

Prospects for improving people's socioeconomic attributes by investing in road access: an investigative survey of a highland area in Malaita Province, Solomon Islands.

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Abstract— Sources of livelihood in coastal and highland villages in Solomon Islands vary. Within coastal communities most people rely on subsistence activities, forestry and marine resources while highland people rely on small scale farming or gardening, cultivation of the land, hunting and other subsistence activities. This research report provides a descriptive analysis of the socioeconomic attributes of residents within the highland area of Harisi to Tariuna, East Are' Are, Malaita Province. A household survey determined income levels and whether people consider road construction necessary for better utilisation of their resources to improve the level of their livelihoods.

The highland area residents have abundant land with potential for commercial agriculture and farming. These landowners have participated in planting cocoa, coconut, coffee, and other commercial crops but lack incentives for committed commercial management of these small-scale plantations. A major disincentive is the difficulty in transporting these crops to the coastal areas for shipment to either the Honiara or international markets. Also apparent is the increasing movement of able-bodied landowners from these fertile lands to coastal areas and urban centres in hopeful pursuit of employment and better opportunities. Participants within this site are emphatic that transportation (road infrastructure) is vital to economic development in the area.

Keywords— Livelihood, road construction, subsistence activities, sustainable development.

I. INTRODUCTION

The Solomon Islands is located in the Southwest Pacific about 1,900 km northeast of Australia with 996 islands

stretching in a 1,450-kilometer chain southeast from Papua New Guinea(Coleman & Kroenke 1981). It has a population of around 537,000 inhabitants who share a total land area of approximately 27,500 km2. Eighty five (85%) of the population live in rural areas (Gagahe 2011) mainly along coast lines although some still live in the interior of the main islands. The majority of this population depends directly on the environment for its livelihood and sustenance (Ha'apio et al, 2014). This study focusses on inland population of East Are' Are high land of Malaita, Province. Rural communities in the country have shown to anticipate tangible rehabilitation and reconstruction programs in their villages, implemented by the government and development partners to adapt to the increasing impacts of climate change and development in general (SIG Household Survey, 2013). Most of the development programs undertaken aimed at increasing the livelihoods of the communities such as environment conservations, education, health and infrastructures.

Road construction is regarded as one of the fundamental elements of infrastructure development to any society (Banister & Berechman, 2003; Wilkie et al., 2000). Many landowners and residents within the study area perceive that without road construction, no serious development will take place in the area for the next 10 to 20 years. This is depriving the current and future generations of the possibility of utilizing their resources economically. The poverty cycle in which the residents of this region are trapped will continue for the years to come. While we note that it is vital for the people in this area to develop their land in a sustainable manner to benefit the present and future

generations, no development will take place at this site without the proposed road construction (Winston 1991).

The economic impact of roads and road transport-related sectors on any economy is important, as this study will demonstrate in its discussion (Banister & Berechman, 2001; Maciulis et al., 2009). The economic and social indicators studied demonstrate the absolute importance of this sector for this region (*East Are' Are(Aiaisi) highland region*). Furthermore, the study has identified road construction as the key driver to any future development in this terrestrial region. Even without considering and measuring the monetary consumption or benefits of transport services on aggregate in the province and the country, to benchmark, the residents of this rich, less accessible resource area have expressed enthusiasm for construction of road access to the region, enabling people to allow development of their natural resources.

The study findings re-affirm the desperation of the general populace living within the area for the government to assist in road infrastructure development. Moreover, they admit that currently no serious commercial activities are taking place because of the difficulty in transporting agricultural products from the highland region to the sea ports, where they could be marketed in the surrounding coastal villages, or to Honiara (the capital city) and international markets (Sarkar, 2010). Transport and communication are basic infrastructure for economic development of any country (Röller & Waverman, 2001; Talpur et al., 2012; Kessides, 1993). Roads are regarded as the arteries and veins of any state, essential for sustainable economic growth (van Exel et al., 2002). The Honoa-Tariuna road construction is seen as the first step in the right direction with the development initiatives undertaken by the East Are' Are political leadership and the people within that area (Democratic Coalition for Change policy framework, 2015)¹.

