

Assessing the Farmer's Sustainable Livelihood Outcome of Rice Sectors Development in Sarawak

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Abstract

This study aims to identify the relationship between the production, socioeconomic and environmental factors, and the sustainable livelihood outcomes of the farmers in Sarawak. The research was carried out in ten sites across the Miri and Kuching divisions. This research conducted a qualitative analysis that utilised an empirical approach. Interviews were conducted with thirty selected respondents to acquire information about rice production and livelihood strategies. The study indicated that land size, capital, subsidies, and incentives significantly influence rice output and farmers' livelihoods. Consequently, governmental action to standardise the Guaranteed Minimum Price rate between Sarawak and Peninsular Malaysia is vital for enhancing the farmers' income. Paddy cultivation land must be conserved and formally designated to avert its transformation into cash crop plantations and to ensure the viability of paddy agriculture in Sarawak. This study emphasises the significance of equitable rice pricing and land preservation for paddy farmers in Sarawak. It underscores the necessity of considering issues beyond output levels in the pursuit of sustainable living and the mitigation of climate change. Ultimately, governmental involvement and contemporary agricultural practices will be necessary to guarantee food security, enhance the quality of life for farmers, and assure the sustainable profitability of paddy cultivation in Sarawak.

Keywords: Land Size, Capital, Subsidies, Incentives, Sustainable Practices

Introduction

Rice is a fundamental dietary component for over 50% of the global population, with Asian countries being the primary cultivators responsible for almost 90% of the world's rice production. Hence, rice and paddy have a crucial significance in ensuring food security, government interventions, and socio-cultural aspects in many developing nations. Rice is major staple food for rural population and food security to many low-income countries and mainly cultivated by many smallholders' farmers with less than one hectare of land. Under the Sustainable Development Goals (SDGs) indicators, the second goal is to end hunger by achieving food security, improving nutrition, and promoting sustainable agriculture. 2030 is

the year when everyone will have enough access and sufficient food all year, in particular the poor and people in vulnerable situations.

For majority of the smallholder farmers in Sarawak, rice cultivation continues to be a vital source of income for their family. Nevertheless, a number of socioeconomic, environmental and policy related concerns produce challenges to their sustainability and profitability. Despite the significance of rice as a staple crop and cultural component, research has been done on how the combination of production, socioeconomic and environmental factors affect these Sarawakian farmers sustainable livelihood outcomes. Furthermore, there is an urgent need to fully comprehend these complex interactions in order to guide more successful solutions, given the growing worries about how labour availability is impacted by rural-urban migration and climate change.

Sarawak is well-known for its distinctive rice type, which boasts superior taste, texture, and smell. Some examples are Bario rice, which is sold for its premium quality and is profitable. This activity increased income for the smallholder farmer community in Bario (Omar, Jasmin & Tumin, 2018). Rice production is vital because it supports thousands of smallholder farmers especially in rural areas. Typically, paddy planting is primarily for livelihood, with any excess being sold to acquire essential items like salt, sugar, and other necessities.

The agricultural sector has been a significant contributor to the Malaysian economy since the 1960s, serving as the primary source of income for the country. Additionally, the rural sector has played a crucial role in fostering economic, social, and political development. The early development stage of the Malaysian economy relied heavily on the rural sector for agricultural input and production, which therefore contributed to the country's export earnings and growth during the 1960s and 1970s (Arshad & Shamsudin, 1999). The National Agro-Food Policy (2011-2020) and Eleventh Malaysia Plan (2016-2020) have contributed to the growth of rice production in Malaysia.

In Malaysia, the government provides strong protection for the rice industry, particularly in granary areas, and offers a number of assistance programs to help paddy farmers maintain their standard of living. Furthermore, Malaysian rice policies are primarily focused on reducing poverty because of the stigma that currently associates rural areas and poverty with agriculture. This is particularly true in rural areas, where the majority of impoverished individuals are farmers who rely on paddy cultivation as a crucial agricultural activity within the sector (Echoh, Nor, Salfarina & Masron, 2017). The policies seek to develop the industry into a profitable one that able to support farmers livelihoods.

