THE VIABILITY OF TRADITIONAL FARMING SYSTEM AMONG THE LOCAL HOUSEHOLD COMMUNITIES AT BENGOH RESETLEMENTS SCHEME (BRS)

WHITNEY PAULA ANAK RONALD

A dissertation submitted in partial fulfillment of the requirements for the degree of Master in Environmental Management (Development Planning)

FACULTY OF SOCIAL SCIENCES
UNIVERSITI MALAYSIA SARAWAK
2015
DECLARATION

I hereby declare that the work in this study entitled “The Viability of Traditional Farming System Among the Local Household Communities in Bengoh Resettlement Scheme (BRS)” is my own except for quotations and summaries that have been duly acknowledged.

Date : 
Signature : 

Name : Whitney Paula anak Ronald

I.C Number : 900205-13-5210
With humility and faith, I thank the Almighty Lord for giving me the strength and patience to complete this dissertation.

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<tr>
<td>BAHEP</td>
<td>Batang Ai Hydroelectric Power</td>
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<tr>
<td>BCR</td>
<td>Benefit Cost Ratio</td>
</tr>
<tr>
<td>BD</td>
<td>Bengoh Dam</td>
</tr>
<tr>
<td>BHEP</td>
<td>Bakun Hydroelectric Power</td>
</tr>
<tr>
<td>BRS</td>
<td>Bengoh Resettlement Schemes</td>
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<tr>
<td>CBA</td>
<td>Cost and Benefit Analysis</td>
</tr>
<tr>
<td>DOA</td>
<td>Department of Agriculture</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impacts Assessment</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>IRR</td>
<td>Internal Rate of Return</td>
</tr>
<tr>
<td>JKR</td>
<td>Jabatan Kerja Raya</td>
</tr>
<tr>
<td>MLD</td>
<td>Millions of Liters per Day</td>
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<tr>
<td>MYR/RM</td>
<td>Malaysian Ringgit</td>
</tr>
<tr>
<td>NBBI</td>
<td>New Brunswick Bible Institute</td>
</tr>
<tr>
<td>NCR</td>
<td>Native Customary Right</td>
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<tr>
<td>NPV</td>
<td>Net Present Value</td>
</tr>
<tr>
<td>PVB</td>
<td>Present value benefit</td>
</tr>
<tr>
<td>PVC</td>
<td>Present value cost</td>
</tr>
<tr>
<td>RCF</td>
<td>Rainforest Conservation Fund</td>
</tr>
<tr>
<td>SALCRA</td>
<td>Sarawak Land Consolidation and Recreational Authority</td>
</tr>
<tr>
<td>SPU</td>
<td>Sarawak Planning Unit</td>
</tr>
<tr>
<td>TPVB</td>
<td>Total present value of benefit</td>
</tr>
<tr>
<td>TPVC</td>
<td>Total present value of cost</td>
</tr>
<tr>
<td>VIDP</td>
<td>Village Integrated Development Project of Padawan Cluster Programme</td>
</tr>
<tr>
<td>WTA</td>
<td>Willingness to accept</td>
</tr>
<tr>
<td>WTP</td>
<td>Willingness to pay</td>
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ABSTRACT

This study examines the viability of traditional farming system among local household communities in Bengoh Resettlement Scheme (BRS) that is limited to three acres of land per household, the identification of their previous and current livelihood strategies, suggested land utilization pattern on the new land using their common way to run the agricultural activities and projection of cost and benefit on the land utilization pattern.

A random sampling of 40 respondents were selected through face-to-face interview using semi-structured interview schedule. Focus group discussion was also executed to gain information on the typical agricultural practices among the farmers. This study was also supported by secondary data obtained from several official meeting reports on the progression of the resettlement projects. Cost benefit analysis was employed to determine the viability of agricultural farming system in which NPV, BCR and IRR was calculated by using Microsoft Excel.