The potential road construction would link Honoa which is on the coastal site to Tariuna in the highlands of East Are' Area, Malaita Province. This area represents a vast land mass suitable for development in agriculture for both research and commercial farming, potential for mineral exploration, sustainable timber harvesting, education, communication and other socioeconomic development initiatives.

The objective of this study is to assess the socioeconomic impact of road construction on the livelihood of the people within the region, Honoa-Harisi to Tariuna, and whether investing in road construction is likely to be significant for improvement of the livelihood of the inhabitants in this highland region.

II. STUDY SITE

The study covers three (3) main villages in the highlands of ward 19, Aiaisi, East Are' Are, Malaita Province, Solomon Islands² (See figure 1). The total number of households in the area in 2010, was, according to Gagahe (2011) 205 households, with a population just over 1,230 people. The study site was selected because of the initiative of the Honourable Andrew Manepora'a, the current Member of Parliament (MP) for East Are' Are constituency, who intends to build a road from Honoa to Tariuna in the highlands region. The length of the road is estimated at 25 km from the coastal sea area into mountainous fertile farm land of East Are' Are.

In addition, ward 19 road development was chosen because of the difficulty the people in this region face when transporting their produce to better markets at the coastal villages or later by ferry to Honiara, the capital city on Guadalcanal Province. Since independence, the people from this area had been requesting their previous MPs to invest in road infrastructure into the highland villages to boost development efforts, but so far without success. The breakthrough in eventually building this proposed road is expected to create numerous opportunities for people within the area for further development in other sectors besides agriculture. This would include establishment of sustainable milling of their forests, water refinery and bottling, small-scale mining exploration, bush trek tourism, commercial farming, piggery and poultry production.

¹Democratic Coalition for Change is the new incoming government in the Solomon Islands led by Honorable Manasseh Sogavare.

² Solomon Islands has 9 provinces, Malaita province has the highest population with 137,596

