring for their parents, the *bilik* and eventually return to the family farm. Some people return to Alit voluntarily for financial reasons in order for one parent to care for the children and others to be self-employed. It is now easier to stay in touch with the aid of mobile phones and when asked about development improvements for the community, a public phone was mentioned.

Figure 9: Proportion of households relying on remittance.

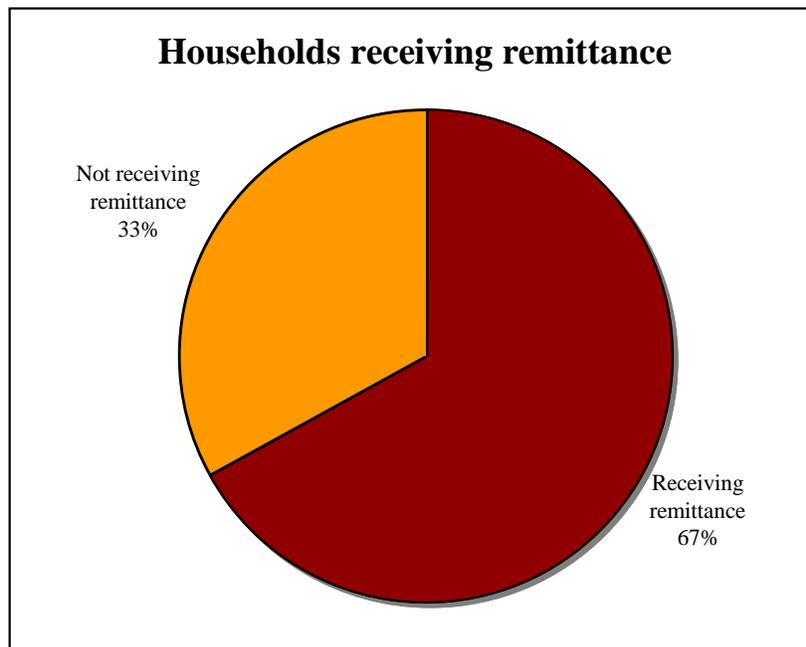
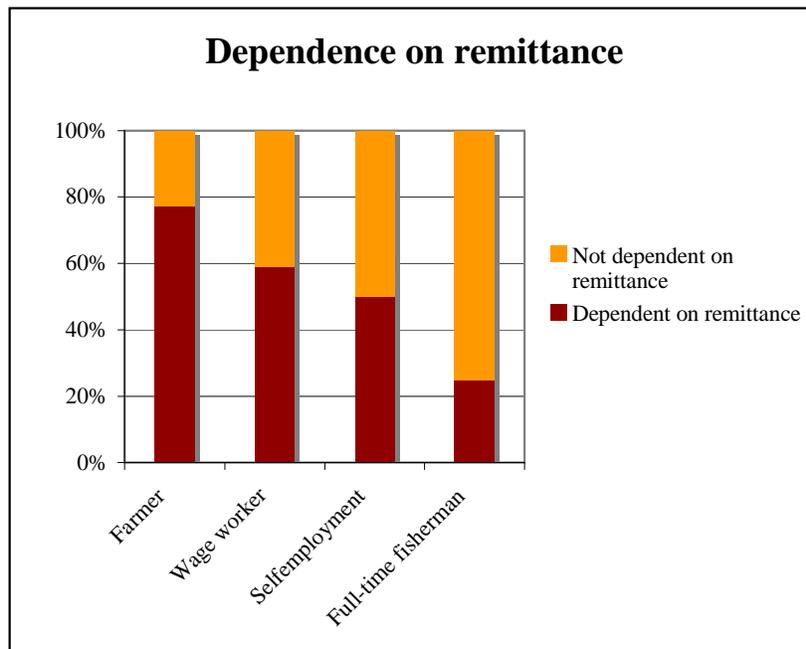


Figure 10: Dependency of remittance in the major income generating groups



This team learned that 67% of households cited remittances as the principal- or significant contributor- income (figure 9). Especially for farmers who use the majority of time spent on the farm for own-consumption activities, and hence have low cash income (table 3) rely on remittance even more than other groups in the village (figure 10). The remittance has a positive economic impact on the community, helping to stimulate the local economy through investments in family farms, although the household is then potentially more prone to vulnerability in the working conditions of the person remitting the money. Some household that are not of migrating age are not relying on remittance but instead achieve cash mainly as drivers or fulltime fishermen.

For the teenagers in the community there is a lack of role models; people to identify with, and they are undecided on whether they want to go to the city to be with other family members, or stay in Alit close to their parents. With only 14 people (12%) living in Alit in the age range 18-35 it is probable that at least some of them will migrate (figure 2).

Wage work in Alit

Some of the men in Alit have chosen to work for wage and still stay in Alit with the family. These types of job vary from tapping rubber, private van driver, lorry driver, casual labour, odd jobs, and scaffolding. Some of these occupations are seasonal, while others have made a small business out of driving taxi or goods.

Another main occupation among the men in Alit is seasonal work for example with construction companies and oil companies. Via informal conversations we were told that Ibans are generally considered good employees, since they do not mind working 7 days a week, 8 hours or more a day for a sometimes-low salary. They do not complain about the workload or work conditions, and they have generally been very happy with the work they found outside Alit.

Generally the people are unhappy about the infrastructure leading to Alit, which according to some of them hinders them in pursuing employment in nearby cities such as Roban and Kabong.

The way forward

Authors: All

Based on the previously discussed findings we will now focus on the various alternatives for the future of Alit, with point of departure in the natural resources.

A major restriction to agricultural production, as a method of development, was identified as drainage for which the people offered the solution of a bund to utilise the idle land. Their plan is to receive a grant from DID to fund a bund to improve the drainage of the land which will allow the area to be converted to large-scale oil plantations thereby providing economic security to the village while also providing a physical boundary with the surrounding villages to stop the vacant land being taken over. This mentality that one bund will fix all problems, is unlikely to provide their desired outcome for several reasons. The community-wide plan to convert all land to oil palm based on the success of other villages and a perception that it will provide future financial security and disposable income shows a lack of reflection to previous mono-crop schemes which had short life-spans in the past. Through our combined experiences, knowledge and opinions we are inclined to believe that crop diversification would be preferable to extensive mono-crop plantations in order to preserve biodiversity. We believe that the community feel pressured into proving their land claims by utilising all idle land rather than have a desire to convert the forest.

