INTENSIFICATION OF TRADITIONAL LAND USE
SYSTEM: A CASE STUDY AT
KAMPUNG LONG PASIA, SABAH

SINIMIS ANGELICA SUIMIN

Kota Samarahan
2002
ACKNOWLEDGEMENT

First of all, I would like to thank the DANCED for funding the SLUSE-M masters programme and my tribute to my late mother for the inspiration to continue on the journey of lifelong education. In Sabah, I was grateful for the assistance and support of Department of Agriculture, Sipitang (notably Encik Awangku Pengiran Momin) and Kota Kinabalu, Sipitang District Officer, Department of Veterinary and Animal Husbandry, Department of Land and Survey, Department of Forestry, Sipitang, Ministry of Tourism (notably Ms. Joanna Kissey Kitingan), World Wide Fund (Mr. Michael Ickes), Department of Environmental (notably Mr. B. Mobaying), Kota Kinabalu, Institute of Development Studies, Kota Kinabalu, Mr. Ray Laban, Mr. Light Joseph Lakung, Mr. Lukas Usim, Mr. Balang Baru, Mr. Sakai Luyan and particularly Mr. Mudin Sia and family. Finally I want to thank the people of Long Pasia for their hospitality, cooperation and support during the field work.

In Sarawak, I would like to thank everyone in CTTC notably Mr. Chew Chang Guan, the staff of Social Science faculty particularly my supervisor Assoc. Professor Dr. Gabriel Tonga Njoweg for his constructive advice, comments and support during the dissertation process. Finally, I am indebted to my husband Edward Brauok, my children Vava Vivianne and Ephrem Shom Bonnugan for their patience, encouragement and support until the completion of my studies.
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Land resource is one of the mainstays for the livelihood of the people. The scarcity of land resource has gradually changed from the traditional land use in Long Pasia to a situation where other rural development institutions are coupled with the livelihood of the people. The focus of this study is to identify the level of how the relationship of land resources, income, manpower supply, skill, and institutional support are equally towards intensification of traditional land use methods in Long Pasia. Financial and economic sustainability of the area is one of the challenges faced by the community. Final income forms the basis of their subsistence farming practices.
ABSTRACT

Land resource is one of the most important aspects in any agricultural development. The scarcity of land resource may also affect agricultural development in the rural areas. The focus of this study is to evaluate and identify the intensification process of traditional land use in Long Pasia, Sabah, its constraints and prospects; its causal relationships with other rural development activities and its socio-economic impact on the livelihood of the people. The study also evaluates the existing traditional land use structure and social sustainability of resource allocation. In addition, this study also serves to identify the level of household participation in land use intensification process and to highlight the application of indigenous resource management.

Data collection was carried out using household survey and interviews of key informants covering 45 heads of household. Statistical Package for Social Science (SPSS) was used to analyze the relationship of various variables identified in the study. The results revealed the importance of land resource and tenure, being one of the important aspects of socio-economic sustainability of the communities in the study area. Nevertheless, household income, manpower supply, skills, marketing and credit facilities, infrastructure and institutional support are equally important in the process of agricultural transformation towards intensification of traditional land use. The traditional farming system of Long Pasia has gradually changed from subsistence annual cropping to perennial crops (cocoa and some fruit trees) as an effort to assimilate them in the current development trend. However, many of them were still practicing traditional farming using local technical knowledge through long fallow period. It is one of the traditional soil-nutrients treatment skills coupled with use of plants and animals parts as natural insecticide or pesticide to sustainably managed land resource allocation. Eco-tourism and community forest conservation based was one of the many activities introduced in the village to supplement the income of the people. Out-migrations of the younger generation for education and employment to small or big towns have affected the manpower supply in the study area. However, remittances from family members (migrated) supplement household income and improved education level that may alleviate the standard of living of the community. Finally, factors like land tenure problem, labour supply, marketing and credit facilities as well as the overall infrastructure development has been identified as one of the constraints in the intensification of traditional land use.

Conservation and subsistence farming with minimizing risk strategy forms the basis of the sustainable farming practices while land tenure rights, family labor and household income forms the basis of their social sustainability.
ABSTRAK


1.1 Introduction

Land represents natural resources (irrigation), rangeland, woodland or forest. It is the basis upon which economic development and agricultural developments have been based. In this chapter, the economic development is discussed in detail. In particular, the role of agriculture in economic development in Malaysia will be discussed. It is expected that the agricultural development will have a significant impact on the economic development of Malaysia. The agricultural development process is not only economically important, but also socially important. The agricultural development process is closely linked to social, economic, and environmental factors. In particular, the agricultural development process is closely linked to the development of local communities within the formal and informal sectors. The agricultural development process is also closely linked to the process of industrialization and modernization. The agricultural development process is closely linked to the development of local communities within the formal and informal sectors. The agricultural development process is also closely linked to the process of industrialization and modernization. The agricultural development process is closely linked to the development of local communities within the formal and informal sectors. The agricultural development process is also closely linked to the process of industrialization and modernization. The agricultural development process is closely linked to the development of local communities within the formal and informal sectors. The agricultural development process is also closely linked to the process of industrialization and modernization.
CHAPTER 1
INTRODUCTION