According to Jamaludin, Amer, and Hasan (2010), the government actively provides fertilizer, support price, and price subsidies to rice farmers to ensure a strong yield and steady revenue for farmers particularly those with low incomes. This provides the rice industry heavily reliant on government assistance and incentives. Government support also includes farming infrastructure such as irrigation systems and dams, as well as price restrictions, subsidies and tariffs in which contribute to farmers livelihood sustainability (Rahmat, Firdaus, Shaharudin & Lim, 2019).

Although paddy cultivation benefits farmers in a variety of ways, some farmers continue to live below the poverty line. Poverty level is frequently used as the primary criterion for evaluating livelihood results. According to Raja (2015), a resource-dependent society has challenges to social and economic stability due to its reliance on certain natural resources for revenue and jobs. Furthermore, climate change has an impact on farmers' socioeconomic status and output. According to a few earlier research (Takama et al., 2014; Hasanthika, Edirisinghe & Rajapakshe, 2013; Saptomo, Setiawan & Yuge, 2009), climate change or climate variability has a significant impact on paddy output. The agriculture sector, particularly paddy, is vulnerable to climate change.

This study addresses an important research gap by providing an empirical qualitative assessment of the key factors influencing sustainable livelihoods among paddy farmers in the northern and southern regions of Sarawak. By examining land size, capital, subsidies, incentives and socio-environmental variables comprehensively, policymakers can better devise tailored support mechanisms. Furthermore, the report makes practical recommendations for government intervention in pricing standardization, land preservation and modern agricultural practices, all of which help to advance food security and rural development of rice sector in Sarawak.

Literature Review

The rise of international trading price of rice caused food crisis happened in year 2008 bring significant effects. According to Childs and Kiawu (2009), this phenomenon occurred as a result of price increases and was not caused by crop failure or a particularly tight global rice supply scenario. Instead, trade restrictions enforced by key suppliers, panic buying by a number of major importers, a weak dollar, and record oil prices were the immediate drivers of rising rice prices. Echoh et al (2017) suggests that it is important to maintain the life of the local people in a positive traditional way to ensure paddy cultivation and the local knowledge on it to be well-preserved in the pursuit for industrialization and urbanization.

Due to the unequal distribution of income, social and economic issues are mostly associated with urbanization *and* rapid industrialization. Therefore, family methods and the diversification of rural livelihoods are necessary to address these issues. The primary drivers of farmers engaging in off-farm jobs are income and cost of living. Income diversification is crucial for farmers to adjust to vulnerability factors including inadequate government assistance and climate variability that could endanger their livelihood, according to Idris and Siwar (2015). On the contrary, Echoh et al. (2017) repeated that farmers can endure market pressures by diversifying their activities that can sustain and improve their social capacities and by continuing cultural practices related to paddy production.

A worldwide phenomenon, climate change has detrimental effects on humanity, but these effects are most acute in developing nations that rely more heavily on natural resources and have less capability to adapt to the great fluctuation of the environment. Furthermore, drought and floods cause enormous losses for low-income farmers. Paddy production is greatly impacted by climate change or variability, according to a few earlier research (Takama et al., 2014; Hasanthika, Edirisinghe & Rajapakshe, 2013; Saptomo, Setiawan & Yuge, 2009). Climate change poses a threat to the agriculture sector, particularly paddy. According to Intergovernmental Panel on Climate Change [IPCC], "vulnerability is the point to which a

system is disposed to, and unable to deal with, adverse effects of climate change, including climate variability and extremes” as cited in Takama et al., (2014). Thus, climatic and socioeconomic vulnerability may worsen the difficulty of poor farmers who majority lives in rural areas and this condition will continue to put them to be vulnerable to social and weather changes in the future.

Low-income households that rely entirely on natural resources for their livelihood are more likely to experience disasters and are particularly at risk of suffering financial losses due to droughts and floods Silva and Kawasaki (2018). Smallholder farmers play a crucial role in the agricultural community, particularly in rural areas, and they are more susceptible to poverty when it comes to the overall revenue from paddy production and cultivation. Smallholders and vulnerable groups must be given priority by national and international research organizations in order to combat poverty and advance the status of food security.