Oil palm schemes in nearby areas have improved livelihoods for those involved but these plantations have also come about for other reasons such as links to government and prominent members of industry for insider information about upcoming opportunities. Whereas Alit does not seem to have a network and is therefore reliant on remittance from their children and the capacity of the headmen.

Many parents claimed that they wanted the best for their children and said that this would be realised through education and would like their children to complete school. Yet they don't action these intentions by spending quality time with their children in homework sessions or taking an interest in what they're studying. If an Alit parent was involved in the Parents and Teachers Association (PTA) which successfully applied to the DID for funding for the wall in front of the school then they would have known how to apply for the village. The people who didn't attend school have to work hard and struggle from day to day, they see others in their position with similar hardships and they want their children to go to school in order to break this cycle and lead a more comfortable life.

Limitations to achieving their educational goals are; distance to school, lack of career guidance and lack of disciplinary measures for dropouts within the community.

Students don't have a clear picture of how to reach their career goals. They are able to state what they want to be when they grow up (or finish school) but don't know how to get there in terms of subjects to take and requirements after secondary school.

Other students weren't able to tell us what level of education is higher than secondary school in the Malaysian system showing that some of the youth have no concept of how they fit into the broader world and can't contextualise the education system to their own life ambitions. Members of the community find drop-outs who have activities to keep them occupied disruptive to the longhouse, particularly when drunk but find it difficult to do anything about it because when they mention to the parents that there is a problem, they are told to mind their own business. The discipline of the children is a *bilik*-level issue although its affects are felt at the community level and several parents found the drop-outs to be a bad influence on their children.

Basic level education can inspire further self-development in terms of awareness building, learning social and life skills and broadmindedness. Conversely a lack of basic education can limit the capacity of a person to read and interpret a situation, be aware of surroundings and interact with others. Further to this, Alit's lack of knowledge on the appropriate application channels and timing results in their application sitting on the desk of a low-ranked officer. Whereas, in surrounding communities applications are submitted to people of sufficient rank, they utilise their established networks with important members of government and the application

results in a response as a minimum. For example, nearby active Sessang has 11% of their population working for government allowing them to not only hear about upcoming projects in good time but send the application to the appropriate person.

An underlying reason for students to drop out of school is the enticement of material possessions such as mobile phones and the possibility of earning money in the short-term rather than viewing education as a long-term investment for the future. Leaving school and Alit for employment is a livelihood strategy for the *bilik*, yet this puts a lot of pressure on the remitting person who the family are depending on. A recently returned woman said that it was hard to make ends meet in the city as expenses are high and the added pressure of having to send money home is stressful. One of the headmen's perspective on remittance is that it is the responsibility of the current youth to migrate and send back money to invest in oil palm so that future generations will be able to enjoy the benefits of education and financial security. The community could consider alternative methods of attaining oil palm on their land or other investment opportunities from an agricultural bank.

We believe that from a social perspective it would be more beneficial for the community to encourage the educated and innovative members to remain in the village and build the economic base of the community from within. Yet from the current economic perspective remittance is a major source of income for a significant proportion of the population allowing them to afford items and investments they would otherwise have to forego. Although rural-urban migration is likely to continue into the foreseeable future, perhaps *biliks* should be more active in generating income themselves rather than having an often complete dependence on family members, opening themselves to vulnerabilities in that family member's employment status.

Alit residents believe that a resort or a factory, representing a wish to have year-round employment for the majority of the community in the surrounding area, will improve their livelihood. Yet no one wants to put themselves forward to do the lobbying for these options. The people have been living in the shadow of previous headmen's narrow-minded interpretation of development but hopefully this will change in the future once the two newly instated headmen learn the skills appropriate for their positions.

Reflection

Author: All

Lessons learnt from the study

There was poor discussion amongst the group about the procedure of the research, focussing more on what was to be said to the community and the outcome that was desired. Yet, the group worked well together, remaining focussed and diligent throughout tense moments and learnt from each other, both academically and personally.

Method reflection

By living in the longhouse through the study period, the methods of informal conversation and personal observation were maximised to their full potential. The questionnaire gave an overview of the community but was too brief to cover all the elements, particularly income values, and made it difficult to compare parameters during analysis. Additionally, the questionnaires were interpreted differently by the interviewers leading to different responses.

The quality of the key informant data was perhaps limited because both headmen had recently been elected and were unsure of specific facts which we had assumed they would know. This meant that the data was sought from other community sources. The community mapping exercise was useful to gain an overview of the power relationships within the community and was a contributing factor to why several of the following exercises were divided into gender groups. Perhaps the map could have been incorporated more into the subsequent field activities as in hindsight it wasn't utilised to its full potential although the bigger issues gained from the mapping session, such as conflicts with boundaries, were pursued. The transect walk group size was too large for only one interpreter where some information may have been lost, yet the activity was a great way to get an overview of the area and interact with the community.

The seasonal calendar session was poorly prepared meaning the group were unsure of what role they were to play resulting in poor facilitation and confusion amongst participants. A select group of males dominated the calendar with the women sitting back and observing. To counteract this, the women were taken to a separate area of the *ruai* to make their own calendar and discuss their seasonal activities which proved to be very rewarding for participation and results. The male group got carried away with showing their fishing equipment which demonstrated their pride and enthusiasm for our research, but was disruptive to the women's session. This was the first session which was divided by gender and it was interesting to see the men checking up on the women and wanting to know what they were doing.

The focus group preparation and implementation was greatly improved from the learning process of the seasonal calendar with clear facilitators and session plan for each discussion. A limitation of the data obtained in the preference ranking was the involvement of different age groups having different needs and desires of development which prevented the results from giving a clear picture and in the future the groups should have been divided into age groups.