1.1 Introduction

Land represents natural resources and could be cropland (with or without irrigation), rangeland, woodland or forestland. Commercialization of agriculture may accelerate the process of change as it demands for the increase of production factors, increase in the price of those factors where supply is less elastic and market price of crops at local level. Similarly, when supply of land is less elastic than the supply of labor, the relative price of land will increase. A likely case when virgin forests have been cleared described by Guisumbing et.al (2001). Thus, land resource and agricultural developments are important for the Nations' sufficiency in food production. In this chapter, the general overview of the study background, the role and structural framework of Agriculture development in Malaysia are discussed in addition to discussion on the problem statement, purpose, objectives and rationale of the study.

1.2 Background

Agricultural development in Malaysia in the last decade went through various transformations to achieve sufficiency of food production by the introduction of large scale commercial agriculture. Agriculture has played a big role in the country's economic development since independence. Eastman (1987) defines agriculture to be both a social, economic and technical activity. According to the social dimension, food and fibres are produced with use and benefit for human beings as the goal. The importance of cost and returns makes agriculture an economic activity. The technical dimension includes elements as land, labour, water, seeds, and mechanic factors.

There are five roles played by agriculture in the early stages of development (Szirmai, 1997). Firstly, it is a source of domestic saving, enable the farmers to do saving either in the formal financial institutional or in investment to produce yields for the next harvest. Second, as source of industrial labour, providing employment for local communities within the vicinity. Thirdly, as a supplier for domestic consumption whereby local produced are being circulated for local consumption before being divided to be exported to foreign countries. Agricultural products contribute to the source of foreign earnings through international trade and finally, agriculture acts as a market for industrial products. Subsequently, these products are used in agricultural production providing inputs for industrial process.

Agricultural development process in Malaysia is classified into two sub-sectors. The traditional and the modern, a form of dualism concept influence by the British Administration. The traditional is largely characterised by farming units that were domestically oriented with large low capital to labour ratio. On the hand the modern sector is export oriented with large farms and estate with high capital to labour ratio. These two sectors together exist alongside a substantial non-agricultural sector and exist interdependently (Mustapha, 1992).
Similar framework exists in the agricultural structure in Sabah with both traditional and modern sector. However, Sabah's economic development is still predominantly rural based. Majority of the population (81 percent) still live and work in rural areas subsisting largely on agriculture and related rural activities such as forestry, livestock and animal husbandry (Ti and Yee, 1988).

At the onset of the Second Malaysia Plan (1971-1975), intensification of agricultural commercialisation was introduced, directed at large-scale plantation agriculture. It was aimed at engaging farms to increase essential food production primarily industrial crops like cocoa, palm oil and rubber to meet local demand and to alleviate rural poverty.

Land use survey studies in 1970’s (Madingkir and Yap, 2000) revealed that Sabah has a land area of 7.20 million ha of which is about 31 percent or 2.18 million ha was identified as suitable for crop agriculture. Up to end of 1998, approximately 1.17 million ha have been cultivated. Land use classification in Sabah, encoded in the Land Ordinance. Cap.68 classifies land into 4 categories; Country lands/village land, Town lands, Forest reserve and Native reserve lands. Most of the large scale modern agriculture activities are found at the east coat of Sabah and to a certain degree at west coast concentrated on State land-country land and forest reserve. Whilst the traditional subsistence activities are concentrated in rural areas on native land, country lands and forest reserve.

The accelerated land development in the late 1980's and 1990's have caused more and more of the country and native lands being converted to large scale plantation agriculture. Subsistence farmers particularly the shifting cultivators or swiddeners are now faced with limited land resource. In some areas, intensification of land use due to improved technology is more prominent. In such a situation, some lands became infertile due to land use pressure and no longer productive relegating the rural community to poverty and limited land resource. In order to solve this, the government have introduced in-situ development by encouraging them to plant industrial crops or other cash crops and wet paddy instead of hill paddy. Thus, rural communities are forced to adapt to the new forms of farming technologies which they have not been accustomed to practise, re-educating themselves with new agricultural inputs application.

1.3 Problem Statement

Sabah is one of the states in Malaysia with highest incidence of poverty rate. According to the Seventh Malaysia Plan (Mid-term Review), household poverty account for 22.1% in Sabah and majority are from rural areas. Rural poverty in Sabah is associated with low income and subsistence agriculture in particular shifting cultivation (Johari and Chang, 1991a). In the 1970’s the major rural development instrument has been and still is the establishment of estate agriculture (palm oil, rubber, cacao, coconut) as one of the means to redressed poverty and underdevelopment among traditional farmers in the rural areas. Such establishment of modern economic enclaves in a traditional or subsistence economic and social setting had enhance the economic and social ‘dualism’ in Sabah (Mustapha, 1990).
This led to an unequal rural development process, concentrated on enclaves. For instance, commercial estates as well as timber-based activities were mainly found in the eastern part of Sabah while the western and interior districts remain on small-scale subsistence agriculture (Schulze and Suratman, 1999). In the 80’s timber industry in Sabah, provided the bulk of state revenue, a crucial source of funding for development expenditure. However, the limited domestic market for timber has resulted in overexploitation of the forests, timber are sold principally in the form of logs. Therefore, its value-added contribution to the economy is small (Walton, J.R., 1990), although it has also provided temporary employment to the local populace. Similarly, the plantation schemes implemented by the government to enhance agricultural activities and elevate rural poverty were not widely accepted by the rural population due to the regimented condition imposed on them. This development indicate a concentration of socio-economic facilities and services in the enclaves complementing the various trading and commercial activities, while most parts of the state remain undeveloped with low productivity and variability in agricultural income (Mustapha, 1990).