However, the paddy production and cultivation industry also have a labor shortage. According to a 2013 study by Reddy and Venkatanarayana, labor use in rice cultivation is rapidly declining because most work is done by machines. FAO (2017) goes on to say that food systems are becoming more capital-intensive, which means that they are concentrated in fewer hands. This is true from the provision of inputs to the distribution of food. As a result, small-scale farmers and households without land are the first to suffer, and they frantically look for work outside of the agricultural sector, which increases migration, particularly among rural households' male members, and creates a labor shortage in paddy farming and production. According to Saisema and Pagdee (2015), the future of family rice farming is in jeopardy since many young people chose city employment that offer larger financial options. Paddy farmers also experience income inequality, both on and off the farm, particularly if they reside in rural areas that are remote from industrial factories.

A study by Terano and Mohamed (2011) based on the rice farmers in Malaysia, most growth is focused on the West Coast, the East Coast has lagged behind in industrial development. As a result, East Coast farmers are less likely to be able to find part-time jobs as factory workers to supplement their income. This led to an increase in income inequality among farmers. This is documented by research by Alam, Siwar, Molla, Toriman, and Talib (2010), which found a high level of income inequality among paddy farmers. This is supported by a study from Alam, Siwar, Molla, Toriman and Talib (2010) there is a high degree of income inequality among the paddy farmers. In addition, farmers notice that paddy cultivation is no longer profitable due to low productivity as a result of climatic changes.

Alam et al. (2012) emphasize the importance of adaptation strategies for farmers, particularly smallholders that require adequate training and government support to help them cope with climatic vulnerability, protect their socioeconomic sustainability, and ensure national food security. In order to improve farmers livelihoods, these agricultural adaptation solutions should include technical improvements, government initiatives, improved farm practices and solid financial management. This emphasis on technology is consistent with Malaysia achievement in paddy production, where modernization of field operations such as sowing, fertilizing, and spraying has dramatically increased efficiency. Rahmat et al. (2019) confirm that mechanization is a feasible way to cut production costs, improve labor efficiency,

and increase land productivity. As a result, adopting and improving machinery technology is critical for farmers to achieve sustainable rice production and ensure their livelihoods.

Methodology

Thematic analysis is a method to analyze qualitative data. It is applied to a set of texts or interview transcripts. The researcher will examine the data to identify the common themes topics, patterns, ideas or meaning that often being called up repeatedly. Through focusing on meaning across a dataset, thematic analysis allows the researcher to see and make sense of collective or shared meanings and experiences (Braun & Clarke, 2012).

Thematic analysis was used to analyse the data. This process practices inductive reasoning, whereby themes and categories being examine carefully with constant comparison. This study primarily based on themes such as subsidies, a lack of understanding of the enhancement programme, a lack of communication channels to inform about production issues, a lack of marketing channels for the products, and other problems like price, ageing factors, and transportation.

This study involves 30 farmers who were interviewed in the sub-urban areas of Lundu and Siburan as well as the rural production areas of Bario and Long Seridan. The selection of these villages is because of the location and the community still practicing paddy cultivation. Siburan located approximately 30 kilometers from Kuching while Lundu is located in Southwest Sarawak and about 2 hours drive from Kuching. Bario and Long Seridan located in Miri division of Sarawak and shares the same highlands. Researcher has conducted interview with the farmers ranging from different backgrounds, age series, sex and also from different experiences involving in paddy farming.

Findings and Discussions

The primary purpose of this review is to address concisely on the challenges and threats facing by Sarawak's paddy farmers in sub-urban and rural areas. Based on location, for sub-urban areas such as Siburan, majority of the farmers in planting paddy 2 times a year and the purpose are for food crops and cash crops. As for Lundu, majority of the farmers planting paddy 1 time a year and it is for their own food crops. They only sell the rice when there is a surplus of production or there are request to sell the crops from their relatives or friends. Farmers in rural areas such as in Bario, majority of the farmers planting paddy 1 time a year and they would sell the rice because there is a lot of demand for Bario rice, especially Adan rice which is known for its premium quality. Meanwhile, farmers in Long Seridan mainly planting paddy for their own food crops and they also planting paddy 1 time a year.