The semi-structured interview information obtained was predominantly dependent on the area of interest identified in the questionnaire survey. This was important to get an in-depth understanding of the subject although at the expense of the comparative aspect of the research. People were not asked about a range of subjects, only specific areas which may have been inappropriate if the wrong impression was taken from the questionnaire. A respondent targeted for a specific focus refused to participate resulting in their views being lost from the study.

The soil samples were taken without an auger, which was a reason for repeating the process in an attempt to improve the reliability of the data. The samples were not representative of the area because they were taken from a single farmer's field, although it allowed a more thorough investigation of that specific field by contextualising the samples with qualitative data.

Conclusion

The move towards the commercialization of agriculture in Alit is changing the traditional way of life, previously based solely on natural resources for own consumption into farming systems of cash crops. Intrigued by the success of oil palm plantations, the community is interested in developing a large proportion of their land for this purpose. An alternative income generating activity is the remittance of migrant family members, which is a popular strategy throughout both longhouses. This migration trend has serious social and economic impacts for both the migrant workers and the families in Alit. The majority of those who leave, often for manual-labour, haven't completed school although a greater proportion of people who have never attended school still reside in Alit and are more likely to be farmers. This lack of education and encouragement of migration has a negative impact on the social life of Alit. Further to this the loss of land from both encroachment and coastal erosion causes anxiety and insecurity among the population, particularly the Rh. Ek longhouse. Improvement of the human capital such as education, lobby work and networking will instigate changes in the community towards a more active and engaged society able to take advantage of future development opportunities.

Acknowledgements

We would like to thank our Malaysian counterparts, Diweng Bakir and Campbell Apau, particularly for sharing their knowledge of Iban culture and local government issues but also for their good humour and interest in the local context all of which helped to connect us with the community. Rossy anak Anding and Edmeade anak Rujis (Cikgu), our interpreters, were indispensable and very involved in our study which made the process more enjoyable for us. All the lecturers offered valuable guidance, particularly Andreas de Neergard, Michael Eilenberg and Kelvin Egay who challenged us to go that one step further and braved the wildlife of Alit. The community welcomed us with open arms and an eagerness to assist us with everything that was in our study and everything that wasn't. We are greatly indebted to Alit for their friendly hospitality and allowing us insight into their lives.

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Appendix 1. Synopsis

An assessment of the development potential in Alit, Sarawak



Interdisciplinary Land Use and Natural Resource Management - Synopsis

Jen Bond

Rikke Hansen

Flavia Nakaggwa

Martin Aubanton

Alexander Roscher

27.02.2008

1. Introduction

Sarawak is located on Malaysian Borneo and in contrast to the peninsula, is dependent on its natural resources such as the rainforest and petroleum stocks. It was colonized by the British from 1946-1963 who introduced the Torrens land tenure system, which initiated the changes to traditional *adat* system (Ngidang, 2005). Then in 1963 Sarawak joined the Malaya Federation, which further violated the human rights of the indigenous people through ongoing legislative processes. Recent legislative amendments are promoting the large-scale utilisation of native land for commercialised plantations. According to the Malaysian “Vision 2020” Sarawak should, along with the other regions, be fully developed with identified sectors for growth being commercial agriculture, manufacturing, construction and the service sector (Sarawak State Government, 2007).

The land use in the region is linked to the hot and humid climate, and that is why the most common crops grown are rice, oil palm tree, rubber tree and pepper (Jen-Hu Chang, 1968); where paddy, sago, coconut and lemon are suited to flat lands while pepper, rubber and palm oil are more suited to hilly areas. The conditions for agriculture in the coastal areas are very difficult, due to soil characteristics such as peat swamp. These are the challenges facing the study site, Alit, located in Sarawak, Betong Administrative Division.

1.1 Background

Alit is an Iban village situated on the coastline and is composed of two longhouses of 16 and 22 *biliks* respectively, equivalent to a total population of approximately 150 people. Because of the soil type, the farmers grow mostly wet padi, vegetables and fruit trees. The surroundings are also composed of peat swamp forest and bushes, and two rivers (Rumbus River and Lubok Batang) flow into the sea a few meters from the village. There is no sealed road that directly connects Alit to the Roban-Kabong road, situated 4 km away. In addition to this lack of access, the longhouses have been connected to the electricity network only since 2003 and to the treated water supply in 2007. It is noticeable that Alit was connected to these networks later than the other villages of the neighbourhood.

Alit’s close proximity to the water allows the villagers to undertake fishing as an alternative source of income, at least from March to September. However, the fishermen of Alit only fish along the coast close to shore because of the presence of larger fishing boats in the open waters, which they cannot compete with. Therefore, fishing activities are predominantly for the community’s own consumption. This competition is further compounded by the frequent

flooding that impacts the soil and water qualities, thereby affecting crop production. Another factor that affects the land quality is the pollution of the rivers. For the Rumbus River, this is due to a prawn farm situated up-stream, whereas the Lubok Batang river problem comes from a fruit orchard scheme established by the Department of Drainage and Irrigation (DID) just outside the boundaries of the village. This orchard scheme prohibits the population from utilizing the river resources, while it was available prior to this.

In addition to fishing, another main occupation of the villagers is rice farming, mainly for their own consumption. Because these activities don't generate sufficient income for the household, the youths tend to move away from the village in search of jobs in town, which could have ramifications for the community. This migration, temporary or permanent, could cause a shortage of young and energetic members of the work force in the village (Parnwell,-M.J.G.; King,-V.T., 1998). In order to diversify their sources of income, the inhabitants of Alit tried different options. They used to extensively cultivate sago and coconut under a governmental scheme, but they experienced too many difficulties in relation to commercialization and flooding respectively. Currently, the villagers would welcome an oil palm plantation on their land with the support of SALCRA (Sarawak Land Consolidation and Rehabilitation Authority) but their application was rejected. Nevertheless, some farmers decided to plant their own oil palm tree in order to earn cash income. Another particular source of income chosen by one household is to cultivate bird nests using two artificial "bird caves", which they have been undertaking since 2007.

Concerning the DID fruit orchard scheme, it is located just outside the village boundaries but it does not include the community even though it would be a good opportunity for generating an income.