This situation has not only affected the income of the people but the socio-economic livelihood of the rural people particularly the traditional farmers. The transformation of the state economy from subsistence to commercialisation of crops towards industrial plantation agriculture has also resulted in large disparity in terms of income, standards of living, skill or education level, accessibility to the modern market forces in the rural areas, socio-economic infrastructure and overall development between the enclaves and the rest of the economy. In addition, adaptation to development changes among the rural farmers also varies depending on the location, socio-culture entities, opportunities and exposure to new skills. Similarly, the Lundayeh community of Long Pasia are no exception in this case. Majority of them are subsistence farmers planting both hill and wet rice, mixed with other food crops. Wetland paddy was introduce to the villagers in the 60’s when the government encouraged them to settle at the valley of Long Pasia and Meganit to discourage extensive shifting agriculture as well as to protect them from international border conflicts during the confrontation of Malaysia-Indonesia-Brunei.

Various efforts have been made to involve the community in the development process through smallholder agriculture assistance scheme by encouraging communities to plant wetland paddy, cash crops like coffee, temperate vegetables, tobacco and animal husbandry. State agencies like Department of Agriculture (DOA), Department of Veterinary Services and Animal Industry (DOVSAI), Pertubuhan Peladang or Farmers Association (PELADANG), Department of Fisheries (DOF) and Rural Development Cooperation or Koperasi Pembangunan Desa (KPD) have become the catalyst of rural development, aims at improving the socio-economic standards of these rural communities. Thus, the development orientation in this area is influenced by two pull-factors. First is the temperate climate and relatively rich natural biodiversity and the second is the push-factor stems from the State government to promote conservation and eco-tourism industry as well as cash crops. In such a situation, the communities are faced with a dichotomy between economic growth, subsistence farming and control over their land resource, between development and conservation of the environment, between individual interests and communal concerns. With introduction of cash crops and other development alternatives, land resource became more important. It is not only
tied to food production but a critical resource for social sustainability and economic security of local communities.

In addition, Malaysians in Sabah underwent years of dominion by colonisers. This period substantially obliterated the indigenous knowledge system. Our colonialists looked down and derided our culture and knowledge system. Through time, we ourselves lost pride in what is our own. To sum up, only the cultural minorities in the hinterlands like the Lundayeh, Muruts and Dusuns in different remote areas of the state and a score of others have remained least influenced. Indigenous knowledge among these ethnic groups has remained more intact compared to those of their lowland counterparts. They were least exposed to new technology and are actively practising the indigenous knowledge that was handed down to them for generations. It was the only tool that has been proven effective to them as a mean to manage their natural environment successfully with the absence of new technology. However, as Malaysians embark on rapid socio-economic development, the negative perception about indigenous knowledge remained. Furthermore, the focus of this study is to evaluate and identify the intensification process of traditional land use, constraints and prospects; its causal relationship with other rural development activities, its socio-economic impact on the livelihood of the people. In addition, the study also examines the structure of the Lundayeh traditional land use system and indigenous knowledge of labour arrangement and resource management as they faced challenges of resource scarcity. Specifically this study will provide the answers to the following research question.

1. How do the development activities affect the intensification of traditional land use, its positive and negative impacts on the traditional land use pattern and socio-economic livelihood of the local communities?
2. How do the households decide on land use, crops and site selection, pest management and other land tenure issues?
3. What are their perceptions pertaining to the present and past rural development activities in the village?
4. What are the options for the villagers to sustain and achieve a stable standard of living beside the wage employment provided by logging, tourism activities and conservation project with the allocated resources (land)?
5. What/how is the indigenous knowledge applied that can be integrated into traditional land use as well as commercial or modern farming?

1.4 OBJECTIVES

The Specific objectives of this research project are as follows:

1. to identify and evaluate the existing traditional land use structure and the social sustainability of resource (both socio-economic and land tenure) allocation in the area.
2. to identify the level of intensification process
3. to highlight the application of resource management.
4. to identify and evaluate the traditional land use system, and land use options.

1.5 Hypotheses

Several hypotheses are formulated. The hypotheses focuses on scarce resources, traditional land use activities. These traditional land use intensification, labour management and finally, the third hypothesis focuses on the participation of communities in conservation activities.

