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Sustainable Livelihood Strategies and Potential Socio-Economic Development Activities in Kampung Kesindu, Simunjan

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ABSTRACT

This study takes place in an Iban community village located at the foot of Bukit Buri in an area called Kampung Kesindu, Simunjan. A part of the community lives in the longhouse headed by a headman named Tuai Rumah Robert Gana anak Jampong, while others have built their own houses around the longhouse. The aims of this study are to study the sustainable livelihood strategies and potential socio-economic development activities in Kampung Kesindu, Simunjan. The study explores how the community livelihood strategies influenced their socio-economic and natural environment. This study combines qualitative survey and participatory research techniques, namely Participatory Research Appraisal (PRA), as an approach to achieve a broad understanding of the livelihood strategies and land use of the community in Kampung Kesindu. The social sciences techniques used in this study are transect walk, seasonal calendar, focus group interview, and questionnaire survey. The study shows the essential aspect of the livelihood strategy in the community is to strike a balance between income security and food security. In addition, natural, social, human, financial, and physical capitals were identified to study the livelihood strategies at Kampung Kesindu. It is also important to realise that the community is dynamic in managing their resources. Government agencies play an important role in providing the subsidy and assistance for agriculture development in

Kampung Kesindu. In summary, the current agricultural activities and practices of the community have little impact on the local natural resources. The community of Kampung Kesindu has identified that the community after much experience and observation made throughout the years of carrying out the agricultural activities as top priority that will improve their socio-economic.

Keywords: *Agriculture; land use; livelihood strategies; sustainability; socio-economic*

INTRODUCTION

This study aims to focus on the livelihood of the Iban community in Kampung Kesindu. The village is named after the Kesindu tree or locally known as *bawang utan* because they can be found mostly within the area. Today, there are only two *Kesindu* trees found in the village. The village is constructed on a five-hectare size of land comprising 44 households and 220 residents with a fraction of 93.8 percent Iban, 1.4 percent Melayu, 1.9 percent Chinese, 1.9 percent Bidayuh and 1.0 percent others. According to Tuai Rumah Robert Gana Anak Jampong, seven households are currently not residing in the village as they have migrated into the city and they will only return to the village during festive seasons. Currently, there is only one longhouse consisting of six households and the other households live in separate dwellings. The village has a connection to electricity supply and the internet while their source of water is obtained through gravity feed from the Sungai Engkabang. The community depends mostly on agricultural activities as their main source of income. The changes in land use, agricultural activities and public services available in this village are currently progressing and bringing benefits to the community. Some of the key drivers such as the five capitals, decision-making process within the households and community levels (Jaffe & Senft, 1996), institutional framework including the land use within Kampung Kesindu influence their livelihood strategies. In addition, the impacts of participating in cash-based economic activities for example the involvement in 90-hectare rubber plantation will also affect their land use and especially their livelihood strategies. The consequences of these agricultural activities such as planting rubber, pepper and oil palm will bring negative and positive implications to the ecosystem. Ibans are still emotionally involved in this

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subsistence activity, and are even ready to sacrifice time and labour, which could possibly be used for the more profitable work of rubber tapping and pepper growing, for the intensive work necessary in the rice fields (Uchibori, 1984). The future desire and prospects of the community is an important measure of their livelihood strategies. Parents and relatives will wish well for the future of the younger generations. These youths too will hope for the betterment of the lives of their family and also their future especially in terms of career. Thus, rural-urban migration has been on the rise in Sarawak, resulting in an increase in urban poverty in fairly recent years. They include the low rural income and poor prospects, the belief in more prestigious wage-employment, dull and monotonous rural life among the young, the severity of poverty in rural areas, and the hope for better employment opportunities in the urban centres (Shari & Osman-Rani, 1996). The livelihood strategies of rural communities depend largely on the five livelihood assets which are financial capital, human capital, natural capital, physical capital and social capital (Lax & Krug, 2013). Therefore, the development processes in rural communities are part of the strategies to sustain their livelihood.