Finally, the inhabitants of Alit are quite worried about their current situation and they feel that they have been overlooked in the development plan for this region.¹

1.2 Problem statement

This research team assumes there are several factors which impact the development of Alit. Among these are land quality which has an impact on the village's ability to attract external investment and migration of youth to the urban areas.

Therefore, this study intends to assess the development potential of Alit by investigating how the sustainability of land use management and welfare of the villagers could be enhanced.

¹ Hand out material

2. Objectives and research questions

The main objective of this study is:

To assess the development potential in Alit village, Sarawak, Malaysia.

Under this broad objective, three research questions have been identified:

1. What is the natural resource base and how has its utilisation changed?
2. To what extent do social and human capitals impact development in Alit?
3. What are the potential income generating opportunities in Alit?

Each of these three research questions draws on further issues related to the land use management, political climate, ability to attract outside interest, social cohesion, economic factors, community history, gender, labour and migration issues of the community and will be discussed separately below.

1. What is the natural resource base and how has its utilisation changed?

This research question aims to investigate the history of the natural resources in Alit and to make an assessment of the quality of those available. The question deals broadly with the areas of land-use history, land quality, availability and accessibility of natural resources, land tenure, economic aspects, political restrictions or plans for natural resource management, gender and labour force issues. The data required will incorporate the major events and land-use changes, soil physical and chemical properties, water chemical characteristics and climate factors.

2. To what extent do social and human capitals impact development in Alit?

By investigating the social and human capital in Alit, the focus will be on education, ability to attract outside investment, employment opportunities, migration, political structure and family structure. More specifically, the data required will address the ambitions and concerns of the community, local planning and accessibility to essential services.

3. What are the potential income generating opportunities in Alit?

Based on the data collected in research questions 1 and 2, this team intends to use the analysis of the data to make suggestions on income generating opportunities for Alit which are appropriate in terms of the natural resource base and social welfare of the community. It is

anticipated that potential income generating activities may lie within the surrounding area of Alit.

Appendix 1 compiles a comprehensive table listing the specific data required to address the research questions and linking them with the methods used to collect the data.

4. Methodology

3.1 Study design

The survey team will involve five Danish students and two Malaysian students. Our sampling frame will be Alit village and the unit of analysis will be households (*bilik*). Due to the small population, we hope to involve the entire community in the questionnaire. The methods to be employed include secondary information, questionnaires, semi-structured interviews, key informant interviews, Participatory Rural Appraisal (PRA), Geographical Positioning System (GPS), soil and water sampling and a natural resource inventory to increase the validity and reliability of the information. The semi-structured interviews, key informant interviews, PRA and focus groups will be sampled purposively. Data analysis will be carried out using the software program SPSS and soil samples will be analysed in the laboratory on return to Denmark, while the water analysis will be conducted in the field.

On arrival in Malaysia, this synopsis will be synergised with that of our Malaysian counterparts, Campbell Apau and Diweng Bakir, who are likely to have greater knowledge and understanding of the local area and customs.

a. Data collection methods

3.2.1 Gathering of secondary data

Secondary data will be used to assess what other researchers have found in relation to the current study and this team will use information from the internet, journals and text books.

3.2.2 Questionnaire.

The questionnaire is included in appendix 3 although, changes are likely after the merging of this synopsis with that of our Malaysian counterparts. Pre tests will be carried out with fellow

students and with at least 5 farmers before interviewing to ensure the questions' clarity, comprehensiveness and acceptability.

Due to the limited number of *biliks* in Alit a questionnaire will be administered to get an extensive overview of the community and to ask closed questions, for example in regard to family structure and demographic information.

3.2.3 Semi-structured interview (SSI)

Semi-structured interviews will be used to gather information from individual households and also answer questions of how and why. This method will help us identify the correlation between phenomena like that between different land uses and development. It is anticipated that the sample size will enable a representative population to be interviewed with open-ended questions in relation to aspirations for the future, migration patterns and economic factors that affect the choice of lifestyle in Alit. By interviewing a high proportion of the population of Alit, it is expected that the validity and reliability of the data will be improved.

3.2.4 Key informant interviews

Interviews will be held with particular people such as the leaders and elders of the village in order to gather information relating to the history, current choice of lifestyle and an overview of Alit. Representatives of local administrative bodies and Non-Governmental Organisations (NGO) will also be interviewed to ascertain why the Alit village is presumably not involved in development schemes, for example the owner of the neighbouring fruit orchard. The limitation is that if the informant is not interested in the subject area, information given may not be reliable. If the informant has any grudges or is passionate concerning the area, they may be biased and create an inaccurate or exaggerated impression of the area.

3.2.5 Participatory rural appraisal (PRA)

PRA is a methodology which helps to identify community problems and to plan solutions with the active participation of community members. Due to the fact that little is known about the area, we think this will be a good way of obtaining this kind of information. PRA is a useful tool when under time constraints.

General information about the area, spatial, time, production and technical information, map of the community, history and more information can be obtained with the tools listed below.

i. Transect walk

A transect walk is a transverse “cut” of the community or a farm in which various technical and production related aspects can be identified, described and analyzed. This will be done at the beginning of the field work to give us an overview of Alit village in terms of types of crops grown, infrastructure, and natural resource distribution.

ii. Mapping & Seasonal calendar

Mapping will identify the spatial distribution in addition to the past and future utilisation of the area. We hope to involve categories of people including women, men, young and old. Mapping will be used to document history, timing of major events and the effect on the community.

Trend analysis presents the trends in community life. It will give an understanding and awareness of past events and their effect on the present and the future. Information gathered will focus on themes such as rainfall, crop production, harvests, soil fertility, deforestation, availability of work and production trends outside the community.

The natural resource inventory will be undertaken using personal observation and with the aid of a GPS to give a clear and current picture of the static environment in terms of location, altitude and other geographical parameters.