1.5.1 Resources and Intensification

- There is significant relationship between the types and type of land owned.

1.5.2 Household Participation in Indigenous Resources Management

- There is significant relationship between knowledge, income level, land tenure.
- There is significant relationship between resources, management and resources.

1.5.3 Constraints of intensification

- There is a significant relationship between the constraints of intensification and education level.
- There is a significant relationship between the constraints of intensification and participation in conservation activities.
- There is a significant relationship between the constraints of intensification and participation in conservation activities.

1.6 Rationale of the Study

In general, this study seeks to understand the use and policy matters rather than soil, water and biological impact of farming practices in South East Asia and succeeded in adapting to the resource constraints of limited resources. This is further discussed in the microenvironments of forest and...
2. to identify the level of household participation and land use in the intensification process
3. to highlight the application of indigenous knowledge in labour arrangement and resource management.
4. to identify and evaluate the constraints of intensification of traditional land use system, and land use options towards resource sustainability.

1.5 Hypotheses

Several hypotheses are formulated based on the above objectives. The first set of hypotheses focuses on scarce resource allocation, land tenure, inheritance rights and traditional land use activities. The second set involves household participation in land use intensification, labour availability, application of indigenous resource management and finally, the third set focuses on constraints of intensification and participation of communities in other development activities.

1.5.1 Resources and Intensification of land use

- There is significant relationship between age, household size, income level and type of land owned.

1.5.2 Household Participation, Land use decision and application of Indigenous Resource Management

- There is significant relationship between household size, out-migration, age, income level, land size owned, and land use.

- There is significant relationship between crops selection, choice of pest management and reason to change seed.

1.5.3 Constraints of intensification of Traditional Land use system

- There is a significant relationship between levels of income and perception on the constraints of intensification in traditional land use system
- There is significant relationship between land ownership and perception on the constraints of intensification in traditional land use system
- There is a significant relationship between age of head of household, out-migration and perception on the constraints of intensification in traditional land use system

1.6 Rationale of the Study

In general, this study seeks to understand and explain the empirical evidence of land use and policy matters rather than to discuss the physical components of the study, soil, water and biological impact. Analysis of numerous case studies of traditional farming practices in South East Asia showed that the swidden farmers have succeeded in adapting to the response to changes in land use, working within the constraints of limited resources. They utilize the indigenous knowledge of the microenvironments of forest and field and the microsite needs of specific crops when...
other land use system failed (Warner, 1991). With the declining forest area and limited resources in response to landless settlers, logging concerns and national financial needs, the indigenous knowledge found among the traditional farmers should be utilised. Reliance on local materials, energy sources and technical knowledge of the community does not imply a lack of willingness to try something new (Padoch and de Jong, 1987).

Today, there is no traditional agricultural community that has not gone through changes. The contribution of local technical knowledge in the intensification of traditional land use system should be enhanced. However, more research is needed on traditional land use system, shifting cultivators or swiddeners should be allowed as active participants in designing new agro-ecosystem that are sustainable when forest reserve decline or became inaccessible (Warner, 1991).

In addition, the historical development of commercial agriculture in Sabah, specifically in plantation and settlement schemes have gone through difficult years. Project implementers had encountered problems such as poor participation of rural population. The management practices and work routine imposed on farmers are in conflict with the socio-culture practice on land use management. Commercial plantation agriculture in Sabah is mainly practising mono crop which differs to mix or intercropping practice by the traditional agriculturist. It is important to evaluate the process of intensification of traditional land use system and highlight the indigenous technical knowledge practiced by the communities in Long Pasia in crop and pest management, soil health care, rice weed management strategies, rice transplanting, crop seeds selection and crop cycle practices.

It is hoped that this study will provide some information to planners such as the Sipitang District Office, Department of Agriculture, Village Development Committee and other organisation involved in land use planning, a decision-making process that "facilitates the allocation of land to the uses that provide the greatest sustainable benefits and development in the rural areas. Besides that, the study will provide important data on the indigenous technical knowledge of natural resource management that could be incorporated in the permanent agriculture as well as commercial agriculture to prevent further soil pollution through excessive chemical inputs can be applied in this area or elsewhere in the future. In addition, this study may be used as a guideline or reference to students and other researchers conducting similar studies related to the intensification of traditional land use system. The evaluation of options on sustainability of the traditional farming systems with limited resources to provide security to the local population can be used as basic information for any land development planning in the future.
farming forest area and concerns and national the traditional farmers sources and technical
ness to try something has not gone through the intensification of more research is needed
ers should be allowed it are sustainable when agriculture in Sabah, through difficult years.
participation of rural peded on farmers are in
agement. Commercial p which differs to mix
important to evaluate m and highlight the in Long Pasia in crop
ement strategies, rice
planners such as the Village Development ng, a decision-making it provide the greatest
tes that, the study will age of natural resource agriculture as well as
ough excessive chemical In addition, this study researchers conducting
and use system. The ng systems with limited can be used as basic
strategic directions for agriculture, livestock and fisheries development in the state for the year 2010 (Madingkir and Yapp, 2000).

