



ROADS FOR COMMUNITIES: BUILDING ROAD CONNECTIVITY INFRASTRUCTURE FOR THE LIVELIHOOD OF INDIGENOUS PAPUANS AND THE ENVIRONMENT

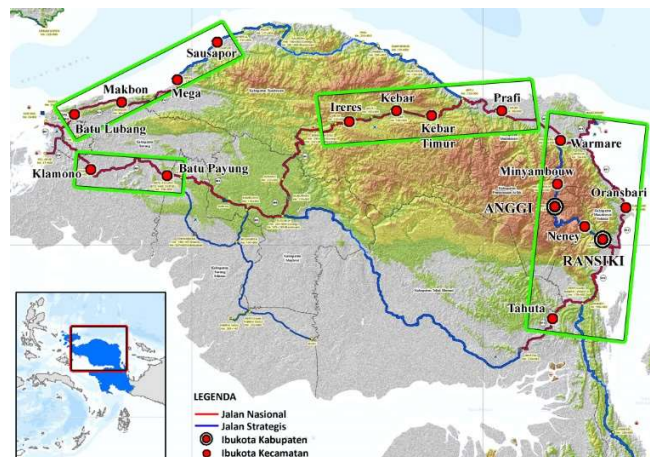
Executive Summary

Photo: Jonathan McLeod

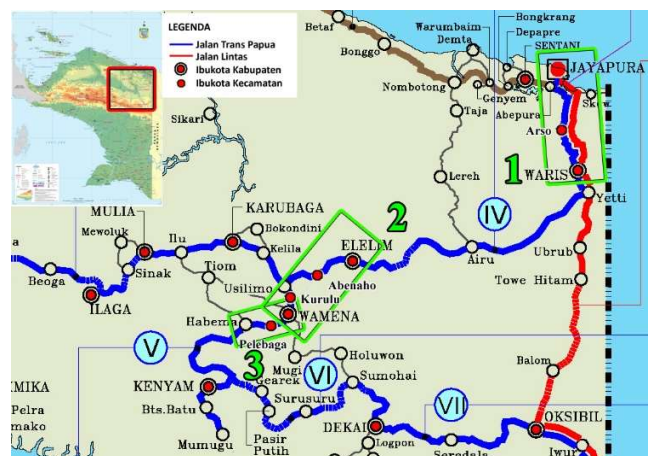
“Now that we have a good road, village residents can get treatment at the puskesmas (community health center), they don’t have to walk. At the puskesmas, there are doctors and nurses. But this good road now has lots of farm-raised pigs, drunken young men... What will it be like if the (Wamena-Jayapura) road is improved???” (Village head in Jayawijaya, 5 June 2018)

In line with the third of the Nawacita [nine priorities], the administration of President Joko Widodo is promoting construction of infrastructure in Papua and West Papua, with the main objective of enhancing connectivity between regions in these two provinces. This can be seen, among others, from the increased budget for the Directorate General of Highways and Roads in the Ministry of Public Works in these two provinces, at Rp 6.71 trillion in 2016, up 8% from the previous year’s allocation.

How has the construction of roads in Papua and West Papua improved connectivity and enhanced various aspects of livelihood of indigenous Papuans (*orang asli Papua*, OAP) and affected the environment? These are the questions that are answered through a rapid assessment conducted by The Asia Foundation (TAF) in cooperation with the Indonesian Institute of Sciences (Lembaga Ilmu Pengetahuan Indonesia, LIPI), in 2018. This qualitative study was conducted on stretches of national roads and strategic roads in the provinces of Papua and West Papua, specifically the Jayapura-Waris-Senggi, Wamena-Elelim, Wamena-Habema, Sorong-Mega-Sausapor, Sorong-Batu Payung, Manokwari-Kebar, Manokwari-Ransiki-Bintuni, and Manokwari-Arfak Mountains-Ransiki corridors. Through interviews with local residents living near the roads in both coastal and mountain regions, road users, drivers who regularly use the roads, the government, providers of basic services, and other relevant parties, as well as field