LITERATURE REVIEW

Livelihood

Iban community

The Ibans are one of the natives in Borneo where most of the population resides in Sarawak, Malaysia. During the British Colonial period, they were known as Sea Dayaks and they lived in longhouses known as *rumah panjai* in Iban language. Today, many of the wooden longhouses are converted into concrete longhouses equipped with proper electricity and water supplies including tar-sealed roads, telephone lines and internet connection. Concrete longhouses are fast becoming the trend even in the upper reaches of the state despite their higher costs (Then, 2014). Even though they have advanced towards development, they still retain most of their traditional heritage and culture. The Ibans were traditionally shifting (swidden) agriculturalists, cultivating dry-rice on the slopes of low, though often steep, hills along river valleys (Uchibori, 1984). Due to development in terms of agriculture, this community has ventured into planting new cash crops such as pepper, rubber, oil palm and cocoa.

The Ibans are emotionally involved in this subsistence activity and are even ready to sacrifice time and labour, which could possibly be used for the more profitable work of rubber tapping and pepper growing, for the intensive work necessary in the rice fields (Uchibori, 1984). Traditionally, the Ibans were animist but majority have converted into Christians but they still conduct traditional ceremonies especially during marriages and festivals like Gawai Dayak. The Ibans believe that soil, land and the environment are to be highly respected as they are the sustenance of life. Although modernisation has occurred rapidly, majority are still living in the rural areas and agriculture is still their main source of income.

Concept of livelihood

According to the International Federation of Red Cross and Red Crescent Societies (2012), a livelihood is a means of making a living. It encompasses people's capabilities, assets, incomes and activities required to secure the necessities of life. A livelihood is sustainable when it enables people to cope with and recover from shocks and stresses (such as natural disasters and economic or social upheavals) and enhance their well-being and that of future generations without undermining the natural environment or resource base. The International Recovery Platform (2010), claims that the hidden complexity behind the term comes to light when governments, civil society, and external organisations attempt to assist people whose means of making a living is threatened, damaged or destroyed. In operational terms, a livelihood should be sufficient to avoid poverty, and preferably, increase wellbeing for a typical worker plus dependants; it implies systems of how rural people make a living and whether their livelihoods are secure or vulnerable over time (Gregory, 2008).

Livelihood strategies

Livelihood strategies are the combination of activities that people choose to undertake in order to achieve their livelihood goals. They include productive activities, investment strategies and reproductive choices. Livelihoods approaches try to understand the strategies pursued and the factors behind people's decisions; to reinforce the positive aspects of these strategies and mitigate against constraints (Alinovi, D'Errico, Mane & Romano, 2010). The livelihood strategies and activities of poor people are often complex and diverse. For rural people, agriculture and other natural resource-based activities may play an important role, but

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rural households also diversify into other activities, some of which are linked to agriculture and the natural resources sector, others which are not. Strategies may include subsistence production or production for the market, participation in labour markets or labouring in the home. Poor urban people often also depend upon multiple diverse livelihood activities involving different employment (labouring) and self-employment activities (Centre for Financial & Management Studies, 2014).

Sustainable Livelihood Framework

The Advanced Training Program on Humanitarian Action (2014) defines sustainable livelihood as a framework that seeks to take a more comprehensive and integrated approach to poverty than traditional interpretations, which largely considered poverty in relation to a narrow set of indicators (such as income and productivity). A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term (Chambers & Conway, 1991). The ability to pursue different livelihood strategies is dependent on the basic material and social, tangible and intangible assets that people have in their possession. Drawing on an economic metaphor, such livelihood resources may be seen as the 'capital' base from which different productive streams are derived from which livelihoods are constructed (Scoones, 1998). The five different types of capitals are identified as follows.

Natural capital

The World Forum on Natural Capital (n.d.), defines natural capital as the world's stocks of natural assets which include geology, soil, air, water and all living things. The most obvious ecosystem services include the food we eat, the water we drink and the plant materials we use for fuel, building materials and medicines. There are also many less visible ecosystem services such as the climate regulation and natural flood defences provided by forests, the billions of tonnes of carbon stored by peatlands, or the pollination of crops by insects. Even less visible are cultural ecosystem services such as the inspiration we take from wildlife and the natural environment.