Agriculture has been the mainstay of the state’s economy and has contributed significantly to export earning and its share of Gross Domestic Products. In 1988, the agriculture sector’s contribution to the state’s GDP was 35.01 percent, calculated at 1978 prices (Table 1).

Table 1: Gross Domestic Product by kind of activity, Sabah 1998

<table>
<thead>
<tr>
<th>Activity</th>
<th>Value in RM (Million)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural, Livestock and Fishing</td>
<td>2,931.20</td>
<td>35.01</td>
</tr>
<tr>
<td>Forestry and Logging</td>
<td>430.40</td>
<td>5.14</td>
</tr>
<tr>
<td>Mining and Quarrying</td>
<td>721.80</td>
<td>8.64</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>1,143.40</td>
<td>13.66</td>
</tr>
<tr>
<td>Construction</td>
<td>241.10</td>
<td>2.88</td>
</tr>
<tr>
<td>Wholesale and Retail Trade</td>
<td>972.60</td>
<td>11.62</td>
</tr>
<tr>
<td>Transport, Storage and Communication</td>
<td>598.10</td>
<td>7.15</td>
</tr>
<tr>
<td>Other Industries*</td>
<td>1,104.00</td>
<td>13.20</td>
</tr>
<tr>
<td>Less Imputed Bank Services Charges</td>
<td>571.50</td>
<td>6.83</td>
</tr>
<tr>
<td>Domestic product of Industries</td>
<td>7,571.10</td>
<td>90.45</td>
</tr>
<tr>
<td>Domestic Product of Government and Other Services</td>
<td>711.60</td>
<td>8.50</td>
</tr>
<tr>
<td>GDP (including Import Duties)</td>
<td>8,282.70</td>
<td>98.95</td>
</tr>
<tr>
<td>Plus Import Duties</td>
<td>88.10</td>
<td>1.05</td>
</tr>
<tr>
<td>GDP Purchaser’s in Values</td>
<td>8,370.80</td>
<td>100.00</td>
</tr>
</tbody>
</table>

* Includes electricity, gas and water, restaurants & hotel, finance, insurance, real estate and business services, owner occupied dwellings, etc.


In 2000, agriculture has also contributed to the human resources development in the state, a major source of employment and livelihood of the majority of the rural population accounting to 37.3 percent (Table 2). According to Yapp et al. (1988), the enormous investment in the agricultural sector over the last two decades by both the private and public sectors helped to enhance the importance of agriculture in the state’s economy. The rapid development in this sector has also brought about a progressive modernization of agriculture, a diversification of crops and to a certain extent, it transformed considerable part of small-scale farmers.

Table 2: Percentage distribution of human resources by sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, Animal Husbandry and Forestry workers, fishermen and hunters</td>
<td></td>
</tr>
<tr>
<td>Production workers, Transport Equipment operators and labourers</td>
<td></td>
</tr>
<tr>
<td>Sales workers and Related workers and Service workers</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
</tr>
</tbody>
</table>


2.4 Agriculture and Rural Areas

Rural and agricultural development growth and facilitate the process of social, economic, and welfare of the rural populace, to rural communities (Mustapha, 1986). Such development refers not only to changes in wider rural society, especially interesting to combine anthropological and sociological rural areas. In addition, rural development areas are not limited to agriculture activities such as trade, handicrafts.

The phasing out of shifting cultivators, government as backward, inefficiency (1986), is one of the main objectives of the interior of Sabah. As a result, land reform Board was formulated by the development of idle land, the growth of scattered communities into modernised (King, 1993). For instance, shifting cultivators, in Ranau winter vegetables.

However, the implementation of such problems were the reluctance of workers, low work schedules, loan repayments.
Development in the state and has contributed to domestic products. In 1988, GDP was 35.01 percent.

Table 2: Percentage distribution of employed persons by occupation, Sabah.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, Animal</td>
<td>37.3%</td>
</tr>
<tr>
<td>Husbandry and Forestry workers, Fishermen and hunters</td>
<td></td>
</tr>
<tr>
<td>Production workers, Transport Equipment operators and labourers</td>
<td>26.7%</td>
</tr>
<tr>
<td>Sales workers and Related workers and Service workers</td>
<td>19.5%</td>
</tr>
<tr>
<td>Others</td>
<td>16.5%</td>
</tr>
</tbody>
</table>


2.4 Agriculture and Rural Development

Rural and agricultural development is viewed as an effective instrument to stimulate growth and facilitate the process of change in the rural economy, to enhance the welfare of the rural populace, to promote changes on attitudes and behaviour among rural communities (Mustapha, 1992). Szirmai (1997) also pointed out that rural development refers not only to economic changes, but also to transformations and changes in wider rural societies. A multidisciplinary approach is required. It is especially interesting to combine economic studies on agricultural development with anthropological and sociological studies of processes of socio-economic change in rural areas. In addition, rural development indicates that economic activities in rural areas are not limited to agriculture. Although agriculture is a defining characteristic of rural areas, rural populations have always been involved in other economic activities such as trade, handicraft production and Service.