Map of study locations in West Papua province

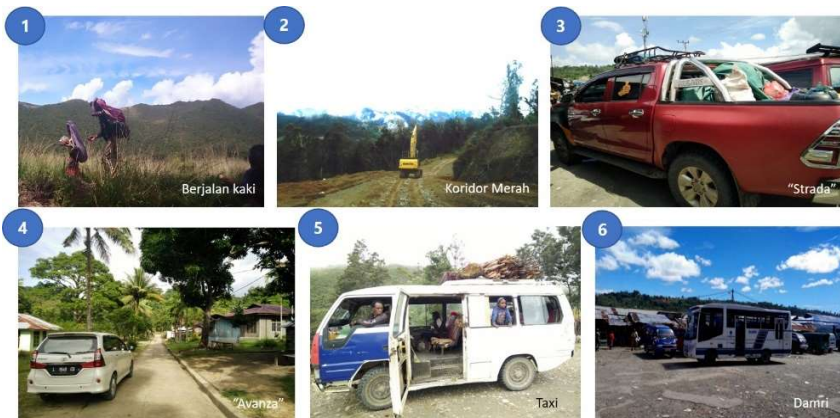


Map of study locations in Papua province

observations and collection of secondary data, this rapid assessment has identified several interesting findings.

Enhanced Connectivity

Although several corridors of the national and trans-Papua roads were opened in 1997, road users said there have been many improvements to road conditions since 2014. For example, there has been continuity in the upgrading of road conditions through soil compaction, asphaltting, and construction of bridges on the Wamena-Elelim route and the Manokwari-Sausapor route (Tambrauw); asphaltting on the Wamena-Napua-Habema corridor; and widening and improvement of the asphalt road on the Jayapura-Waris, Manokwari-Ransiki, Sorong-Batu Payung routes, which has improved connectivity on these corridors.



Stages of enhancement of connectivity from the perspective of OAP (Photos: Indri Sari & Setiawan Aji)

Village residents usually use the type of transport using the roads as the indicator of enhanced connectivity. According to them, the road is good if an Avanza can travel on it, not just a Hilux (with four-wheel drive), and even better if there are now “regular taxis” or *ojek* [motorcycle taxis] on the road.

For example, *mamas* [housewives] from Hitelowa in Wamena used to have to carry a *noken* [basket] of their farm produce by walking one to two hours to go down to the market, and then four to five hours to get back home. Since the Wamena-Habema road was asphalted, there are now *ojek* and a L300 “taxi” on the Wamena (Sinakma Market)-Pelebaga route. Now, the *mamas* prefer to use the taxi, which costs Rp20,000 but takes only 15 to 30 minutes. If they miss the taxi, they can hire

an *ojek* for Rp50,000. If the price of fuel rises, the taxi fare will also rise to Rp25,000-Rp30,000.



Women waiting for the L300 taxi in the morning to go and sell produce at Sinakma Market (Photo: Indri Sari)

For residents of Elelim village in Yalimo Regency, the improvement of the Abenaho-Elelim road has reduced the travel time between Wamena and Elelim from as much as 20 hours in 2010 to only three to four hours starting in 2016. This route now has Hilux transport with a fare of Rp200,000 (in the open back) or Rp300,000 (in the cabin).

Similarly, for residents of Neney District in South Manokwari Regency, since 2014, the *mamas* have been able to carry their sacks of farm produce to Ransiki Market using Hilux transport by paying Rp50,000. And in Sorong, the government has even provided Damri bus service between Sorong and Maybrat for residents along the Sorong-Ayamuru route, with fares ranging from Rp10,000 to Rp50,000.

Impact of Connectivity on the Economy and Livelihood Strategies of OAP

The enhanced connectivity has not affected the amount of domestic or foreign investment of large industries. Although data from the Investment Coordination Board (BKPM) shows strong growth in investment in the province of Papua – though not in West Papua – the development of investment in the province of Papua fluctuates. The highest total value of foreign investment in Papua province was in 2013, mostly contributed by Mimika Regency, and for domestic investment in 2011, mostly in the

city of Jayapura and Merauke Regency. In other words, increased investment occurs in regencies and cities where the connectivity had already developed before 2014. Conditions of customary (*adat*) land rights (*hak ulayat*), low labor skills, complicated bureaucracy, unstable security conditions, and high costs have discouraged investment by large-scale industries, particularly those that are environmentally sound and could create jobs for OAP.

On the other hand, the assessment results show that the construction of large-scale infrastructure such as national roads and the Trans-Papua road, ports and airports has increased the movement of goods into Papua and their distribution to the villages. Residents can now access a greater variety of goods, both essential and non-essential.