A seasonal calendar will be used to collect data on the community’s various activities in relation to land-use, income and culture over the period of a year.

iii. Preference ranking

Preference ranking will help to identify and rank concerns and opportunities such as reasons for the current low development and the future choices of lifestyle. This will be used to identify and analyze options for an increase in development. It will also be useful in analyzing preferences concerning issues of importance for different community groups, for example preference of crop varieties.

iv. Focus-group discussion

A group discussion is where a homogeneous group of people is used to generate primary data. This research team hope to involve the elderly to give us a view of the past events and what activities were carried out which might have affected the use of land. Targeting the youth will give an appreciation of how they perceive their future.

3.2.6 Sample collection

With the transect walk results and an area map, representative areas for sample collection will be identified. Soil sampling will be conducted using an auger and several parameters of both the physical and chemical properties of soil will be tested. Water sampling will test for nitrates, biological oxygen demand (BOD) and *Escheria coli* (*E.coli*). Soil data from other nearby communities will be incorporated into the final report for comparison with that collected from Alit. This will help to assess the production potential of the soil and the quality of water.

The above methods combined with direct observation and informal conversations with the community members will improve triangulation.

3.2.7 Data analysis

Data from interviews and questionnaires will be analysed using the SPSS software program. Soil physical properties like texture, structure and colour will be analyzed in the field. Soil chemical properties such as pH, phosphorus and aluminium contents will be analyzed in the laboratory. The water samples will be analysed by a member of the Malaysian team during the field work period.

3.3 Proposed time schedule

Activity	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11
Key informant interviews	Village head (All)		Development agents								
Transect walk											
GPS											
Questionnaire											
Semi-structured interviews											
Soil & water sampling											
Preference ranking											
Mapping											
Focus group discussion											
Observation											
Nightly de-briefing & logbook											
Data analysis											

When in the field the research team intends to keep a logbook of all activities and maintain a wall weekly planner for appointments and fieldwork activities. Nightly de-briefing sessions will be carried out with the entire research team to keep track of data collection and the time schedule.

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Cover Page Photo. ‘Typical Iban longhouse’. www.galenfrysinger.com/Nanga_Sumpa_sarawak

Appendix 2. List of Methodologies implemented

Methodology	No. of respondents	Focus Topic
Questionnaires	Rh. Bettie: 14 Rh. Ek:13	<ul style="list-style-type: none"> • Demographic information – <i>Bilik</i> occupancy, age, gender, education level, income • Migration • Natural resource use • Agricultural production • Labour division
Semi-structured interviews	13	Migration Income Fishing Land use Herbicide/fertilizer use
Key informant interviews	6	<u>Headman of each Alit longhouse:</u> <ul style="list-style-type: none"> • History of Alit • Major events • Land use changes • Community structure • Plans for the future <u>Headman of Empayang (Rh. Jemat):</u> <ul style="list-style-type: none"> • SALCRA/FELCRA applications • View of Alit <u>Agriculture representative:</u> <ul style="list-style-type: none"> • Current road application • Plans for Alit <u>Headmaster Alit school</u> <ul style="list-style-type: none"> • Coastal erosion • Relationship with Iban Alit
Focus groups	4 Sessions: Children: Girls: Boys: Women:	<u>Children, youth boys, youth girls:</u> <ul style="list-style-type: none"> • Education • Migration • Life in Alit – role models aspirations for the future
Group discussions	3	Resource: Natural resources changes Development: Peoples’s perception of development Coastal erosion: Changes of the river mouse, floodings
Soil sampling	12	<u>Soil composition:</u> pH, Conductivity, nutrient contents, total Carbon and Total Nitrogen
Water sampling	14	<u>Water composition:</u> salinity, pH

Preference ranking	2 Sessions Women: 28 Men: 20	<u>People's perception on Alit:</u> Problems Opportunities
Seasonal calendar	2 Sessions Women: 10 Men: 10	Repartition of the activities, ceremonies throughout the year Free time periods
Community mapping	1	Resources: People's perception of their land Social: Group dynamic
Transect walk	1	Resources: Land use, relation to the boundaries, resource inventory
GPS mapping	1	Resources: Repartition of the natural resources Coastal erosion: Impact of floodings, erosion intensity
Informal conversation	Every day, for every one of us	Because we lived in the longhouse with the people, we had the opportunity to have numerous informal conversations and observed all daily activities.
Personal observation	All the time	

Appendix 3 Definitions

Migration:

Migration is the moving of people from rural areas to cities or other destinations, e.g. oilrigs that offer employment. It can be seasonal, meaning that the migrants still come home once in a while to help out on the farm, or it can be more permanent jobs, where the migrants stay in the city or with the company and only comes home for the Gawai.

Welfare:

The state of doing well especially in respect to good fortune, happiness, well-being, or prosperity. (Merriam-Webster Online Dictionary, <http://aolsvc.merriam-webster.aol.com/dictionary/welfare>)

Livelihood:

A combination of the resources used and the activities undertaken in order to live. The resources might consist of individuals skills and abilities (human capital), land, savings and equipment (natural, financial and physical capital, respectively) and formal support groups or informal networks that assist in the activities being undertaken (social capital).

Livelihood strategy:

The range and combination of activities and choices that people make/undertake in order to achieve their livelihood goals.

Social capital:

Social resources upon which people draw in pursuit of their livelihood objectives. These are develop through: networks and connectedness, either vertical (patron/client) or horizontal (between individuals with shared interests) that increase people's trust and ability to work together and expand their access to wider institutions, such as political or civic bodies; membership of more formalized groups which often entails adherence to mutually-agreed or commonly accepted rules, norms and sanctions; and relationships of trust, reciprocity and exchanges that facilitate co-operation, reduce transaction costs and may provide the basis for informal safety nets amongst the poor.

Human capital:

Skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood objectives. At a household level human capital is a factor of the amount and quality of labour available; this varies according to household size, skill levels, leadership potential, health status, etc. Human capital contribute to peoples ability to negotiate and engage in discussions and debates. To increase or improve human capital people for example have to invest in training/education.

Appendix 4 Iban Religion and Culture

Author: Jen Bond

Religion

Traditionally the Iban believe that this world is connected to and influenced by the events and actions of beings in other realms. These gods (Petara) are believed to be compassionate towards humans and are associated with the sky, although some are in the realm of the dead. Similar to the gods, Sprits (antu) are unseen supernatural beings although they may act unfavourably towards humans and exist in a realm that can be entered into by humans through dreams (Mawar, 2006). The third supernatural category is the heroes and heroines of the Panggau-Gellong world, called the Orang Panggau which exists between the visible world and the sky.