The phasing out of shifting cultivation, a traditional farming system seen by the government as backward, inefficient and environmentally friendly (Ave and King 1986), is one of the main objectives of the government to induce rural change in the interior of Sabah. As a result, land development under the Sabah Land Development Board was formulated by the State government to implement resettlement and plantation scheme in rural Sabah. In addition to developing the agriculture sector, development of idle land, the government is also concerned with the concentration of scattered communities into accessible locations, easily administrated and modernised (King, 1993). For instance, the Lohan Resettlement Scheme targeting the shifting cultivators, in Ranau was implemented in the early 70’s to plant temperate vegetables.

However, the implementation of these schemes was stopped in 1982. The main problems were the reluctance of farmers to move into the scheme with regimented work schedules, loan repayment problems and tardiness of issuing land titles.
As a result, the schemes had to rely on hired labourers from Indonesia and the Philippines (Schulze and Suratman, 1999). Similarly, the Federal Land Development Authority (FELDA), which was already operating in Sabah by late 1970's took over land Development Schemes have encountered problems recruiting participants from all over the State. According to King (1993) these development programmes have been conspicuously unsuccessful, and it clearly indicates that policies towards resettlement require urgent rethinking.

On the other hand, the in-situ developments of the agriculture smallholding sector in Sabah were more successful (Clearly and Eaton, 1992). Several state agencies such as the DOA and KPD promote cash crops and new agricultural methods (Ti and Yee, 1998) mainly to Shifting cultivators. KPD is one of the role model in the state promoting cash crops either for local market or export with numerous strategies being initiated. Among these are the promotion of back yard gardening, joint venture projects, establishment of processing plant for agricultural produce, carrying out participatory research, credit facilities and providing extension services such as mechanized ploughing and harvesting. According to Schulze and Suratman (1999), the joint venture projects form the backbone of KPD's intervention policy. In the long-run such venture was also not spared of problems associated with project implementation.

Golinggi and Ismail (1998), pointed out that this due to the majority of smallholders were not aware or not able to take advantage of the opportunities available due to lack of knowledge, capital, size of holdings, inaccessibility to markets, apathetic attitude and smallholders preference for leisure. In retrospect, some of these arguments may be true but the generalisation of farmers or smallholder preference to leisure was unwittingly prejudiced without valid figures to support it. Some of the farmers may behave in such a way due to many reasons. It can be structural, technical or the policies itself and many others. The farmers are actors, or active respondents, that can influence the development or even develop by their own. Some farmers are obtaining off-farm income instead of investing in agriculture. Such investments become insecure as a result of weaker governmental protection of the crop sub-sector. The agricultural policies are external change leading to increased farm risk. To cope with this risk, the farmers are making their decision suitable for present day's needs, which mean risk minimising and utility optimising. As claimed by Hyden (1988) the agricultural authorities are seemingly not paying enough attention to the social sustainability of the farming household.

The NAP was designed to ensure a balanced and sustained rate of growth in the agricultural sector vis-a-vis the other sector in the economy. The policy objectives of the NAP aimed specifically at maximising income from agriculture through effective and efficient utilisation of the country's resources and the revitalisation of the sector's contribution to the national economy (Malaysia, 1984). However, the National Agricultural Policies (NAP) in Malaysia are mostly performed with the basis in the view that agricultural modernisation can be planned at a national level and that farmers are passive respondents forced to follow the aims of the agricultural authorities. The agricultural policies are seemingly performed in a Western tradition of modernising and economical development. Strategies has been performed and implemented to force the farmers to become commercial farmers. This policy is based on the assumptions that agricultural modernisation would be viable and that the farmers are passive to change. However, if farmers do not know what to do. They were enforced to them by the authorities.

This conceptual link to eurocentric approach in Malaysia's rural agriculture was a necessity for reaching the highest production was seen as an obstacle to commercial production was inspired by the modernisation of agricultural crops should replace traditional crops for the market. This is also very deliberate to promote settled and modern farmers. Smallholders and estate owners do not know their own and the conditions for their own production, it was forced for production.

2.5 Traditional Farming

Traditional farmers were often government agencies. They were called farmers. Smallholders are groups of land or less than 10.17 ha (25 acres) deemed to have the lowest product contributes little to the national little access to resources. The owners are land, labour and management long as they practice simple means.

Traditional land use system has been the indigenous minorities in Asia. Conklin (1957) integral swiddening round, community-wide, largely that is still prevalent among the peoples of America and a small declining components of a larger ecosystem of collection, hunting, fishing and itinerancy. Padoch and De Jong (1987) define that has resided in a region for many years to have developed and uses local an initial conversion of primary forest for growth, followed by rotation pastures, the cultivation/fallow cycle, with 20-30 years, by its inhabitants to preserve values to the permanent tree crops such as rubber.
the majority of smallholders rely on hired labourers from (1999). Similarly the Federal Territory of Sabah by 1993) these problems are encountered. The Federal Government of Malaysia has not been entirely successful, and it clearly must rethink its agricultural policy.