Based on the results of interviews with small-scale traders and residents, only the price of cement has fallen with the increase in connectivity, but there has been no significant fall in the prices of basic needs in the villages. However, improved connectivity helps residents overcome the high cost of basic needs in the interior villages; some residents regularly chip in to hire a Hilux vehicle together to go shopping for basic needs in the large cities.

In the capitals of newly-established regencies such as Yalimo, Tambrau, and villages that are relatively open in the coastal areas such as Arso and Makbon Districts, the picture of movement of goods into the villages is evident from the large number of traders selling fairly large quantities of consumable goods such as rice, soap, MSG, instant noodles, cigarettes, salt, “colorful” bottled drinks, various kinds of snacks, as well as building



A newcomer trader transporting various basic goods to be sold in villages near Lake Anggi, Arfak Mountains (Photo: Muklas Aji Setiawan)

materials, even in the villages. The *mamas* in Makbon village, Sorong Regency, for example, refer to these traders, who are not necessarily from Java, as “*mas bakso, mas vegetables, mas siomay, mas ice cream, mas kitchen utensils on credit, mas cendol, mas clothing*” [*mas* is a term of address mostly for Javanese males].

The assessment results show that indigenous Papuan women – in both coastal and mountain areas – utilize the increased connectivity to sell their farm crops at markets further away than before. For example, when there is a fruit harvest or surplus crops from their fields, some OAP *mamas* in Makbon and Minyambouw Districts sell their crops as far away as Sorong and Manokwari, and more often as well, up to two or three times a week. This expansion of the market for agricultural produce also occurs in interior regions, though only going as far as the capital of the sub-districts or regencies.

However, due to the limited economic scale of the women in the coastal and mountain areas, this market expansion has not been accompanied by a significant increase in income. During the fruit harvest season, women in coastal areas, such as Makbon and Klamono Districts, may earn

Story of a Mama from Hitelowa Village, Pelebaga District

Mama B is a farmer, growing many different crops: sweet potatoes, onions, string beans, edible ferns, and pineapples. Even before the road was improved, she used to sell her produce at Sinakma market in Wamena. She was happy to meet the other mamas at the market. Before availability of taxis, she would normally only take one noken of her surplus crops. Now that there are taxis, she can take two baskets and one or two bundles of wood to sell.

A noken of farm produce typically brings in around Rp 50,000 to Rp100,000, and each bundle of wood around Rp20,000 to Rp25,000. With the taxi fare at Rp 40,000 for a round trip, Mama B’s profit can be anywhere from Rp60,000 to Rp160,000, or even Rp200,000 if she has sold some wood. But often not everything gets sold, so she simply abandons her merchandise by the side of the road. She goes to the market once every one to two weeks.

Mama B says that the proceeds from what she sells are always spent entirely to buy “basic needs.” She buys salt, MSG, cooking oil, betel and areca nuts, sugar and coffee. If she sells everything, she can also buy rice, cigarettes and instant noodles.

additional revenue of around Rp150,000 to Rp300,000 per week. Now that there are taxis, women in Pelebaga, Jayawijaya Regency, have increased the amount of produce they sell from one to two *nokens*, as well as selling a bundle or two of firewood for cooking.

The proceeds from sale of crops are usually used up for consumable goods, including non-essential goods. The women often complain about their children who like buying snacks, preventing them from being able to save.

The assessment results show differing impacts of the improved connectivity on the livelihood strategies of male OAP between the coastal and mountain areas. In the coastal areas, the improved connectivity has increased the variety of livelihoods for residents from non-agricultural sectors. As well as farming, men in Arso, Waris, Klamono, and Makbon districts, for example, drive motorcycle taxis or do construction work.

In contrast, in the mountain villages, the improved connectivity, together with *pemekaran* (splitting of administrative regions) and increased village budgets, has changed men's orientation in using the forest and its products from subsistence to a market orientation. In these regions, *pemekaran* and higher village budgets have increased the demand for building of houses, causing men to choose to sell wood as a source of income.

As well as selling wood, men in the Kebar and Sungai Kwoor regions in Tambrauw Regency, for example, hunt deer to sell. Selling wood and venison are easy ways to use their existing expertise to get cash. For example, in a one-week hunting expedition to the River Kwoor area, two or three men can get three or four deer and sell them for around Rp2 million - Rp3 million.

Improved connectivity has also altered the patterns of migration for some groups, in both coastal and mountain regions. In the coastal areas, the men typically migrate temporarily to the cities to do construction work. In the mountains, the older men complain that the good roads have "made the young folks disappear"; young men no longer help to open up land for cultivation, preferring to work in the cities.