In terms of agricultural aids and subsidies, rice sector in Sarawak is facing problems in the quality and fair distribution of aids and subsidies to the paddy farmers. According to Echoh, Nor, Salfarina and Masron (2017), rice sector certainly facing problems in the equity and quality of aids and agricultural subsidies distribution. In Siburan, the farmers received support in the form of fertilizers, pesticides and harvesting machine. The machine is handled by the Farmer's Organization committee, and the farmers understand that the subsidies are given from the state government. On the other hand, there are some farmers who claimed that they are still doing the traditional harvesting due to high cost of renting the harvesting or plowing machine which incurred extra cost to their production. The farmers mentioned that

the given subsidy is suitable to their needs. BERNAS is one of the government agencies that provide subsidies to the farmers who sell their paddy to them.

There are issues raised by the farmers whereby they revealed that the fertilizers that was given to them is not in a good quality. However, farmers in Siburan still think that the way subsidies were distributed are fair for all farmers in that area. All farmers who are actively involved in paddy farming receive equal support from government agencies and farmers receive updated information every year on all agricultural activities and assistance provided by the agency. The agriculture officers frequently monitoring the farming activities, hence the farmers have a good relationship with the agriculture officer. Besides, Department of Agriculture (DOA), State's Farmers Organizations and Department of Irrigation and Drainage Sarawak (DID) frequently go to the field and monitoring the areas of paddy farming in order to maintain the good drainage system of the paddy field. As most of the farmers in Siburan consists of old generation, there is a need for transplanter machine because this machine can help them to plant the paddy efficiently and help to reduce workloads. Other than that, farmers in Siburan also interested to use drone services to spray the fertilizers or pesticides to the paddy field to allow for more efficient spraying techniques.

Meanwhile in Lundu, majority of the farmers only receive the fertilizers but with a limited amount which not enough to be use for one cycle of production. The distribution of fertilizers is based on the size of the farm, unlike in Siburan. Hence due to the subsidy's limitation, most farmers do not plan to expand their production. There are also farmers who inherited the subsidy scheme from their parents and the agency does not have any updated information on the size of their farms and therefore the subsidy distribution becomes inconsistent. In 2018 some of the farmers only received half from the usual quantity of subsidies. Surprisingly, there was a respondent who received subsidies only once throughout 10 years of farming the paddy. Besides, the subsidies were only given to farmers who are the Farmers' Organization Members and they need to pay RM50 for the whole life membership. In Lundu the farmers also benefiting from the harvesting machine services provided by the organization, but they need to pay for the service and the price is according to the size of their farm. In order to qualified for the aids and subsidies, the farmers need to fill up form provided by the organization and most farmers do not know the exact requirement of selection criteria. There is a representative of the farmers at the village who will collect the subsidies application forms from the farmers.

One of the respondents complained that the agriculture staff does not going down to the field to observe and monitor the farmers' activities. As a result, in Kampung Pueh, the drainage system project built by DID appears fail and cannot cater the drainage problem of the paddy field. Lack of funding might one of the reasons lead to inconsistent maintenance even though farmers are aware that funding for such big project mostly comes from the federal, it just that it is not manage effectively by the state agencies. The farmers have shared their problem to the head of village but does not deliver to the related agencies. The head of village does not involve directly with the farmers welfare and focusing more on other matters. There are informants who receive subsidies in form of fertilizers, pesticides and rubber saplings from Rubber Industry Smallholders Development Authority (RISDA) as her family owned a rubber estate and the amount of subsidies allocation is also depends on the size of farm. Through in depth-interview, majority of the paddy farmers in Lundu said that they need

financial assistance to buy additional fertilizers, hire workers to spray the pesticide or handle the machine for them other than receiving input subsidies. Moreover, it is better if the agencies go to the ground and ask the farmers what are their needs rather than giving something that they not require such as the disease control monitoring service and quality seeds from the DOA. The farmers also think that the quantity of the subsidies need to be increase especially the pesticide as now the price of pesticide is expensive compared to pre-Covid period. The sudden hike of price of the pesticide is somewhat one of the factors that hindering them to increase their production.