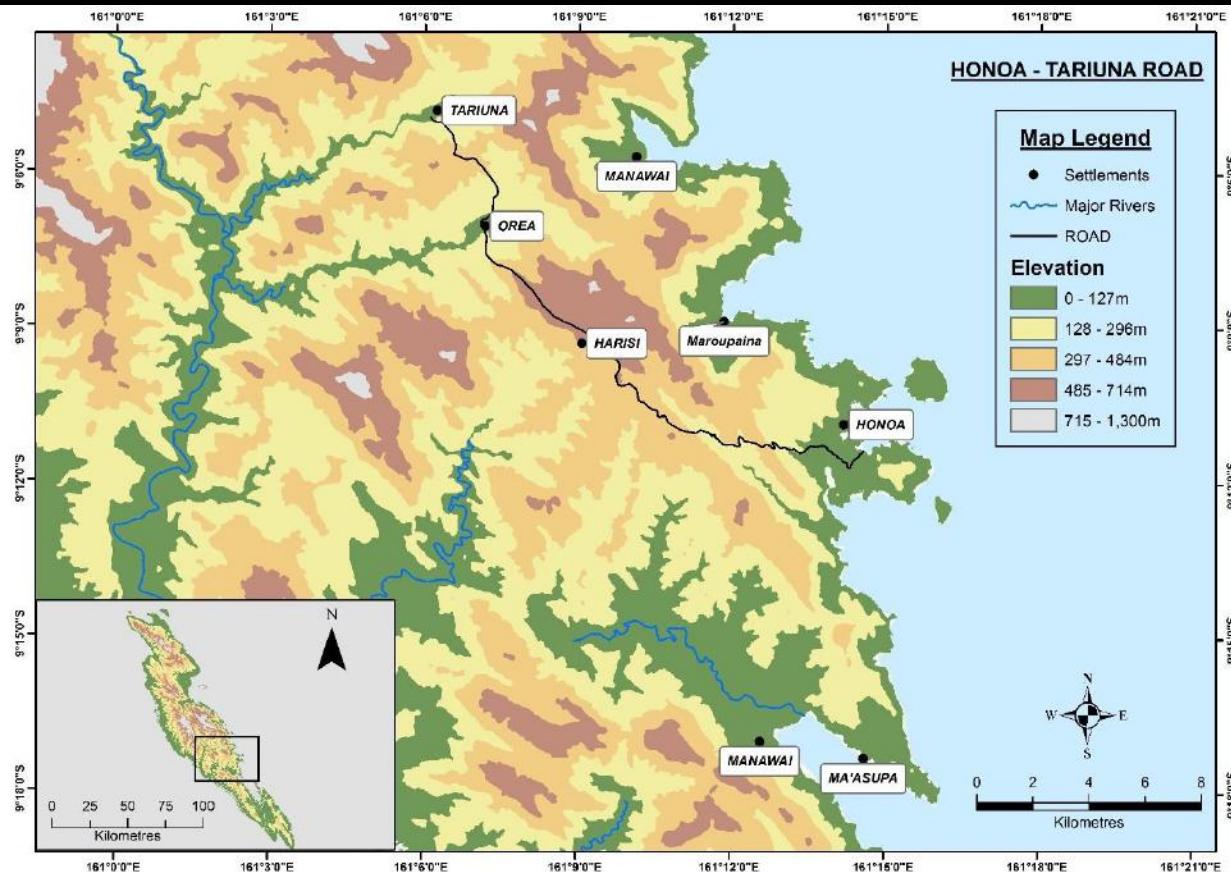


Fig.1 : Map of Honoa - Tariuna Propose Road Site

III. METHOD AND MATERIALS

The study was carried out in conjunction with a research project that was used to assess the Cost-Benefit Analysis (CBA) of a road construction from Honoa to Tariuna, East Are' Are Malaita Province. The assessment focused more on the potential socioeconomic implications for the general populace in the area. The research team visited the site, 7–30 December 2012, to assess and evaluate the potential socioeconomic benefits of the intended road construction for people of the nearby communities and relevant stakeholders. Evaluation of the potential benefits for the villagers' livelihood was based on *household surveys* of a sample of landowning villagers, and *semi-structured interview questionnaires* used with focus group; in addition, expert opinions were sought from other informed stakeholders. A total of 60 respondents were interviewed during the visits, with one member randomly chosen from each selected household to be interviewed. There were 205 households from altogether from the three sites. Through this approach, we satisfy Kotlik & Higgins (2001), recommendation of covering 30 per cent of households in order to fairly represent a given population.

3.1 Household surveys

The first instrument collected data on respondents' socioeconomic attributes and their perceptions of the potential benefits from building up road infrastructure in the area. The 130 questions designed for the schedule were organised into 12 sections. Twenty (20) questionnaires were distributed at each of the three sites. Because of the poor literacy in the area, three research assistants helped the respondents fill in the questionnaires.

The variables investigated in our household survey included: the sources and level of income, the number of family members, how they judge their farm operations in previous years, the types of farming in which they are involved and their major income source(s), their perception of the importance to their villages of road infrastructure development, and how they think such development would improve their lives. We requested them to be particularly mindful in their responses of the potential benefits they perceive the road construction would have on their livelihoods.

3.2 Semi-structured interviews questions

The second instrument was used with a wider sample of respondents, hoping to elaborate on and verify the village respondents' views on the socioeconomic attributes and potential benefits the road would deliver to the livelihood of the people within Ward 19. We spoke mainly with village elders, teachers, women's group members, youths and church representatives to verify their perceptions on the road construction in the area. These engagements were critical, to ascertain the potential level of benefits these focus groups in communities perceive that the project will contribute to improving people's livelihoods. The questionnaire guiding this semi-structured interview consisted of 4 sections with 50 open questions.

Thirty (30) interviewees represented focus groups selected purposively from the study region and interviewed. For the most part, questions targeted household heads (HH) and other individuals, both male and female (ages 18–72). Besides the main socioeconomic factors, we investigated the reasons why the youths are leaving this fertile land in this highland region and why villagers are attracted to urban centres. Other questions concerned the reasons why the respondents at home spend less time at their farms than in other activities. Our focus groups consisted of officials from the government (Ministry of Infrastructure and Development and Ministry of Agriculture and Livestock), NGOs and road constructors. From the highland region we also interviewed representative groups from each village, including youths, mothers' unions, village elders, and government workers such as teachers.