For some members of the Abun ethnic group who live in the city of Sorong, the improved facilities in Sausapor due to *pemekaran* and greater

connectivity have enabled them to return to Tambrauw and resume farming.

Abun people return to Tambrauw

People of the Abun ethnic group, the largest group in Tambrauw Regency, place great importance on education for their children. The main reason why Abun own homes in Sorong is for their children's schooling. The quality of education, especially in high school, is considered better than in Tambrauw, and they do not want to be separated from their children. Living in Sorong is very expensive for them, and also unpleasant because of pollution and having to work as laborers, and they miss farming. Some of them try to split their time between Tambrauw and Sorong, farming in Tambrauw and then bringing their crops back to Sorong. Now that connectivity has improved, together with pemekaran and increased village budgets, there have been improvements to facilities, including schools, in Sausapor, the chief city of Tambrauw. Some Abun people who were living in Sorong have now returned to Tambrauw and resumed farming.

In the economic aspects, generally, the improved road connectivity has been utilized more by non-indigenous groups. The newcomers see opportunities from the enhanced connectivity to expand their markets, whether as traders in wood, providers of transport, or sellers of basic needs.

For example, an itinerant trader, "Mr. A", in the Manokwari region, who is originally from Prafi District, modified his two motorcycles to carry a wide range of basic goods and snacks to villages in the Arfak and Kebar Mountains. From his motorcycles, Mr. A now owns a Hilux pickup truck.

Impact of Connectivity on Social Relations

Village residents say that the roads have made it easier to visit relatives living in other villages. For Papuans, frequent visits to relatives in other villages are important, and help overcome problems in times of difficulty.

On the other hand, the improved connectivity has made relations between indigenous Papuans (OAP) and non-OAP more complex. On the one hand, OAP see non-OAP as an important part of their lives, who sell various needs, safely transport them to their destinations, buy their crops and wood, and can be relied on to build the houses and bathing/washing/ toilet facilities (MCK) they need.

On the other hand, the newcomers' ability to make use of the improved connectivity creates tension and feelings of being under threat, fears that OAP are increasingly marginalized. These fears and tension are felt mainly in the Central Mountains region.

This can be seen, for example, from the narratives about farm-raised pigs coming from Jayapura to Wamena, causing the local Wamena pigs to go unsold, about the large amount of alcohol from Jayapura poisoning the young people and causing more motorcycle accidents, or about glue sniffing, which has become a focus of attention even in Elelim.

Residents worry that once the Trans Jayapura-Wamena road is improved, even more goods will come in. Reactions to these worries are already being seen, such as a ban on non-indigenous traders in Welarek District, Yalimo Regency, and restrictions on the operating hours of newcomer motorcycle taxi drivers on the Wamena-Napua-Pelebaga route in Jayawijaya Regency.

Impact of Connectivity on Basic Services

Generally, residents' access (especially for OAP) to basic health, education, and population administration services has improved – in that better transportation makes it easier to reach the services. With the improved connectivity, indigenous residents choose to send their children to better junior and senior high schools in the cities, rather than the schools near where they live. In many interviews, residents mentioned the importance of roads: “kids can study at good schools in the cities; people who are sick or have accidents in the forest can get to the puskesmas easily”.

However, the quality of services, especially in the education sector, has not shown significant improvement. There are indications that teachers are now absent more often, as better accessibility enables them to do things other than teaching.

On the other hand, improved connectivity makes more health workers at the service points now. For example, in Wamena, improved connectivity enhances the feeling of safety for puskesmas personnel, which affects their working hours.

A nurse who works at the Puskesmas in Pelebaga said that the asphaltting of the Napua-Pelebaga road

led to an increase in the number of *ojek* and other transport, making it safer for her to travel to the Pelebaga puskesmas from her home in Wamena. Previously, she was able to go there only two or three times a week, with working hours only to midday. Now she can go there every day and works a full day.

In one district in Sorong Regency, a doctor said he is happier serving at the puskesmas now that the road has been improved. Since the road was upgraded, he can now stay in Sorong, because the trip to the puskesmas takes only 45 minutes.



Residents accessing health services at the Puskesmas in Pelebaga, Wamena (Photo: Indri Sari)

Unfortunately, the improvements in road connectivity have not been accompanied by improvements in other types of infrastructure such as electricity, water, and telephone and internet networks. Where these do exist, they are still limited. For example, Puskesmas that are now functioning well are still not equipped with clean water and electricity.