Throughout time, the Iban have been exposed to Hinduism, Islam and more recently Christianity with the majority of Iban are now Christian in faith (Ministry of Tourism, 2008) while retaining their traditional rituals of their animistic heritage, particularly the worship of triumvirate of gods under the authority of the bird god of war (Mawar, 2006).

The adat

The adat is a system of rules and norms which govern the interactions of humans with the unseen supernatural realms and regulates the affairs of humans to provide social and moral order among the Iban people. The adat encompasses social and behavioural norms, rules, legal system and sanctions to be enforced and is pivotal to the Iban way of life (Mawar, 2006). It is believed that the Iban were introduced to the adat system by a representative of the God who created the land (Mawar, 2006).

Omens

Sengalang Burong, the god of war and divination is the principal omen bird and authority over his seven son-in-laws who are the augural birds, with varying importance. He communicates to humans through his sons-in-law sending either sanctioning or disapproving messages (Mawar, 2006). The Iban interpret these messages as either auspicious or inauspicious and would be respond accordingly for example, signals may lead to the abandonment of settlements (Mawar, 2006) or swidden sites (Dove, 1993). These signals from the gods are very complex and depend

on the bird species, the type and number of the bird call, whether the call is heard to the observer's right or left, the order within a sequence of messages and the character of its flight (Dove, 1993).

Headhunting

Although the Iban society lacks social classes there are distinctions of status based on individual achievement and success rather than inherited privilege and this could be achieved through agricultural success and the taking of heads. Headhunting was undertaken in order to end the period of mourning for the dead. The spirits taught the Iban proper mortuary ritual whereby 'mourning for the dead must be cut away with an enemy's head'. The tradition has also been linked to fertility (Davison and Sutlive Jr, 1991).

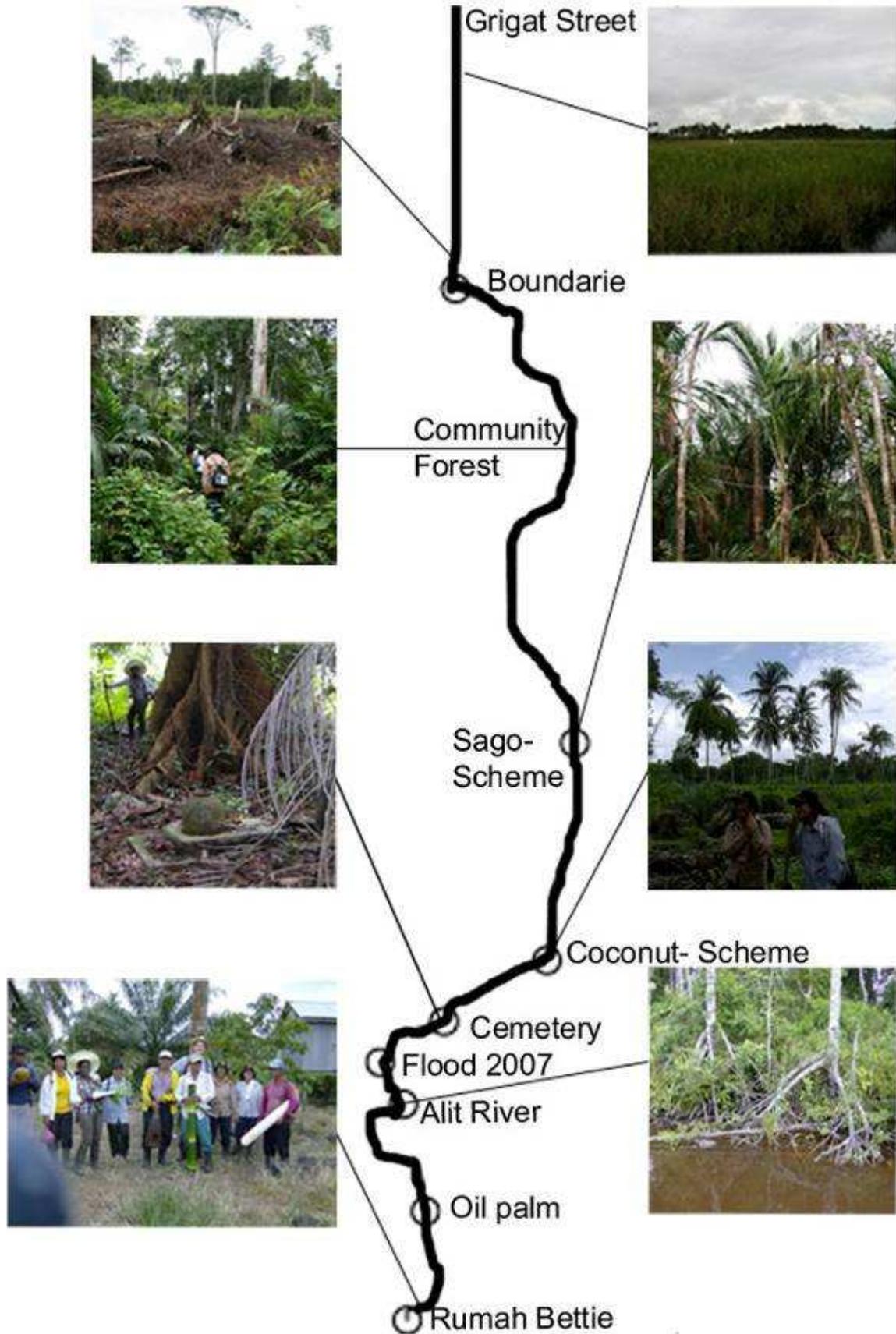
Despite the egalitarian nature of Iban society and the equality between the sexes, the act headhunting was strictly under the domain of men although women were involved in the ceremony of bringing the head into the longhouse (Davison and Sutlive Jr, 1991). Men who were successful warriors were awarded the highest honours and achieved positions of power within the community, the level of power linked to the number of heads taken, while also enhancing his desirability as a suitor. These men were also able to have the back of their hands tattooed as visual recognition of their achievement. The taking of heads is closely linked to the supernatural realm and the Iban would travel great distances in parties to seek their enemy (Davison and Sutlive Jr, 1991). The cult of headhunting was outlawed during the Brooke rule after having first made use of the enmity between the various ethnic groups to gain control over the interior (Wadley, 2007).