To gauge respondents' perceptions we asked them for alternative levels of benefits (for example, rank from 1 to 5) or possible scenarios ('satisfied with the level of your income' or 'not satisfied with your income') and requested them to tick the statement that best fit their judgment. We then grouped those rankings and tabulated them as presented in the results and discussion section of our analysis.

Design and formulation of the measurement instruments adopted a livelihood sustainable development approach (Kelman et al., 2009; Arce, 2003). This assisted in the critical analysis of the participant responses against their satisfaction and their perceptions of the potential benefits of the road infrastructure development and how usefully this project will assist them to improve their livelihood and cope with the increasing level of unproductive farming in the area.

IV. FINDINGS

In all, 60 household surveys were conducted within the study region, 20 each at Harisi, Orea and Tariuna villages, between 7 and 30 December 2012. In addition 6 focus group interviews were conducted within the region and in the capital city, Honiara. The majority of respondents from the three sites were male (Harisi, 80 per cent, Orea, 85 percent and Tariuna, 75 percent) while female respondents ranged from 15 to 25 per cent. The average monthly level of income and expenses also varies at the sites. Table 1 displays the basic socioeconomic characteristics of the respondents from the three project sites.

Table.1 : The social characteristics of villagers in the study area , in percentage)

	Harisi (n = 20)	Orea (n = 20)	Tariuna (n = 20)
Gender			
Male	80	85	75
Female	20	15	25
Total	100	100	100
Marital Status			
Single	15	20	15
Married	65	55	50
Widower	10	10	10
Divorced	5	0	10
Widow	5	15	15
Total	100	100	100

Educational Level

No formal Education	50	70	65
Primary School	30	15	20
High School without grad	10	10	10
High School general	10	5	5
Tertiary	0	0	0
Total	100	100	100

Does the family live with the family

Yes	75	80	75
No	25	20%	25
Total	100	100	100

Years spent away from home

No stay away from family	75	80	75
Between 1 and 12 months	10	10	10
More than 12 months but less than 24 months	5	5	0
More than 24 months but less than 36 months	5	5	10
More than 36months but less than 48months	5	0	0
More than 60 months	0	0	5
	100	100	100

Average Monthly Income

Average Monthly Spending	SBD\$450	SBD\$385	SBD\$290
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Main Source of Income

Root Crop produce	40	30	60
Non-farm products & others	35	10	10
Piggery	5	45	10
Casual labour	20	15	20

Time spent on farms in one year (2012)

Zero months	20	45	45
Three months	45	5	40
Six months	25	10	5

³ Average income and expenses at these three sites per household

Nine months	5	10	5
More than 11 months	5	20	5
Types of commercial activities by family members			
No formal business	65	35	70
Piggery	20	10	10
Agro-businesses	5	30	5
Commerce & Trading	5	15	5
Others	5	10	10

Source: Household livelihood survey (2012).

4.1 Harisi Village

The ages of the Harisi respondents range from 24 to 68 years, with a mean of 35 years. Of these, 5 percent were chiefs, 75 percent household heads, 10 per cent housewives, and 10 percent relatives.

In terms of education, 50 percent of the respondents from this village did not attend formal education. From those who had obtained formal education, 30 percent had reached primary level and a further 20 percent had gone on to secondary school level though half of them did not complete it. Of this 30 percent, half did not complete their education. In terms of *income generation*, 90 percent of the respondents depend on farming and their forest resources for livelihood; a further 10 per cent of respondents were teachers receiving a fortnightly pay check from the Solomon Islands government.

4.2 Orea village

The ages of the respondents from this site range from 25 to 72 years with an age range of 47 years. Of the respondents, 5 percent were chiefs, 50 percent household heads, 25 percent housewives, and 20 percent relatives. In comparison with the other two sites, this site has experienced good support from community members, especially the youths and the church leaders.

The analysis shows that 30 percent of respondents from this site have completed their education while 70 percent have either abandoned (40 percent) or failed to complete (30 percent) their studies beyond primary or secondary level. This was the highest percentage of respondents across all the three project sites with very little or no formal education.

4.3 Tariuna village

The ages of respondents at this village range from 25 to 68 years, with a mean of 43 years. From the age distribution and interviews we know that many young people have left the village to seek better opportunities in urban centres to find employment and support their families.