Social and human capital

Social capital refers to the institutions, relationships and norms that shape the quality and quantity of a society's social interactions. Increasing evidence shows that social cohesion is critical for societies to prosper economically and for development to be sustainable. Social capital is not just the sum of the institutions which underpin a society it is the glue that holds them together (Serageldin, 1996).

To most people, capital means a bank account, a hundred shares of IBM stock, assembly lines or steel plants in the Chicago area. These are all forms of capital in the sense that they are assets that yield income and other useful outputs over long periods of time. But such tangible forms of capital are not the only type of capital. Schooling, a computer training course, expenditures on medical care, and lectures on the virtues of punctuality and honesty are also capital. That is because they raise earnings, improve health or add to a person's good habits over much of his lifetime. Therefore, economists regard expenditures on education, training, medical care, and so on as investments in human capital. They are called human capital because people cannot be separated from their financial and physical assets (Becker, 2008).

Financial capital

Financial capital plays an important role in sustainable development, enabling natural and social capitals to be owned and traded. But unlike the other types of capital, it has no real value itself but is representative of natural, human, social or manufactured capital e.g. shares, bonds or banknotes. Although it has no real value it has a disproportionate significance in how a corporation's performance is measured and plays a material role in driving the behaviour of business leaders (World Business Council for Sustainable Development, 2013).

Physical capital

Physical capital is the tools, factories and equipment that are used in the production process. As the stock of physical capital increases, the nation experiences capital deepening (Mayer, 2010).

Decision-Making

There are two decision theories in decision making which are known as normative and descriptive decision theory. A normative decision

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theory refers to how decisions should be made where a descriptive theory is a theory about how the decisions are actually made (Hansson, 1994). The community in the household will normally be influenced by those so called 'knowledgeable or experienced' groups. The household decision making is judged on the extent to which it influences thinking about other areas such as family counselling, information dissemination and marketing research (Davis, 1976). A research study is normally conducted by referring to the parents or head of the family on decision making. The target should also involve their children to be part of family decision making since they are part of the family members to influence in decision making (Szybillo & Sosanie, 1977). However, the household decision making will not emerge by focusing solely on decision outcomes such as who decided or who won. The process on how the family makes decisions is needed to explore rather than who is involved (Davis, 1976). Most of us assume the households are actually gone through these experiences that they might be. Therefore, the questionnaires are correctly filled out but do not justify these questions in research questions. This challenge was also reported by Jaffe & Senft (1996) in their decision-making framework.

Institutional Framework

Village-level organisations have the potential of being an important instrument to deliver local public goods and to support market-oriented income-generating activities (Bernard et al., 2010). The economic differentiation is perceived as a threat to the traditional social structure and to the solidarity system. Therefore, the communities tend to enforce strict redistribute practices whereby enriched individuals are socially compelled to share with the rest of the community not only their good fortune but also the differential product of their hard work. The governance structure of village organisation can range from situations where all decisions are taken by the leaders to situations where they are made via an extensively participatory process. The role of governance structure is related in affecting the performance of the organisation and even the whole village (Bernard et al., 2010).

RESEARCH METHODOLOGY
Participatory Rural Appraisal (PRA) Tools

According to The World Bank (2011), Participatory Rural Appraisal (PRA) is a label given to a growing family of participatory approaches and methods that emphasize local knowledge and enable local people to make their own appraisal, analysis, and plans. PRA uses group animation and exercises to facilitate information sharing, analysis, and action among stakeholders. Although originally developed for use in rural areas, PRA has been employed successfully in a variety of settings. The purpose of PRA is to enable development practitioners, government officials, and local people to work together to plan context-appropriate programs. Participatory rural appraisal evolved from rapid rural appraisal a set of informal techniques used by development practitioners in rural areas to collect and analyse data. Rapid rural appraisal developed in the 1970s and 1980s in response to the perceived problems of outsiders missing or miscommunicating with local people in the context of development work. The participants for all the PRA exercises were selected by the Tuai Rumah and Jawatankuasa Kemajuan dan Keselamatan Kampung (JKKK) according to their knowledge and experience.