In rural area, farmers from Bario informed that they received quite numbers of agricultural aid and subsidies from the DOA. Farmers in Bario think that they need machinery facilities such as machines to plough and harvest in order to facilitate farmers, and this may help to increase agricultural productivity. However, farmers in Bario also facing problems same as in Lundu where some of the farmers did not receive the said agriculture aid. One of the informants aged around 70 years old has a problem with the restricted age limit for the recipient of any assistance. The respondent believes that the recipient should have no age limit as long as they willing to continue to farming. The government is focusing more on quantity than the quality of production and there is a lack of a training programme for the farmers especially on the use of fertilizers and pesticides.

As for Long Seridan, farmers have never received agricultural aid for rice, only for coffee crops. However, coffee subsidies are not suitable for several reasons such as the suitability of the land, the process of making coffee is difficult, and there is not yet a suitable market to sell coffee. Subsidies are given suddenly without good reason, and information about proper cultivation and no proper training. Subsidies for coffee were received along with equipment, pesticides, fertilizers and also financial assistance amounting to RM3000 for the cleaning of coffee growing areas. After all, the lack of monitoring from the agricultural office on coffee is one of the issues that makes farmers think of that the coffee scheme is not appropriate in the Long Seridan area because it has not yet yielded good results. They believe it would be better if help was provided in the form of a good irrigation system as well as machinery that could help with the heavy workload. Similar to Siburan and Lundu, farmers in Bario and Long Seridan also think that it is preferable before any assistance is given, the responsible agency should ask the opinion of the farmers in an area to avoid wastage.

Next theme is regarding the farmer's participation in agricultural dialogue and discussion. For farmers in Siburan, they had joined a dialogue organized by National Farmers Organization (NAFAS) and farmers knows that this agency supply fertilizers to the farmers organization before being distributed to the farmers on the ground. Thus, the relationship among the local farmers and agriculture officer are relatively good. In Lundu, the farmers were never invited to any dialogue or discussion in order to discuss the problems they faced in paddy production. One of the informants only invited to a dialogue organized by MPOB for the briefing on Malaysian Sustainable Palm Oil (MSPO) certification. Some of the farmers claims that usually the head of farmers will be representing them for the dialogue, therefore any information related to assistance scheme were informed by the representatives of the villages that appointed by DOA. But some of the farmers still manage to get the information from their friends. There are only discussions or dialogue sessions at the village level. All the issue and complained will be bring to the related agencies by the representative of village.

For Bario, most informants have never invited to any discussion or dialogue to propose for opinions or any problem faced by them. They only attended dialogue that was held at village level and only one of the informants that involved with regional farmers' associations and cooperative clubs. This particular informant has been invited to a dialogue about the problems she faces as a Bario representative for Agrofest. Same goes to Long Seridan, most of the informants were never attend any dialogue or discussion. The farmers will refer to the DOA in Marudi for matters that involve agriculture. Besides, there are no private agencies offering any type of agriculture cooperation. This explains in rural areas too there is rarely any dialogue or discussion on the issues that are faced by farmers. Agencies will only provide briefings on the plans that they want to carry out.

As for the communication channels to highlight agricultural issues, farmers in Siburan usually will have a meeting at the village level to highlight the issues and discuss on the solution or strategies that led by the head of units. There are only 9 people from all head of units from all area or Siburan are selected as the board members of Farmers organization. In Lundu, there are no such channels for the farmers to deliver the issues and problems that they faced. The agriculture officer only come to visit during harvesting seasons and only inquire on the total of production for that particular season. Hence, the officer is not capable to give the advice on the handling the farming due to the lack experience in the actual field. The farmers assume that poor monitoring may occur due to the agencies are lack of staff. For Bario, there are no specific channels to communicate about the issues or complaints. If there are problem rises, the informant will notify the head village or the district office or find proper way to communicate the issue. As for agricultural problems, they will always directly refer to the DOA officer who being stationed there and the villagers have good relationships with agricultural officers. In Bario, the farmers are lack of understanding of the proper channels and procedures for communicating any issues or problems encountered. While in Long Seridan, the farmers do not know which channel to go through if there is any problem because there is no invitation to discuss agricultural problems in the village. Therefore, they do not know who the agricultural officer should be referred to if there is any problem.