In the current context of smallholder farming, the agricultural smallholding sector is undergoing a structural change. Several state agencies such as the National Agricultural Extension Service (TAPE) and the Malaysian Agricultural Research Institute (Mardi) have expressed the need for smallholder farmers to adopt more modern farming methods. This change is influenced by the modernization process, which includes the promotion of agricultural diversification and the integration of modern technology. Smallholder farmers are being encouraged to adapt to this new environment, which includes the adoption of new farming practices and the use of modern agricultural inputs.

In the context of the Malaysian agricultural sector, the role of smallholder farmers is crucial. These farmers are responsible for a significant portion of the country's food production. However, they face several challenges, including limited access to credit, marketing, and technology. The government has implemented several policies to support smallholder farmers, including the Smallholder Grant Scheme and the Smallholder Farmers Investment Scheme. These initiatives aim to enhance the productivity and profitability of smallholder farmers, thereby contributing to national food security.

2.5 Traditional Farming System

Traditional farmers were often defined in different ways by various institutions and government agencies. They were sometimes called smallholders or subsistence farmers. Smallholders are group of farmers who owns not more than 20-24 ha of land or less than 10.17 ha (25 acres) in total area. Hence, subsistence farmers were deemed to have the lowest productivity that uses traditional methods of farming and is mainly involved in subsistence farming due to the limited available resources and limited access to markets. The only important resources required in their production and management. In this study, traditional farmers include both subsistence and small-scale farming systems, incorporating plantation agriculture and estate owners. The belief was that the farmers themselves did not know their own and the country's best. If the farmers were given responsibility for their own production, it was believed that they would turn back to subsistence production.

Traditional land use system has always been associated with shifting cultivators and the indigenous minorities in Asia, South America and South East Asia. According to Conklin (1957) integral swidden is a land use system based on traditional, year-round, community-wide, largely self-contained and ritualistically sanctioned way of life that is still prevalent among the tribal minorities in South East Asia and South America and a small declining percentage of African farmers. It is one of the components of a larger ecosystem which includes not only agriculture but also forest collection, hunting, fishing and in some areas, cash cropping (Warner, 1991). Whilst Padoch and De Jong (1987) define a traditional farmer as a member of a community that has resided in a region for many years (at least long enough for agro ecosystem to have developed and uses local resources rather than improved inputs. There is an initial conversion of primary forest to short-term field crops and secondary growth, followed by rotation partly in mature forest and partly at various stages in the cultivation/fallow cycle, with the resulting forest composition being manipulated by its inhabitants to preserve valuable fruit or honey trees, produce rattans or grow permanent tree crops such as rubber. Forests are all secondary and contain many...
trees planted or conserved for their edible fruit or other useful produce. Areas of semi-permanent swamp rice supplement hill-rice swiddens (Cramb 1988; Padoch 1982a; Sather 1990).

Warner (1991) emphasized that shifting cultivators are practitioners of traditional farming system. This refers to local systems that use local products and local techniques, 'have roots in the past' and 'have evolved' to their present state as a result of interaction of cultural and environment conditions of a region (Gleissman, 1985; Allan (1965) also pointed out that the shifting cultivator worldwide has always needed a detailed knowledge and understanding of the environment to survive. Leaving an area to regenerate (fallow) after a few years cultivation then rotate to another area is the main principle of shifting cultivation (Hyden, 1988). Goddall (1987) distinguishes between the traditional meaning of the term connected to nomadic tribes, land rotation practised by farmers in permanent villages, and shifting cultivation associated to cash crops were land is abandoned when the yield falls under a certain minimum. An area is cleared by slash and burn, planted by the aid of a digging stick with a mixture of crops. Ash from the burned vegetation was the only nutrient supply. After a few years cultivation the soil became too unfertile for use. The area was then abandoned and natural vegetation, either bush or forest recolonised the land (Grigg 1993). An additional strategy to restore the nutrients of the soil is fertilising with manure from livestock.

Myers (1986) and Russels (1998) estimated that the number of shifting cultivation in the world vary from 250 million to 300 million. It was estimated that approximately 350,000 people in Sabah are practicing shifting cultivation. Over one million hectares of land or 15% of the State total land mass (Figure 2) is affected by these activities (Forestry Department, Sabah, 1989). On contrary, estimation by the Department of Statistic, Sabah in 1999 (200 I) mentioned that there were about 11,332 hectares of hill paddy area in Sabah, producing about 15,912 metric tonne of paddy or 10,025 metric tonne of rice per season. Shifting cultivation in Sabah is commonly practiced steep slopes which are often cleared and planted with hill paddy but sometimes mixed with other crops. The shifting cultivation varies cycle varies from region to region. The shifting cultivators in the State are mainly the kadazanduzuns, Rungus, Muruts and Lundayehs. The Sabah Forestry Department (1989) defines and categorizes shifting cultivation in two groups, Cyclic and Nomadic. The first involved clearing and occupying the Forest land for periods of up to 2 years, leaving the area idle for between 3-12 years then subsequently occupying it. While the latter, involved felling and clearing of high forests for agriculture then abandoned for longer periods to permit improvement in soil fertility.
A practitioner of traditional local products and local to their present state as a of a region (Gleissman, cultivator worldwide has of the environment to years cultivation then cultivation (Hyden, 1988). Meaning of the term connected in permanent villages, and abandoned when the yield sh and burn, planted by the burned vegetation was the soil became too unfertile, either bush or forest to restore the nutrients of.