The study discovered that disrupted livelihood strategies in the BRS were attributed from challenges in seeking for new employment (60%) in which it is related to limited natural resources (27.5%). Access to sufficient amount of land is vital for the local communities to support their living. Small area of land restricts them to cultivate agricultural activities especially using traditional farming system.

In terms of traditional farming system proposed, this study found out that a mixed-pattern of pepper vines (230 vines) and 10,000 cobs of maize planted on 1.5 acres of land respectively is the most viable to the local communities. With a discount rate at 10 per cent, the NPV throughout 10 year period was projected RM22,508.43, BCR of 1.39 (more than 1), IRR of 28 per cent (more than discount rate) and the payback period is estimated on the sixth year after planting these two crops using the traditional farming system.

**Keywords:** Traditional Agriculture, Bengoh, Viability, Pepper
ABSTRAK

Kajian ini bertujuan untuk menyasat daya maju sistem pertanian secara tradisional di kalangan masyarakat tempatan di Skim Penempatan Semula Bengoh (BRS) dimana keluasan tanah dihadkan kepada tiga ekar. Untuk mencapai tujuan utama kajian, mengenalpasti strategi kehidupan sebelum dan semasa berpindah, mengenalpasti corak penggunaan tanah yang ingin dilakukan oleh petani serta amalan pertanian yang biasalah dijalankan juga turut disertakan dalam kajian ini.


Kajian ini mendapati bahawa perubahan strategi kehidupan mereka berpuncu daripada kesusahan untuk mendapatkan pekerjaan baru (60%) di mana ia turut berkaitan dengan kekurangan sumber semulajadi (27.5%). Keluasan tanah adalah penting bagi masyarakat tempatan untuk menjana sumber pendapatan mereka. Tanah yang kecil menghalang penduduk untuk mendapat pendapatan yang cukup bagi menampung kehidupan mereka.

Aktiviti pertanian traditional yang terdiri daripada lada sebanyak 230 batang dan 10,000 tongkol jagung pada 1.5 ekar setiap satu dilihat sebagai aktiviti yang paling menguntungkan berbanding dengan aktiviti pertanian yang lain. Dengan kadar diskaun sebanyak 10%, NPV sepanjang tempoh 10 tahun dianggarkan sebanyak RM22,508.43, BCR sebanyak 1.39 (lebih daripada 1), IRR 28% (lebih daripada kadar diskaun) dan tempoh bayaran balik dianggarkan pada tahun keenam.

Kaca Kunci: Pertanian traditional, Bengoh, Keuntungan, Lada
CHAPTER 1

INTRODUCTION

1.1 Background

Land has been and always will be transformed into several different purposes so as to supplement the development process. One of its major transformation is for agricultural purposes, and this has often lead us to compare and weigh the costs and benefits of such decision. Pearce and Moran (1994) highlighted that there are comparatively more and more land utilization for agricultural activities in Asia thus triggering lots of concern particularly in South East Asia. This is because more than half (67%) of the rainforest land in Asia has been converted to agricultural land, followed by 38 per cent in Africa, and 38 per cent in South America (RCF, 2010).

Agricultural activities are understood as the process of utilizing natural resources to produce goods and materials for human needs. Deemed as one of the earliest economic activities in the world, the agriculture sector has reigned within the core of livelihood strategies especially among the rural communities of developing countries like Thailand, Vietnam, Philippines and Malaysia. In these countries, agricultural practices were conducted in traditional ways and it has been practiced by most of the rural communities since their forefathers. Like any other developing nations, Malaysia depends very much on agriculture sector especially within the context of rural development. Current statistic
indicate that agriculture sector contributes substantially to the national Gross Domestic Products (GDP) as exemplified by the states of Sarawak about 19.6 per cent, followed by Sabah with 17.9 per cent and Johore with 14.1 per cent (Department of Statistics, Malaysia). However, the contribution of agriculture to the national GDP showed a declining trend from 2011 to 2013 (Figure 1.1), although there is an increase in production from 2012 to 2013 of about two per cent (Figure 1.1). As for Sarawak, it is still very much dependent on agriculture and its natural resources as the main economic drivers (SPU, 2015) of the state.