In term of marketing channels to sell agricultural products, farmers in Siburan and Lundu did their own marketing strategy to sell the rice. In Siburan, there is a retailer company named Antares who would come to the village during harvesting season and buy the paddy from the farmers. For Bario, similar situation the farmers will sell their products such rice, pineapple and pineapple-based products own their own either to nearest town Marudi or Miri. Therefore, farmers in Bario think that federal and state agencies should assist farmers by identifying and providing a market venue or platform to sell all of their products. Meanwhile in Long Seridan, as most of paddy farmers did not sell their rice, the farmers try to market the coffee commodity. However, it is not easy to sell this commodity due to unfamiliarity with the market situation. Hence, no one has yet successfully sold their coffee product.

Other challenge and threat that farmers facing is the issue of animals or pests. Farmers from Siburan, Lundu, Bario and Long Seridan face the same problem in terms of the threat of pests such as rats, locusts, snails and sparrows. In Siburan and Bario, farmers are facing threats from snails known as *siput gondang emas* that can cause huge damage to the paddy plants. Therefore, to solve the issue of pest or animal threats, the whole farmers have to

cooperate each and do the pest control together in the certain period. Besides, similar for all areas, majority of the paddy farmers are the aging or old population and this situation become one of the factors that affect the production volume. On the other hand, farmers in Siburan think that in order to increase the quality of harvesting the farmers believe the modernization of farm is important. In Lundu, there is a problem with the drainage system. The issue never been resolved even though the head of farmers had published the issue in the social media but no action had been taken. The farmers suspected that the related agencies do not have enough budget to do the maintenance and solving that drainage issue. In Bario, the main problems faced by the respondents were transportation and infrastructure issues. For example, this particular respondent had pineapple crops and required a "one-stop center" or "deposit center" to facilitate the marketing of pineapple in various types of final products. This suggestion can help farmers that grow pineapples on a small-scale market their crops and to ensure to reduce the amount of crop damage in the long term. Besides, there is a labour shortage for paddy field farming as they depend on foreign workers during pre-covid times from the neighbouring country, Kalimantan. Bario and Long Seridan people especially the farmers are facing same issue which related to transportation. These two areas located far away from Miri and the fastest way to reach there is by plane that operated by MASwing. Thus, farmers have difficulty in bringing their crops out to nearest town due to limited transportation and expensive fares. Therefore, there is a need for a better road infrastructure because it is assumed that if the road is repaired, there may be a high chance to sell their product outside and it does not take long time to transport the products to town by car. Another challenge faced by farmers is in terms of the price of selling rice which is considered low and unprofitable. Farmers face the dilemma of setting a high price for this commodity for fear that demand will decrease if they set a slightly high price. However, farmers do not have many options due to the sudden increase in the price of input materials such as poisons and fertilizers. Therefore, this is a big challenge that farmers face due to the lack of fixed price setting enacted by the government. Farmers have to come out with their own standard price for the whole village to counter this issue.

Conclusion

In order to improve the sustainability of Sarawak's rice sector and the livelihoods of the smallholder farmers, there are two crucial factors which are land size and capital. These factors have direct influence on the rice production and farmer well-being. While machinery, labor and climate variability may not have a direct influence, these factors however still contribute positively to production. For example, machinery improves efficiency and sufficient labor ensuring farming activity are ongoing efficiently, even if majority of the farmers rely on family members. Therefore, optimizing these factors through targeted research and agricultural policies such as encouraging the usage of modern machinery, providing efficient training and implementing climate adaptation strategies like resilient rice varieties and better irrigation system to maximize the rice yields and farmer livelihoods.

Enhancing sustainable rice production and farmer livelihoods in Sarawak also based on providing subsidies and incentives by improving distribution channels and employing effective marketing strategies. The allocation of subsidies for essential inputs like pesticides and herbicides is important and relevant especially for low-income farmers. Furthermore, empowering farmers with knowledge in effective agricultural practices, through programs like MyGap, can help them integrate traditional and modern techniques. This systematic

approach, supported by government initiatives like promoting hybrid rice and modern farming, it will not only boost rice yields and farmer welfare but also move Sarawak closer to its goal of rice self-sufficiency.

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