Respondents at this village identified as 10 percent chiefs and village elders, 55 percent household heads, 25 percent housewives, and 15 percent miscellaneous relatives.

In terms of education, 35 percent of the respondents had completed their education while 45 percent had not; 20 percent had in fact already abandoned their education endeavors. Although schools are available in surrounding villages, the rate of respondents with an incomplete education background is relatively high.

V. DISCUSSION

Respondents from Harisi village have a higher average income than those in Orea and Tariuna, because their proximity to the coastal area affords them better market outlets (Jacoby, 2000) and also "von Thunen's rule" (Leigh, 1946). This is reflected in their relatively higher cash flow compared to Orea and Tariuna villages. On the other hand, they also record a relatively higher level of expenses as compared to the two other sites. This relatively higher monthly spending also indicates their relatively greater access to cash and the weak saving attitude apparent in this community. We note, however, that higher cash flow is vital for improvement of people's livelihood.

Further analysis shows the villagers within this highland territory are dependent on similar structures of income sources: no huge differences are apparent in the income base and sources for the dwellers in the region. Because of this we identified and narrowed down the sources of income to 4 main categories (crop produce, non-

farm produce, piggery, and casual labour). From those categories, it is evident that Harisi and Orea villagers are more dependent than Tariuna villagers on crop produce as their main source of income.

Tariuna respondents have depended largely on piggery (farming) compared to both Harisi and Orea (see table 2). This position persists mainly because although Tariuna villagers have established pig fences, it is difficult for them to sell their animals for better prices because of their remoteness from the better markets in the coastal areas. Yet they are closer to the coastal area than are Harisi and Orea, and with more effort the villagers could carry their produce to the coastal village markets. Crop products such as sweet potato, cassava, taro, yam, and pana could also be sold at the coastal markets from these two sites. This, however, underlines the importance of building road access to these villages to encourage residents of the region to cultivate their land and transport their produce to better markets.

The majority of the respondents, according to the analysis, are not able to afford the basic family necessities with their current level of income in this region: 49 percent of the respondents confirmed that their income is not enough to meet bare needs in life, including basic items such as school fees for their children and better clothing for family members. A further 35 percent of all the respondents rated their income as sufficient but only to meet necessary expenses such as education and clothing costs; 16 percent confirmed that their income was sufficient but not enough to buy decent things in life. No one in the highland area regards himself as fully satisfied with their income and expenses in this resource rich area.

In terms of commercial activities, overall 37 percent of the respondents believed that there is no difference in their operations from 2012 when compared to 2011 (which was the year used as the benchmark for 2012 comparisons and the most recent year of farming operations before this study. From the study, 35 percent confirmed their operations as "worse" in the same period. Furthermore, 16 percent of the respondents have compared their operation as "worst" while 2 percent could not compare any farm operations with the previous year. The majority of respondents confirmed that the profitability of their farming activities is deteriorating. This is reflective of the Tariuna villagers' poor market production and the absence of serious farming operations across all the villages. Despite the surrounding fertile land, generally good for farming, most of the villagers find it unattractive to participate in commercial farming because of the distance from the coastal area and market access. In terms of

profitability at each project site more than 75 to 90 percent have confirmed that their profitability either is "worse", "worst" or "no commercial farming" to compare in the last year. The villagers must continue to produce their cash crops to ensure that they have enough food to sustain their livelihood. The surplus from their operations is used to sell at the nearby coastal villages to assist them in meeting their financial needs. They are not strongly oriented towards commercial farming.

This is important because in order to retain the villagers in their farming activities, there must be some form of motivation such as improvement or growth in their profitability to keep them in operation. Transportation costs, poor access to market and deteriorating quality of farm land are some of the main contributing factors to the decline in the villagers' profitability.