Shifting cultivation is estimated that approximately cultivation. Over one million (Figure 2) is affected by these contrary, estimation by the that there were about 15,912 metric tonne shifting cultivation in Sabah is and planted with hill paddy cultivation varies cycle varies the State are mainly the Sabah Forestry Department a two groups, Cyclic and the Forest land for periods of 12 years then subsequently clearing of high forests for improvement in soil fertility.

2.5.1 Perceptions and Criticism of Shifting Cultivators

Governments universally detest shifting cultivators, if allowed to persist in traditional form, it locks up land and timber resources which planners may seek to allocate elsewhere (Padoch and Peluso, 1996). Similarly, Malaysian government, like many others in the tropics, is committed to eliminating shifting cultivation in all its forms. Large areas lying fallow at any one time form an essential component of the system and offend those who wish to see resources, whether of land or of timber, in commercially productive use. Yields of basic food crops, especially rice, tend to be less reliable than those in other forms of agriculture, and it is widely believed that shifting cultivators are not only inefficient but also among the poorest of the rural poor. Elimination of the system would, therefore, meet social as well as developmental goals. (Porter, Brookfield and Byron, 1995) Persuasion has been applied for many years, but the timber boom has created a new urgency that blames shifting cultivators for eating into primary and late-secondary forest that could yield timber revenues to the state even so much so that, for every log felled, "another goes up in smoke" (Lau 1979). No government in the region has given its indigenous peoples inalienable rights to all the land they use.

Various criticisms pertaining to shifting cultivators have been made by several writers in this field. One of the popular criticism looks at shifting cultivation as wasteful and leading to environment degradation. It is unproductive and main cause of poverty in rural areas of Borneo. Porter et. al, (1995) pointed out that the question of poverty and insecurity of livelihood, implicit or explicit in almost every relevant planning document, may have some truth. King (1988) reports his own estimate that 40 per cent of Sarawak's population live below the poverty line.
overwhelmingly in rural areas but probably largely in the west. Lian (1987) and Cramb (1989a) question the lack of self-sufficiency in basic foods, the more so when foods supplementary to rice are taken into account. Yields are low, and a great deal depends on skill in timing activities in relation to the weather, but there is often a surplus. Despite the low income from shifting cultivation, traditional farmers still cling to this practice. This form of agriculture has been practiced by the rural communities in Sabah for hundred of years. It is difficult for them to change to compete with the modern market forces. The strength of their cultures as traditional farmers is often being blamed for the die-hard practice of shifting cultivation or swidden farming. Suratman and Schulze (1999) described that farming households have been responding to changes by shifting their land use from annual subsistence crops to perennial cash crops (fruits). However, the cultivation of subsistence crops such as hill-rice and vegetables is still an important economic activity for many traditional farmers. Homegrown rice and vegetables reduces household expenditure and surplus vegetables provide an additional income for the households. However, other factors like the physical limitations and institutional constraints failed to address the problems of isolated location, lack of infrastructure development, lack of education, lack of suitable soil or uneconomical land size for large scale agriculture and other agricultural support facilities. The local culture of the indigenous communities to co-exist with nature treat land as part of their existence is another factor that enhances these practices. This also strengthened native customary rights or land tenureship and social sustainability of the people both politically, culturally and economically.

In addition, Cox and Atkins (1979) argued that shifting cultivation appears to be the most effective method for dealing with ecological realities of the tropical forests. Warner (1991) also added that shifting cultivation represents a response to the difficulties of establishing an agro ecosystem in the tropical forest. It is the most widespread soil management technique. Alcorn (1989) also pointed out that, shifting cultivator recognizes the natural processes of the tropics that can be utilized as resources. Indigenous resource management is based on maintaining “specific items” as an outcome of this process, using the naturally available resource. He also added that tropical technical knowledge revolves around how to operate with rather than try to overcome the natural process associated with the year round growing season and rapid succession that results from the high rainfall and high temperature of a particular region. The perception of agricultural succession goes by the season and into the next generation as the natural process of regrowth takes place, aided and manipulated by the farmer. This manipulation has created anthropogenic forests throughout the tropics.

Whatever the defence of the system in its classic form, a real problem exists where numbers increase and where commercial crops are grown by swidden methods. Unfortunately, most current solutions involve resettlement and a complete change, rather than adaptation, of farming methods (Porter, Brookfield and Byron, 1995). Similarly, with the stated aim of reducing poverty, the government of Sabah has sought to resettle shifting cultivators in managed cash-crop blocks for over 20 years. SLDB was set up for this purpose. Such resettlement schemes, have been criticized as culturally insensitive and often economically unviable (Appel and Appel-Warren 1985; Ave and King 1986).