Transect walk

There is more detailed information acquired on the transect walk survey compared to sketch or village maps (Mikkelsen, 1995). There are five routes to the forest according to the community but only two transect walk surveys were carried out on the 5th March 2017 due to time constraint with the assistant of the Tuai Rumah and one resource person. The two routes were; from the village (N 1º09’575”, E 110º53’765”) to catchment area (N 1º10’133”, E 110º54’747”) and from the village (N 1º09’575”, E 110º53’765”) to old Kampung Kesindu settlement (N 1º10’081”, E 110º53’723”). The information such as zoning of the area, soil types, rivers, crops, fruit trees, timber trees, animals, infrastructures availability, challenges and opportunities within the transect area were identified and recorded in Global Positioning System (GPS). This information gave us an overview of the landscape, environment, land-use distribution and cropping patterns which enable us to understand more in the livelihood strategies of the community. The plotting of coordinates acquired through Google Earth and Garmin Base Camp also showed the cropping pattern

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along the transect walk, the distance of the catchment area to the village and the area that has been cleared for rubber plantation.

Figure 1: Transect Map using Google Earth

Referring to Figure 1 and Figure 2, the old Kampung Kesindu marks the earliest resettlement of the village before the existence of the current village. Wet paddy planting is the main activity in this area. Besides that, fruit trees such as durian, rambutan, Kesindu tree and jackfruit as well as cash crops such as pepper, cocoa and oil palm are also found in the area. The transect walk survey indicated that most of the forest in Kampung Kesindu areas were converted into agroforestry areas such as rubber, fruit trees and a minor area for cocoa plantation. Most of the rubber trees grown in the area were more than forty years old. Cocoa and rubber plantations were among the earliest cash crops in the area but rubber plantations later became dominant in the area.

We also passed through a piece of land that has been cleared for rubber plantation (90-hectare of land according to village headman) and it was very close to the water catchment area (about 100 m distance). This is a very interesting finding as the Tuai Rumah informed that the rubber plantation conducted by RISDA was to prevent the oil palm plantation by PELITA. Land security arose because the community does not want to be involved in the oil palm plantation. According to the Tuai Rumah and a few communities within the village, the oil palm plantation does not bring any benefits in terms of profit return and land tenure as compared to

rubber plantation. Moreover, the water source at the catchment area was polluted in November 2012 after the clearing of the land. The water turned yellowish and they were not able to consume the water.

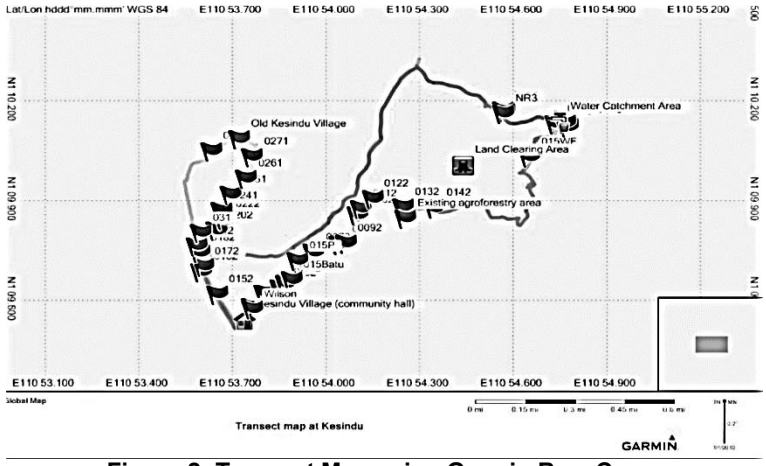
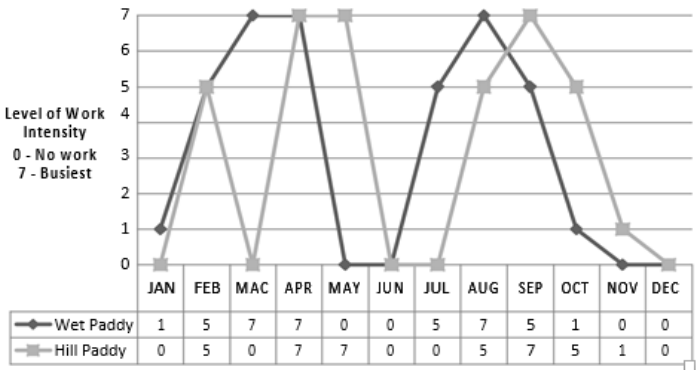