Village funds could potentially be used for construction of supporting infrastructure such as provision of clean water and electricity (purchase of generator sets or solar or hydroelectric power generation), and subsidies for public transport, but the “imagination” and capability of the local governments is still limited to provide these consistently and continuously.

Impact of Improved Connectivity on the Environment

The assessment results show opening and improved conditions of roads, together with *pemekaran*, have attracted residents to establish residential areas and open up farm land along the road routes; this process leads to felling of trees and reduction of forest cover.

Based on observations, on several road corridors – for example Sorong-Tambrau and Sorong-Maybrat – many villages in preparation for *pemekaran* can be found. Residents have felled trees and set up tents or built houses to indicate the expansion of the villages by the residents. They then start to move, build houses, build facilities and establish larger residential areas along the road corridors, as has happened in Sausapor, Tambrau Regency.



Clearing of forests for villages in preparation for expansion (Photo: Indri Sari)

This situation corresponds to the data from the forest cover maps for 2001-2017 from Forest Watch, which show a correlation between the reduction of forest cover and the building of roads. Based on comparison of the maps, the regions that show significant reductions in forest cover are in regions that are connected with roadways in Papua and West Papua, especially the national roads in the 2015 National Road Network and the Trans-Papua Road Network.

However, the scale of the reduction of forest cover is not too great, since the improvements in road conditions have not caused an increase in the amount of new large-scale extractive industries, as

has been explained in the economic section above. Extractive industries, such as large-scale logging, already existed and have taken advantage of the improved connectivity.



Aerial view of Sausapor in 2015 showing residential areas along the road corridor (Photo: Jonathan McLeod).

The improved connectivity has facilitated an increase in the volume of logs that are transported. For example, according to interviews with truck drivers and local residents, the improved connectivity on the Momiwaren-Bintuni route, which is a route for large-scale log transport, has increased the capacity of logging trucks from 2 cubic meters to 4 cubic meters.

Meanwhile, at the village level, the assessment results show a picture of potential environmental problems suggesting that the improvement in connectivity – accompanied by increases in village budgets and *pemekaran* – increases economic activity based on use of natural resources. In many villages, particularly in the interior, the village funds of Rp700 million-Rp900 million are used mainly to build houses.

With the increased demand for wood to build houses, village residents – both OAP and non-OAP – are cutting down more trees, and mainly selling wood to build houses. This situation is in line with the data on granting of Natural Forest Wood Extraction Permits (IPHHK) from the West Papua Provincial Investment and Integrated One-Stop Services Office (DPMPTSP). Based on an interview with the head of the Office, the number of permits issued rises from year to year. In 2017, there were 1,044 IPHHK (86%) out of 1,216 new permits.

In the villages, many residents, particularly traditional leaders, are worried about potential improvements in connectivity causing damage to

the environment from the large amount of plastic garbage. Rivers and soil are starting to be polluted by plastic waste from various packaged products.

In this case, roads facilitate distribution of goods to the villages, and this phenomenon needs to be examined together with the increase in village budgets, which in turn increases villagers' income to buy these goods.



Logging in Yalimo to meet the need for wood to build houses.
(Photo: Rizki Ersa Haryana)

Road construction also has a negative impact on the balance of the ecosystem in Papua, as can clearly be seen in Lorentz National Park. This national park, declared a UNESCO world heritage site in 1999, is now crossed by the Habema-Nduga-Kenyam road. Although building a road in a conservation zone conflicts with Law No. 9 of 1990, the road was nevertheless built based on a 2012 Decree of the Minister of Forestry due to the need for a road to promote economic growth in the region.

According to UNESCO reports in 2014 and 2015 and a Ministry of Environment and Forestry report,

although there was a permit, the construction of the road on this route violated the procedure, as it was not accompanied by an official environmental impact report or minutes of felling of trees to build the road. As a result, the construction of the road has been proven to have brought damage to the environment and biodiversity in Lorentz National Park, among others from felling of trees that wildlife rely on to live, disruption of the flow of water in the ecosystem, and the death of the nothofagus forest in Lorentz National Park. The construction of the road has now been halted, and a rehabilitation process has begun.