Figure 1.1  Contribution of agriculture in Malaysia’s GDP from 2009 to 2013

Sarawak is considered to be the biggest state in the country and is blessed with abundant land to generate economic benefits from agricultural activities. With the highest number
of job of about 10,649 available in the agriculture sector in Sarawak (SPU, 2015), this is yet another proof that indeed agriculture remains very vital to the state’s economy.

For Sarawak, the rural communities still largely practice traditional agriculture such as planting of wet paddy and hill paddy, pepper and other short term cash crops. However, there are numerous effort made by the authorities in modernizing agricultural practices and commercializing them especially in the development of rubber mini estates, oil palm mini estates, and wet paddy on a larger scale of about 50 hectares and more (Annual Report 2011, Department of Agriculture, Sarawak). However, due to land fertility, land size, and available infrastructures, farmers are unable to modernize or commercialize agriculture. This is rampant especially in the very rural areas, and thus, only subsistent agriculture is practiced. The subsistent agriculture is unreliable especially when crops fail and this could lead to serious food shortages in which affects all household members (Dixon, 1990).

Placing value in several land utilization is not an easy task. The value of such utilization is usually expressed using monetary value and is measured by the preference of willingness to pay (WTP) and willingness to accept (WTA) of the consumers. Both indicators show the partialities of an individual over something whereby WTP is linked with gains and WTA with losses. Hence, the gains and losses of an individual able to be measured, thus it can be used to determine their wellbeing. The viability of any land utilization is required in order to measure the benefits and losses to the consumers. It is an important element within the scope of project appraisal that measured the capability for particular solutions to satisfy the desired outcomes. In proposing a project, the viability states the outcome that is prudent and profitable comparing with its associated cost, time,
quality, resources availability, and manpower requirement. In other word, for a particular development to be implemented, the revenue generated from the development must exceed the cost of undertaking the development (Scottish Government, 2010).

1.2 Bengoh Dam Resettlement Scheme

In August 2009, Kuching city experienced water rationing when water shortage became critical during drought season (The Star, 2009). On the other hand, with the occurrence of flood during the wetter months of December to February, it is critical for the State to make sure that water supply is sufficient to fulfill the demand of the city throughout the year (Nyambar and Bong, 2010). As a result, the State government initiated the construction of a water reservoir dam to supply sufficient water for the Batu Kitang Water Treatment Plant (BKWTP) in order to meet the increasing water demand aligned with the expanded population in Bengoh, Serian, Samarahan and nearby areas.

Bengoh area was chosen for this project due to its suitable location situated at the upstream of Sungai Sarawak Kiri, the source of water for BKWTP. The dam is located in the island of Borneo, Penrissen District, about 40 km south of Kuching, Sarawak and about 30 km upstream from exiting BKWTP. With the size of 127 km² catchment area, the dam is expected to produce around 2,047 MLD of raw water by the year 2030 when the demand for water supply in Kuching is expected to be 2,000 MLD by then (The Borneo Post, 2009).
As documented in the Environment Impact Assessment (EIA) Report (2008), as a result of the Bengoh dam project, a lake will be created and will provide a wide range of tourism attractions. This augments well for the local communities and complements the facilities already in place in the Padawan area such as the Borneo Highlands Resort and the longhouses at Kampung Benuk and Annah Rias (EIA Report, 2008). In addition, this project will contribute considerably towards the Rural Growth Centre (RGC) and Village Integrated Development Project of Padawan Cluster (VIDP) programmes which the government has initiated in the surrounding area to improve the quality of life of the communities in the area including agricultural and tourism development (EIA Report, 2008). One of them is the development of Bau-Semadang Road Project, which comprises a 12.4km access road into the mountainous hinterland to Kampung Puruh Semadang/Kampung Puruh Garung in the Padawan District, Kuching, as well as concrete bridges over Sungai Krokong, Sungai Raden and Sungai Sarawak Kiri, proceeded according to schedule. By September 2012, the completed road is expected to provide easy vehicular access to the Bengoh Resettlement Scheme (BRS) area (Naim Annual Report, 2011).