Figure 2: Transect Map using Garmin BaseCamp

Seasonal calendar



	JAN	FEB	MAC	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Wet Paddy	1	5	7	7	0	0	5	7	5	1	0	0
Hill Paddy	0	5	0	7	7	0	0	5	7	5	1	0

Figure 3: Seasonal Calendar for Wet Paddy and Hill Paddy

Seasonal calendar indicates annual variations or variations during other relevant periods for vital factors of production and reproduction e.g. rain, labour and food availability, or prices (Mikkelsen, 1995). It helps to present large quantities of diverse information in a common timeframe. Thus, illustrates important farming activities, essential tools and inputs,

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income and expenditures changes throughout a calendar year. The seasonal calendar, Figure 3 depicted two different crops being planted in the village namely wet paddy and hill paddy.

Table 1 shows the level of work intensity for wet paddy and hill paddy with a range of scale from 0 (no intensive) to 7 (most intensive). In June, Gawai Dayak and all the rituals involved in rice cultivation must be done in order to please their spiritual belief. The skills and techniques of paddy farming in the community was said to be passed down by their forefather. 91 per cent of the household participated in the wet paddy plantation only while the rest participated in both wet and hill paddy.

Table 1: Monthly Activities and Level of Work Intensity for Wet Paddy and Hill Paddy

Crops	**Wet Paddy**		**Hill Paddy**	
Month	**Activities**	**Level of Work Intensity**	**Activities**	**Level of Work Intensity**
Jan	*Ngemata ke umai*	1	No activity	0
Feb	Applying pesticides and fertilisers	5	Applying pesticides and fertilisers	5
Mar	i) Harvesting of wet paddy ii) Wet rice production process: *Nyembui padi, ngindik padi, ngangin padi and nginjin padi.*	7	No activity	0
Apr			i) Harvesting of hill paddy ii) Hill rice production process: *Nyembui padi, ngindik padi, ngangin padi and nginjin padi.*	7
May	Preparation for *Gawai Dayak*	0		
June	*Gawai Dayak*	0	*Gawai Dayak*	0
July	*Nasau* – applying weedicides	5	Slash and burn	0
Aug	Seedling cultivation and *nugal*	7	*Nasau* – applying weedicides, slash and burn	5
Sept	Applying pesticides and fertilisers	5	Seedling cultivation and *nugal*	7
Oct	*Ngemata ke umai*	1	Applying pesticides and fertilisers	5
Nov	No activity	0	*Ngemata ke umai*	1

Focus group discussion

Focus group discussion was conducted with seven youths in Kampung Kesindu on 7th March 2017. Their ages were between 15 to 25 years old. A few questions related to the research objectives were given to them and they were required to discuss among themselves. The information and answers were recorded into a notebook. Focus group discussion aims to encourage selected respondents to be involved in a discussion and to get clearer overview on their livelihood activities, migration, future expectations, and decision-making in the village.

Questionnaire Survey

The questionnaire survey is useful to assess population characteristics, opinions, attitudes and livelihood. The outcomes of the survey or responses would be the information for the topic or issue under examination. The population of study in this research is the head of households in Kampung Kesindu. Household, as a unit of observation and analysis, is often related to the concept of family as indicated by Fui (1993). This survey was conducted among 39 from 44 head of households which represents 89 per cent of the total head of households in the village, where four of it were pilot survey conducted on 2nd March 2017 while the other 35 were finalised questionnaire and was conducted on 3rd March 2017 until 9th March 2017. This survey was carried out with the guided questions in the survey form. The questionnaires developed were pre-tested and improved. The pilot tests enable the team to estimate the time needed for each interview session and also to provide the group members with a clearer view of what to be asked when conducting questionnaires. Each question asked will be explained with proper examples to the respondents before they provide their answers. This is to make sure that all the interviewers and respondents understand exactly what each question means. All the data recorded into the questionnaire paper are further analysed by using Statistical Package for Social Science (SPSS) and Microsoft Excel.