Bejalai

The usual period of bejalai is six months to two years and the main reason is a desire for economic advancement. It is acceptable for young, unmarried men to go on bejalai for a short duration if they send home remittance, achieve a good reputation and return with material goods. However bejalai is unacceptable if the man is older and neglecting longhouse responsibilities, doesn't send remittance home, returns without material goods or disgraces the family's name (Kedit, 1991). A survey in 1972 in Batang Ai found that 30% of the male population was absent on bejalai, which has implications for the families and the social situation of the communities at home. Despite complaining about their husbands' absence many women approved of bejalai because of the economic value for the household and likened the concept of men going on bejalai to their

previous prerogative of headhunting (Kedit, 1991). Iban on bejalai often come together in various cities forming an Iban community and strong friendships usually develop.

Appendix 5: Transect walk



Boundaries

Malay
Land,
drained
with
vegetables
and maize
. Peat soil

River Alit Sea

Forest Reserve		Sago scheme		Coconut scheme	Cemetery and Fruit trees		Paddy fields and Oil Palm plantation	Longhouse (Rumah Bettie)	Beach
Cuttet trees on the ground to prevent any malays' encroachment	Secondary forest with jungle trees	Sago trees	Long grass	Coconut trees, bamboo trees, other trees	Tomb stones in an untouched forest	A few orange trees and durian trees	Paddy fields and Amis' Oil Palm plantation	Longhouse, huts and a few trees	Open area
Water logged		Water logged		Swampy with dry zones	Swampy with dry zones	Drained	Drained	Dry area	Dry area
Peat soil		Peat soil		Peat soil	Sandy soil	Sandy soil	Cracking soils, Sandy clay	Sandy soil	Sand

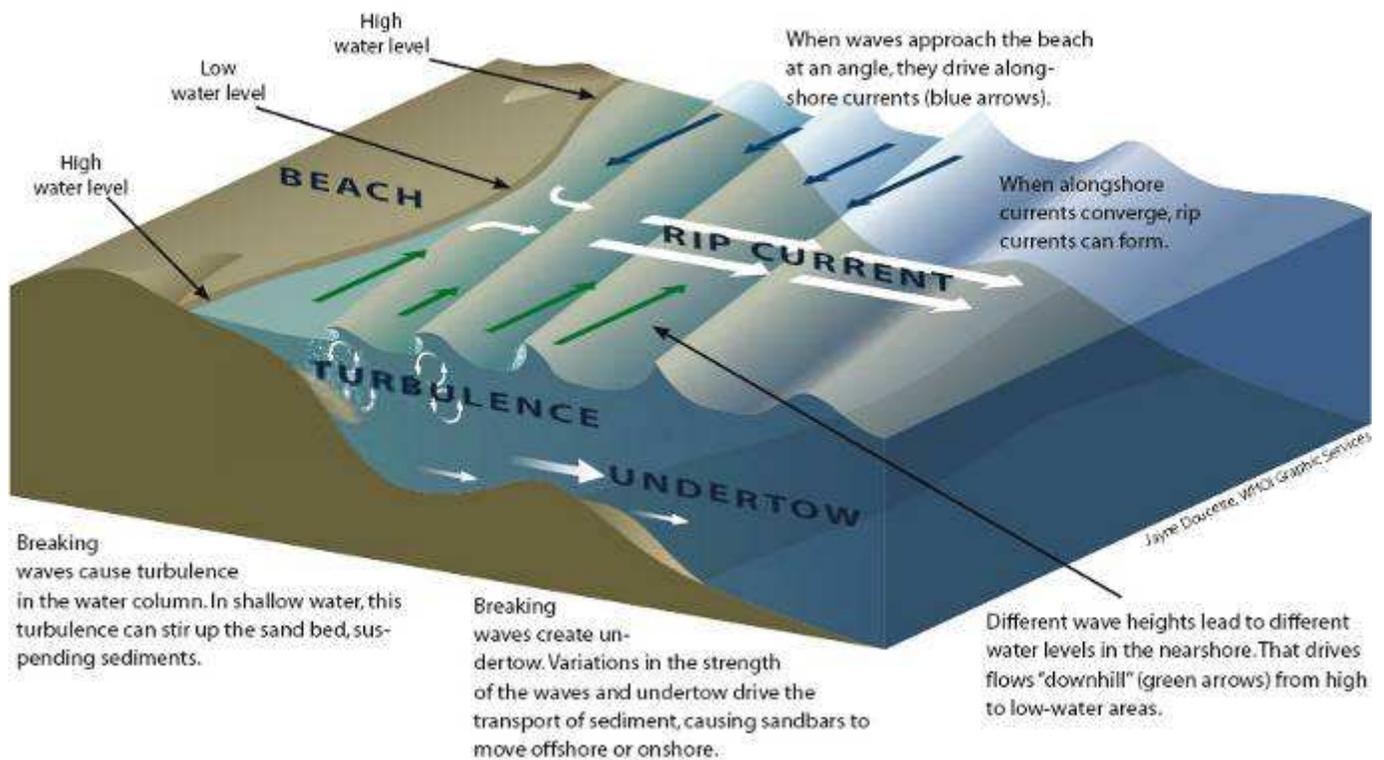
Appendix 7 : Changing fish stock and price/kg