Even so, local governments can play a positive role in minimizing the impact on the environment from construction of infrastructure. For example, the Regent of Tambrau supports the continuation of the cultural practice of “Nu Wuon” and moved the route of the provincial road that crossed the turtle conservation area on the Sauspor-Manokwari route. “Nu Wuon” is a traditional education system of the Abun ethnic group to teach young people about nature by living in the forest for two to six years.

Policy Implications and Recommendations

Based on the findings of the assessment, the construction of road infrastructure in Papua and West Papua has a greater positive impact in improved access to OAP to basic health and education services than in economic growth and improved livelihoods for OAP. It is important that the construction of infrastructure in Papua and West Papua in the future be directed toward efforts to improve OAP's access to basic services as well as local economic development for OAP.

In other words, *“infrastructure for communities, not commodities”*. On this basis, the strategy for construction of connectivity infrastructure needs to be focused on enhancing the relations between OAP villages and properly functioning centers of health and education services, as well as “markets”, which are usually in the capital of districts and regencies.

In this regard, the strategy for construction of connectivity infrastructure for Papua does not need to follow the mainstream of infrastructure development strategy in other parts of Indonesia, where roads and bridges are focused mainly on

improving the economy and the movement of commodities.

The scale of the people's economy in many places in Papua still relies on natural resources and is oriented toward subsistence and "noken scale economy", in a context of huge economic imbalances. Given this situation, improvements in connectivity do not provide great benefits for indigenous residents.

For certain high-value commodities that are already raised by local residents, such as coffee and cacao, the government needs to create a conducive business climate for linking the OAP who raise them with the private sector, which would improve the economic conditions of OAP.

This main recommendation needs to be followed up with several other matters, as follows:

1. Construction of road infrastructure needs to be accompanied by improvements to basic services, including health, education, population administration, water supply and electricity supply.
2. Economic empowerment of OAP, oriented toward agriculture in line with local commodities, needs to be a complement to construction of road infrastructure. Programs for provision of alternative livelihoods are not easy, but the government needs to focus on gradual economic development in subsistence agriculture. This requires facilitators who intensively accompany and assist residents to develop the economy in line with local conditions and maintain food security to ensure sufficient nutrition for local people.
3. Further study is needed on determination of the types of connectivity infrastructure appropriate to the conditions of the region and movement of its people, so that infrastructure development is not always oriented toward building new roads, but may also be in the form of development of water and aviation infrastructure.
4. Construction of connectivity infrastructure needs to be followed with clear regulations, monitoring, and firm (strategic) action against environmental damage. For example, the government should strictly monitor the granting of building permits, carry out reforestation, and provide alternative livelihoods and incentives to reduce the public's excessive use of natural resources.
5. The government needs to accelerate clear legal framework on the construction of road infrastructure in conservation zones. These rules need to contain technical matters relating to the construction of roads in conservation zones – if that is the only option – such as reduced standards for width of national roads and not crossing wildlife migration paths.
6. Assessment of improvement in connectivity should not be measured only from improvement in road conditions, but also be indicated by changes in the means of transport. The government's strategy to improve connectivity needs to be complemented with efforts to provide public transportation, as well as clear regulations concerning fares, routes, and other matters that improve residents' access to basic services and centers of activity. In the Central Mountains, these efforts need to be complemented with a strategy for improved distribution of fuel to ensure stable and equitable fuel prices throughout Indonesia.

This rapid assessment was conducted jointly by a team from The Asia Foundation (TAF) and Lembaga Ilmu Pengetahuan Indonesia (LIPI) consisting of Yulia Indri Sari, Adriana Elisabeth, Jonathan McLeod, Cahyo Pamungkas, Rizki Ersya Haryana, Muklas Aji Setiawan, Harry Seldadyo, Aisah Putri Budiatri, Septi Satriani and Anastasya Surya Andjaswari. Performance of the study was also assisted by teams from the West Papua Provincial Regional Research and Development Agency (Balintbangda) and the Papua Provincial Regional Development Planning Agency (Bappeda). The team was also accompanied by local researchers: Muhammad Chamin, Ocha Windesi, Ibrani Nayaki, Florentianus Geong, Rizal Lani, Nelson Lokobal, Kris Ajoji, Yan Baylo, Daniel Mandacan, Yulianus Dowansiba, Reny Suruan, Sandi Hasudungan, Melda Tuannakota, Edwin Ogini Amar and Mella Kalaibin. This rapid assessment was supported by UKCCU. If there are questions or more explanation is needed about this study, please contact Yulia (Indri) Sari at indrisari@gmail.com.