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RESULTS AND DISCUSSION

Natural Capital

The World Forum on Natural Capital (n.d.), defines natural capital as the world's stocks of natural assets which include geology, soil, air, water and all living things. Main subsistence activities in Kampung Kesindu are planting rice, vegetables, fruit and fishing. A total of 29 households plant rice, 25 households plant vegetables, and 19 households plant fruits and do fishing. *Padi nya pengidup* (Paddy is Life) is frequently uttered during the interviews. The community put a lot of effort in planting the paddy. Paddy is staple food and planted for subsistence. It is always enough for their family's own consumption for an entire year. There are two kinds of paddy planted, namely wet and hill paddy. Paddy farming dictates the seasonal activities of the community as shown in Figure 3. Wet paddy is said to yield higher production compared to hill paddy as most of the village community participated in the wet paddy plantation and as such that the area of wet paddy plantation is bigger than hill paddy plantation. The newly harvested paddy is stored in the house while some are safely kept in *langkau umai* (huts). It is estimated that 10 to 20 bags of paddy were produced per household per year depending on their land area. There are also differences in work preferences between men and women in terms of paddy farming activity. Men will do all the clearing of land, burning and cutting trees. Both men and women will do the weeding, application of fertilisers, and harvesting of paddy. Women then will be involved in paddy processing. Despite the capability to buy packet rice of 10 kg in the market, they still continue to plant paddy due to its cultural value. The home garden in Kampung Kesindu caters various types of vegetables and fruit trees. The vegetables that were commonly planted were long beans, star gooseberry and tapioca leaves. The community seldom buy vegetables from the town as many of the villagers sell and share the vegetables. The common fruits on Kampung Kesindu are banana, papaya, jackfruit, coconut, and durian.

Social and Human Capital

Increasing evidence shows that social cohesion is critical for societies to prosper economically and for development to be sustainable (The World Bank, 2011). Male population contributes to 74 per cent while the female population constitutes 26 percent out of 39 household members. Most of the men in the village are involved in agricultural activities. They

take charge in activities such as *ngasu* (to hunt wild animals for food) and building houses. There are few reasons for the higher male population. One of them is the female members are likely to *nguai* (to leave the village to join their spouse's family). Girls range from seven to 17 years old will do the household work such as *nyembui padi* (the drying of paddy), taking care of their younger siblings, and cleaning the house whilst, the women are responsible for cooking and assisting men in the field. The economists regard expenditures on education, training, medical care, and so on as investments in human capital because people cannot be separated from their knowledge, skills, health, or values in the way they can be separated from their financial and physical assets (Becker, 2008). Among the 39 respondents, 13 percent of them never attended school, 49 per cent of them attended primary school and 33 percent of them attended secondary school while 5 percent of them obtained university education which is the highest education level among the respondents. Their low formal education attainment means the choice of employments are limited. Hence, farming becomes an important activity to a livelihood. It is very likely they will remain in the village permanently as this handicap leads to limited economic as well as social activity.

This study only considers the level of education of the head of the households. Some of the key drivers such as the five capitals, decision-making process within the households and community levels, institutional framework including the land use within Kampung Kesindu influence their livelihood strategies. In addition, the impacts of participating in cash-based economic activities for example the involvement in 90-hectare rubber plantation will also affect their land use and especially their livelihood strategies. The consequences of these agricultural activities such as planting rubber, pepper and oil palm will bring negative and positive implications to the ecosystem.