The declining farming profitability is evident in the diminished time respondents are spending in their farms. The results indicate that 20 to 45 percent of respondents spent less than one month on their farm operations. Comparatively, Orea and Tariuna villages have recorded the highest number of respondents in this category, as villagers start to spend their time on other sources that will assist them to earn money towards improving their livelihood. Despite this, villagers have few options available for improving their livelihood in these villages. At Harisi more than 80 per cent of the respondents report spending between three and eleven months at the farms during the year, the highest rate at these three villages. This high rate is indicative of the significance of farming to the villagers towards building their socioeconomic livelihood. Over all, from the results, 70 per cent of Harisi villagers spent fewer than 6 of the past 12months on their farms. Orea villagers have recorded 45 per cent for the same while Tariuna villagers have recorded the highest percentage of respondents spending less than 6 months (95 percent) in their farms.

Further analysis shows several reasons why villagers at these sites are abandoning their farms and spending more time on other livelihood activities. It is apparent that just over half (52 percent) identify transport as the most prevalent obstacle to their farming activities in the region. A further 17 per cent blamed the distance from markets, 8 per cent said farming was no longer profitable but assigned no cause for this, 7 per cent confirmed degradation in the quality of the farming lands, and a further 7 percent blamed shortage of capital to do commercial farming and 3 percent complained of lack of capital to do farming, conflict over land ownership in the region and

other reasons for villagers' abandonment of the once favoured primary sector. To reverse this growing trend the responsible authorities will need to try to address such factors at these sites.

The evidence also makes it plain that a considerable number of villagers at these sites have migrated to other parts of the country, especially to urban centres, in the belief that better employment and other opportunities will be available there. As shown in table 1, generally 75 to 80 percent of the respondents remain with their families throughout the year, while 20 to 25 percent leave their homes. Those who move away are mostly drawn from the men in their prime, the strong men and youths who should cultivate the farmland and participate in other livelihood activities in the villages. The length of these villagers' absence from their communities varies. For example, numbers who have remained in their village during the period vary between 53 and 78 per cent. It was evident that 30 per cent of Orea respondents leave home for one to more than 4 years, while Harisi village has reported a rate of 45 per cent and Tariuna of 25 percent for the same prolonged absences. The general finding is that between 12 and 17 percent have left these sites for as much as two or three years. Nevertheless, despite the increasing number of villagers leaving these less easily accessed highland sites, others do still choose to remain in the villages and have maintained their adaptation to this environment even in the face of the lack of road access to their villages.

VI CONCLUSION

Road construction is regarded as one of the fundamental elements of infrastructure development for any society (Briedenhann & Wickens, 2004). In this Malaita highland region, road construction is vital because it will open up the land for landowner development and other downstream operations with their resources. Road construction will boost development in the area and will act as a catalyst in promoting other projects or small businesses that will enhance and improve the livelihood of the people within this highland region of Malaita, Solomon Islands. As was made apparent in the findings, many highland people within the region cannot or do not bother to farm their land more intensively because they lack economic incentives to do so. Road construction will encourage more people in the villages to remain within this area and cultivate their fertile land for crops and other agricultural produce to feed the coastal people on their home island or send their produce for better market prices either in Honiara, the capital city, or to international markets.

The villagers who have pointed to the poor cash flow in the area would certainly have the opportunity to improve their financial position after the construction of a serviceable road. Road construction would motivate them to participate in micro-agribusiness and thus enable them to sell their produce, which will directly improve their socioeconomic viability and their standing in the community. Villagers will spend more of their time in the family farm operations and reverse the slow but growing migration of the youths and the strong from the area in the hope, often unrealistic, of finding better opportunities in the coastal areas or urban centres. The road-connected villagers will re-affirm their dependency on agriculture as their main source of income, improving their methods and techniques of cultivating their land for commercial and domestic consumption of their produce. Gains in terms of income, nutrition and food security, locally and beyond, would be considerable.

Furthermore, the villagers would be able to reassess the level of their income and be satisfied if they establish small businesses in the area that would generate cash flow and have a ripple effect amongst them. Even those skeptical of the belief in the possibilities of 'growing the economy' must concede the worth of doing so at least modestly. It has the potential to develop this highland region to a stage where dwellers, satisfied with the level of their income to cope with their necessities and some at least of their desires, may then re-invest in community businesses that will re-generate income and improve the livelihoods in the community. Thus, any investment in road construction in the highland area would be a positive development, one that will improve the livelihood of people within the area, the province and the country as a whole.

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