However, the villages of the Bidayuh communities are surrounded by the identified water catchment areas. Four affected villages are Kampong Taba Sait, Kampong Pain Bojong, Kampong Rejoi and Kampong Semban as shown in Figure 1.2.
Note:

On 27th October 2010, Naim Holdings were awarded the contract to construct the infrastructure for the Bengoh Resettlement Scheme by Jabatan Kerja Raya Sarawak (JKR). This project comprises a mini-township with full urban amenities and infrastructure to provide comfortable permanent homes for the people resettled under the Bengoh Dam project, for which Naim Holdings were also the main contractor. The 324 acres site will accommodate the four kampongs (villages) and provide homes for more than 200 families. A further 704 acres of agriculture land will be prepared for allocation to the
resettled families. The scope of works also includes paved roads, gravel roads for the agriculture area, a water supply system, and electrical services.

(Naim Annual Report, 2013)

Based on the note above, Naim Cendera Holdings was the developer who are responsible for the construction of facilities such as new houses and road for the settlers of the scheme. With respect to income improvement, the Department of Agriculture (DOA) Sarawak was in charge of planning for the agricultural projects that can be developed on the compensated land given to the affected communities.

One of them is rubber mini estate project that will cover about 250 hectares of land. This project is intended to provide income and job opportunity for the settlers. It also aimed to upgrade the rural agricultural sector by using high technology such as machines, new rubber clones which can produce high quality latex and timber as well as agricultural technology that yield higher productivity. The mini rubber estate project is intended to optimize land use which may not be suitable for food crops.

The DOA Sarawak also suggested cash crop projects to secure the food supply for the settlers while diversifying their source of income. However, this project can only materialized if the state government compensate the affected communities with new land besides the existing three acres of land. Other agricultural activities planned at BRS include poultry, rearing and aquaculture projects. These projects are intended to train and exposed these farmers in commercial farming practices and to understand the application of modern farming technology.
Other than focusing on income generation, the DOA Sarawak also planned to develop the community with physical infrastructures such as road and bridges to facilitate the transport of agricultural inputs and products to market. Furthermore, the DOA Sarawak proposed human resource development training for the affected communities. This training aims to equip participants with better knowledge and skills in agriculture. These include advisory services, training in agricultural techniques, procedures, and proper agricultural practices. The methods used consist of training courses, motivational dialogue, and study visits.

1.3 Problem Statement

This study aims to analyze the viability of traditional farming system practiced by the communities in Bengoh Resettlement Scheme (BRS) area. The importance of this study is that it raises essential questions on the impact of development implemented by the state government on the indigenous people, a group of society who has been identified as being in need of change and to be brought closer to urbanization and modernization via resettlements.

Dam projects often take place in the interior part of a country, and as a result, it often affects the livelihood of the affected community living around it. Likewise, Bengoh Dam is located in a remote part of Sarawak, and the construction involves the displacement of the local Bidayuhs. Due to this development, the locals are required to move not only from their old home but also from their traditional livelihood style and belongings. They
have to sacrifice their agriculture land, consequently, losing one of their main sources of income and food supply merely to make way for the Bengoh Dam project. The state government has taken the initiative to help the villagers by compensating each of the affected household with a new house to settle down, three acres of land, plus some cash. However, the amount of compensation is believed to be inadequate to sustain them in terms of food security and income source.