Financial Capital

Presently, the major sources of income in the community are rubber and livestock. Rubber represented 34.73 per cent while livestock such as pig represented by 32.9 per cent. Next is employment by 9.92 per cent, pepper planting by 7.78 per cent, home garden for vegetables by 5.62 per cent, fishing by 4.67 per cent, remittances by 2.82 per cent, small scale business by 0.70 per cent, cocoa 0.48 per cent, fruit trees by 0.29 per cent, and rice by 0.06 per cent (refer Table 2).

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Those with better financial capabilities venture into planting oil palm. Planting oil palm is capital intensive as the farmer will have to invest their own capital to buy seedlings, fertilisers, herbicides, and pesticides in addition to some farming equipment. Cocoa was still planted by a number of villagers while some left their cocoa trees unattended due to high maintenance, cost and labour for pest control as told by the Tuai Rumah during the transect walk exercise. Cocoa becomes an alternative cash crop for the farmers in case of the commodity price increase. The current favourable cocoa price has encouraged the Malaysian Cocoa Board to embark on another cocoa scheme. Cocoa planting is most welcome as it uses a similar fertiliser as rice. Training and tools were also supplied to the farmers. Table 3 shows the seasonal calendar for rubber, pepper, cocoa and oil palm.

Table 2: Sources of Income

Sources of Income	Percentage
Rubber	34.73
Livestock	32.9
Employment	9.92
Pepper Planting	7.78
Home Garden	5.62
Fishing	4.67
Remittances	2.82
Small Scale Business	0.70
Cocoa	0.48
Fruit Trees	0.29
Rice	0.06

Table 3: Seasonal Calendar for Rubber, Pepper, Cocoa and Oil Palm

Crops Year	Rubber	Pepper	Oil Palm	Cocoa
1	i) Site clearing ii) Seedling cultivation iii) Planting of sapling iv) Applying fertilisers and weedicides (once a month)	i) Site clearing ii) Planting of sapling (during rainy season – Jan to Nov) iii) Applying fertilisers and weedicides (after 1 month)	i) Site clearing ii) Seedling cultivation and/or iii) Planting of sapling (12 months old) iv) Applying fertilisers and weedicides (once a month)	i) Site clearing ii) Seedling cultivation iii) Planting of sapling (2 feet tall) iv) Applying fertilisers and weedicides (once a month)
2	Applying fertilisers and weedicides (once a month)	i) Pepper production for new pepper breed – May (3 to 4 kg per vine) ii) Applying fertilisers and weedicides (once a month)	Applying fertilisers and weedicides (once a month)	Applying fertilisers and weedicides (once a month)
3		i) Pepper production for old pepper breed – May (3 to 4 kg per vine) ii) Applying fertilisers and weedicides (once a month)	i) Oil palm production (once a month) ii) Applying fertilisers and weedicides (once a month)	i) Cocoa production (10kg per tree) ii) Applying fertilisers and weedicides (once a month)
4				
5				i) End of life-cycle (poorly maintain) ii) Cocoa production (10kg per tree)
6				

				iii) Applying fertilisers and weedicides (once a month)
7 8 9	i) Rubber production for new rubber breed (20kg per tree) ii) Applying fertiliser & weedicides (once a month)			i) Cocoa production (10kg per tree) ii) Applying fertilisers and weedicides (once a month)
10 11 12 13 14 15 16 17 18 19	i) Rubber production for old rubber breed – (20kg per tree) ii) Applying fertiliser and weedicides (once a month)	End of life-cycle for old pepper breed		End of life-cycle.
20 21 22 23 24 25	End of life-cycle (up to 25 years)	End of life-cycle for new pepper breed	End of life-cycle	

Physical Capital

A quick measure on the impact of the livelihood strategies is the general level of prosperity and buying power acquired by the community. One of the most expensive items for them to buy is a motorised vehicle. Referring to Figure 4, out of 39 respondents, 32 of them were able to buy a motorised vehicle each. Generally, the vehicle is used for local

mobilisation within surrounding areas such as trips to farms, sending children to school and buying goods from nearby markets. Nevertheless, the villagers are not dependent on their vehicles for marketing or transporting their cash crops to the market as they will sell their products to middlemen, Mr. Ah Kui that come to the village twice a week which is on Wednesday and Saturday morning.