Local Name	English name	20 years ago	10 year ago	year Now	Price (RM)	pe	Kg.	Remarks
Murak		a lot	a lot	few	4.00			
Belanak		a lot	a lot	rare	10.00			
Entipit		a lot	a lot	rare	7.00			
Manchong		a lot	a lot	rare	15.00			
Senangin		a lot	a lot	rare	15.00			
Entidung		a lot	a lot	few	10.00			
Beletuk		a lot	a lot	rare	6.00			
Empirit		a lot	a lot	a lot	5.00			
Andong		a lot	a lot	a lot	3.00			
Kuasi		a lot	a lot	few	2.00			
Gunjang		a lot	a lot	few	2.00			
Benung		a lot	a lot	rare	25.00			
Enterusan		a lot	a lot	rare	6.00			
Palau		a lot	a lot	a lot	6.00			
Ikan Panjai		a lot	a lot	a lot	6.00			
Perincong		a lot	a lot	few	16.00			
Pari	Stingray	a lot	a lot	a lot	5.00			
Cuka	Stingray	a lot	a lot	a lot	2.00			
Sembilang		a lot	a lot	a lot	5.00			
Belukang		a lot	a lot	a lot	2.00			
Yu	Shark	a lot	a lot	few	3.00			
Lundu	Catfish	a lot	a lot	a lot	2.00			

Buntal	Catfish	a lot	a lot	a lot	5.00		
Lumih		a lot	a lot	a lot	4.00		
Empirang		a lot	a lot	a lot	4.00		
Lelumbi	Irrawaddy dolphin	a lot	a lot	a lot	3.00	Totally species	Protected
Penyu	Turtle	a lot	a lot	very rare	Not for sale	Totally species	Protected
Beluku	Turtle	a lot	a lot	rare	Not for sale	Totally species	Protected
Obor-obor	Jellyfish	a lot	a lot	few	1.10 per piece	Seasonal	
Duai Hitam	Black promfret	a lot	a lot	a lot	25.00		
Duai Putih	White Promfret	a lot	a lot	a lot	38.00		

Appendix 8: Interaction between the sea and coastline

The following figure shows how the water and sand pushing up and down in the coastal zone (Raubenheimer, 2004)



Appendix 9: Malaysian education system

Box A. Outline of Malaysian Education System

Pre-school education

- 4-6 year olds
- Optional

Primary Education

- Beginning of formal education
- 7 year olds
- Six years (Primary 1 – Primary 6)
- Reading, writing and Arithmetic
- First national evaluation exam – Primary School Evaluation Test (UPSR – Malay)

Secondary Education

- Five years
 - Lower secondary (Form 1 – Form 3)
 - Lower Secondary Evaluation Examination (PMR)
 - Upper secondary (Form 4 – Form 5)
 - Academic stream, technical & vocational stream, Islamic school

Pre-University Education (2 years)

- Form 6
 - Humanities and Sciences
 - Malaysian Higher School Certificate examination (STPM)
- Matriculation

University Level Education

- Government & Private

(Ministry of Education, 2008)

Appendix 10: Education data

No of people in Alit who've left school before completion

Left school before completion				
		Yes	No	Total
Gender	Male	68	23	91
	Female	52	28	80
	<i>Total</i>	120	51	
Longhouse	Rh. Bettie	58	30	88
	Rh. Ek	62	32	94
	<i>Total</i>	120	62	

Level of education of Alit

Level of Education						
		None	Primary	Secondary	Tertiary	Total
Gender	Male	9	53	29	3	94
	Female	21	29	31	2	83
	<i>Total</i>	30	82	60	5	
Longhouse	Rh. Bettie	16	37	39	1	93
	Rh. Ek	17	48	26	4	95
	<i>Total</i>	33	85	65	5	
Still resident in Alit	Yes	28	57	23	1	109
	No	4	27	40	4	75
	<i>Total</i>	32	84	63	5	

Occupation	Unemployed	3	0	3	1	7
	Farmer	14	14	3	1	32
	Fisherman	3	3	0	0	6
	Tradesman	0	11	9	0	19
	Construction worker	0	10	6	0	16
	Driver	0	1	2	0	3
	Student	0	26	13	0	39
	Housewife	3	9	21	1	34
	Other	9	5	3	2	19
	Total	32	79	60	5	

Appendix 11. Questionnaire

Questionnaire No.:

Name of interviewer

Date:

This survey is carried out by a team of students from the University of Malaysia Sarawak and the University of Copenhagen to fulfil the requirements of the SLUSE (sustainable land use) course. The objective of this study is to investigate the potential development opportunities in the Alit area. We greatly appreciate your time and patience in completing this questionnaire.

Demographics

1) Respondent name: _____

2) *Bilik* head: Yes No _____

3) Longhouse No.: 1 2

4) *Bilik* No.: _____

5) Number of people in the *bilik*:

6) Family structure

No.	M	F	Name	Age/ year of birth	Education	Relation'p to <i>bilik</i> head	Occupation	Are they still living here?	Where are they?	How long have they been away?
1										
2										
3										
4										
5										
6										
7										
8										
9										

10									
----	--	--	--	--	--	--	--	--	--

a) How many people have left your *bilik* since this longhouse was built?

_____ Male _____ Female

b) How many people came back?

_____ Male _____ Female

7) What are the principal activities of the *bilik* (in terms of time)?

- ___ Farmer
- ___ Fisherman
- ___ Trader
- ___ NGO
- ___ Casual labour
- ___ Plantation worker
- ___ Civil servant
- ___ Bird nest production
- ___ Other

(specify): _____

8) Major sources of income:

- Own farm Remittance Salary Fishing
- Bird nest production Trader (specify) _____
- Other (specify) _____

Natural resources

9) Who in your *bilik* utilize the natural resources?

Natural resources	Children	M	F
Forest			
Rivers			
Sea			
Uncultivated Land			
Other (specify)			

Land use

10) How much land did you use in the last 12 months?

_____ acres

11) What was your crop and livestock production for the last 12 months?

Field no.	Area cultivated (acres)	Crop	Livestock type	Livestock no. (current)

12) Who in the *bilik* sells which produce?

- Bilik* head _____
- Spouse _____
- Older children _____
- Other (specify) _____

Employment

13) Do you do any type of off-farm casual labour? If yes, what:

- Farm work
- Construction
- Oil palm plantation
- Fruit Orchard
- Fishing
- Handcraft
- Bird nest
- Other (specify): _____

Thank you for your cooperation