It is often argued that development project will provide employment to the local population. The construction of dam required high number of laborers and the local community could have the opportunity to work there. While employment created from constructed dam is momentary in nature, the disturbance to local people from their sources of livelihood contrariwise, is permanent. Referring back to other dam development, Jehom (2009) reported that the employment rate has failed to secure the livelihood security to the affected local people. This is because most of them were unskilled, hence, they only fit only for employment in construction jobs, specifically in building the dam. Eventually, they will return to what they know best, that is farming.

Traditionally, local communities depend on forest and farming for livelihood strategies. For years, traditional shifting agriculture is very common among the people in Sarawak. It has been a major source of income for rural dwellers and the key to food security. Rice cultivation and mixed crop cultivation for the whole year round had been enough to supply the farmer and his family with food. Cash crops like pepper, rubber, and cocoa were introduced to improve the livelihood of the local community.
Owning a land for agricultural activity is very important to the local community. It is not only to support their food sources but it also defined their background and culture. Generally, the local community among BRS adopt traditional farming in their farming practice. The question arise here is: does the traditional household farming among the local communities in BRS economically viable? A total of three acres of land is claimed not to be sufficient to generate income for the farmers especially for those who wanted to cultivate rice. As noted by Mak (2010), the size of the land holding is important to the viability of cultivation of rice as well as many other crops. Even though with the diversification of agricultural activities such as paddy farming, fruit cultivation, poultry, and fishing, it is impracticable to expect the affected communities to depend solely on three acres of land to earn their living. The communities can plant paddy and vegetables on their three acres plot for their daily consumption but cannot cultivate enough cash in commercialized food production and for extra income.

1.4 Goal and Objectives of The Study

The goal of this study is to examine the viability of traditional household farming system among the Bengoh Resettlement Scheme (BRS) community that is limited to three acres per household. In order to meet the goal of the study, the following specific objectives will be answered.

1. To investigate the previous livelihood strategies in relation to the traditional farming system among the local communities in BRS
2. To determine the land utilization pattern for traditional farming proposed by the community of BRS

3. To estimate the cost and benefit of the land utilization pattern according to local communities in regard to the traditional household farming system.

1.5 Significance of The Study

Assessing the cost and benefit of existing farming systems will inform farmers which farming system is most efficient in generating income for living. This would be benefit for farmers in resource allocation decision and bringing better quality of livelihood. In determining the viability of an investment, it is important to understand the labor engagement of farming systems to ensure suitable development intervention.

Most of the affected Bidayuhs are farmers and with only three acres of land size per household with lack of proper planning, it might not be sufficient to sustain their new livelihood. On the other hand, for the rural people that agreed to move in order to give way for development, it means that they may no longer possible to rely on their traditional source of income, especially from the forest and agricultural activities for living. Hence, this study could serve as a guide to help the affected community identifying suitable crops to be planted on the compensated land and ensure sustainable livelihood in the new location.

Moreover, the findings of this study will provide some indications of financial viability of the proposed farming practice/management regime to farmers, community leaders,
resource managers, and policymakers that involved in Bengoh Resettlement Scheme. As most of the affected people are farmers, the financial appraisal provides a guideline for it to the local people to determine which agriculture activity will generate higher income and also deliver a recommendation to the policymakers in providing proper assistance to affected communities.

1.6 Scope of The Study

The study was conducted at Bengoh Resettlement Scheme (BRS) area that accommodated four affected villages namely Kampong Bojong, Kampong Taba Sait, Kampong Semban and Kampong Rejoi. The study is focused on the traditional farming system practiced by the villagers on BRS and the pattern that they planned on their compensated land.

1.7 Limitation of The Study

The study highlighted on the viability of traditional household farming that will be adopted by the local communities of BRS on their compensated land; hence, it does not fully signify the viability of traditional household farming specifically to the local communities in Sarawak that involved in the resettlement program due to development of the region. Besides that, every village or rural area that situated at diverse geographical background will have different culture and environment, therefore the findings of this