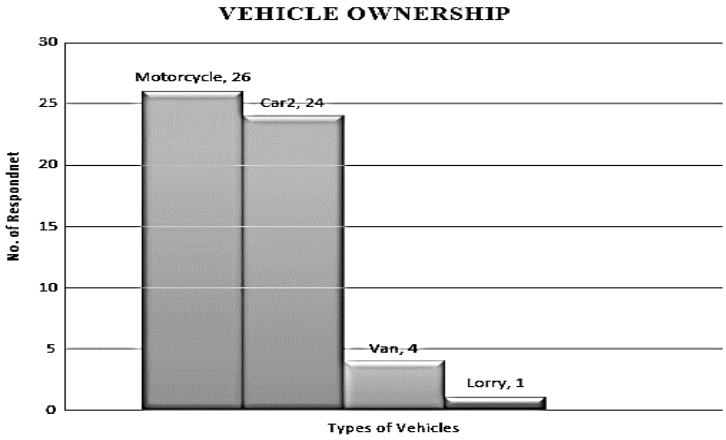

Figure 4: Vehicle Ownership

Decision Making

Decision making is the study of identifying and choosing alternatives based on the values and preferences of the decision maker. In Kampung Kesindu, the decisions will be proposed by the village headman who is appointed to administer and manage the welfare of the whole village. Later, the decision and information will be disseminated through JKKK for discussion. If the JKKK agrees with the proposal, they will bring the matter to the community during the general meeting.

Institutional Framework

JKKK is also responsible for the determination of strategy planning and implementation of development programs and projects in villages. They determine the priority list of development projects in the village and as a coordinator of the implementation of development programs and projects in the village. Besides that, they are a body that evaluates the progress of the implementation of development programs and projects in the villages. In addition, the committees are the eyes and

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ears of the government at the village level which will report all enemy elements such as the communists, anti-national, illegal immigration, smuggling and the activities of drug use to the authorities or the District Office. Furthermore, JKKK is a body that is capable of driving and harnessing energy, resource development and changing community attitude at the village level to further improve productivity.

SUMMARY

This study shows changes in agricultural system in Kampung Kesindu for the past 40 years where the original purpose of agriculture was for self-subsistence. The changes of land-use pattern which originally was swidden agriculture to cash crops such as cocoa, pepper and rubber plantation is one of the strategies used by the community. This livelihood strategy must be diversified and specific to sustain the livelihood of the community in Kampung Kesindu. Farming activities are the major income of the community while some are involved in small-scale business and livestock activities. Rubber and pepper are considered to be the main cash crops in Kampung Kesindu. Planting rubber is considered to contribute to daily income even though the price of rubber fluctuates frequently. Furthermore, rubber is resilient to sudden change and this was proven by the existence of rubber activity in the village for more than 40 years and also due to the fact that almost households plant rubber to sustain their lives. In addition, the conversion of land into pepper plantation was due to high market price of pepper. Most of their pepper plantations are located next to their home garden for the purpose of easy maintenance and harvesting. The increase in prices of fertilizers and pesticides, fluctuation of commodity prices and health conditions of the people in the village are considered to be serious issues because these affect their lives. The assistance provided by the government in terms of subsidies and facilities have seen to reduce the burden of the people in Kampung Kesindu but the migration of the young generation and lack of manpower in the village have adopted a strategy to hire labour from outside to harvest cash crops such as rubber. Most of the decisions made on land-use change and livelihood strategies for each household depend on the Tuai Bilik the elders. A discussion will be carried out with family members before any decisions are made. But at the village level, decisions are proposed by the Tuai Rumah to the JKKK. If his committee supports the decision, the information will be channelled to the community during general meetings. Overall, the community in Kampung

Kesindu is positive with their current livelihood activities and some of them are seeking for the opportunities to expand their agricultural activities to rear livestock such as chickens, ducks and pigs. The assistance provided by the government is still needed especially, to subsidize the community for a better breed of pepper seedling and commercial fruit trees to ensure the diversification of agricultural activities in order sustain the social economic activities in Kampung Kesindu and their resilience to sudden change in commodity prices.

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