



SMERU RESEARCH REPORT No. 3

EINRIP ROADS POSTIMPROVEMENT MONITORING AND EVALUATION: THE 2018 QUALITATIVE SOCIAL RESEARCH REPORT

Dinar Dwi Prasetyo, Dyan Widyaningsih, Rezanti Putri Pramana, Steve Christiantara

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Editor

Dhania Putri Sarahtika

The SMERU Research Institute
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Abstract

EINRIP Roads Postimprovement Monitoring and Evaluation: The 2018 Qualitative Social Research Report

Dinar Dwi Prasetyo, Dyan Widyaningsih, Rezanti Putri Pramana, and Steve Christiantara

This study is part of a long-term monitoring and evaluation (M&E) program of the Eastern Indonesia National Road Improvement Project (EINRIP). A longitudinal qualitative social research comprising a baseline study and monitoring studies—which included surveys of local social and economic relations—were respectively carried out before and after the road construction. The objective of the 2018 social qualitative research was to make a long-term assessment of the socioeconomic outcomes and impacts of the improvement of the EINRIP project roads in South Sulawesi and Flores. The main focus of the research was the relationship between road improvements and economic development in the areas served by the road. Particular attention was given to examining differential impacts on different social groupings divided based on livelihoods and gender. This study found that national road improvements by EINRIP have contributed positively to the enhancement of the economic activities which led to increased community income and welfare. The increased accessibility and flow of transportation has increased people's mobility to carry out economic activities. Thus, the community has better access to production inputs to increase the quantity and quality of production, as well as broader market reach to sell their commodities. Other factors are also important although it is difficult to see the contribution of each because they are interconnected. In both locations, the types of livelihoods, changes in commodity prices, private sector investment, government policies and programs, and sociocultural factors defined the economic activities as well as determined the magnitude of benefit of the national road improvement for economic development.

Keywords: road improvement, economic activities, transportation, access

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List of Abbreviations

Anggur Merah	Program Anggaran untuk Rakyat Menuju Sejahtera	Budget for People Toward Prosperity Program
APBD	Anggaran Pendapatan dan Belanja Daerah	regional budget
APBN	Anggaran Pendapatan dan Belanja Negara	national budget
Bappeda	Badan Perencanaan Daerah	Regional Development Planning Agency
BPS	Badan Pusat Statistik	Statistics Indonesia
BRI	Bank Rakyat Indonesia	People's Bank of Indonesia
BSPS	Bantuan Stimulan Perumahan Swadaya	Self-help Housing Stimulus Assistance Program
BUMDes	Badan Usaha Milik Desa	village-owned enterprise
DPRD	Dewan Perwakilan Rakyat Daerah	Regional House of Representatives
EINRIP		Eastern Indonesia National Road Improvement Project
FGD		focus group discussion
GRDP		gross regional domestic product
HDI		Human Development Index
JKN	Jaminan Kesehatan Nasional	National Healthcare Financing Scheme
JKN-KIS	Jaminan Kesehatan Nasional – Kartu Indonesia Sehat	National Healthcare Financing Scheme-Indonesia Health Card
KB	Keluarga Berencana	Family Planning
LTA	Dinas Perhubungan Darat	Land Transportation Agency
M&E		monitoring and evaluation
NGO		nongovernmental organization
NIS (PT)	<i>Nusantara Inti Satwa</i> (PT)	Nusantara Inti Satwa (Ltd)
PAUD	<i>pendidikan anak usia dini</i>	early childhood education
PIP	Program Indonesia Pintar	Smart Indonesia Program
PKH	Program Keluarga Harapan	Family of Hope Program
PKK	Pembinaan Kesejahteraan Keluarga	Family Welfare and Empowerment

polindes	<i>pondok bersalin desa</i>	village maternity center
poskesdes	<i>pos kesehatan desa</i>	village health post
posyandu	<i>pos pelayanan terpadu</i>	integrated health service post
PPL	<i>petugas penyuluh lapangan</i>	extension field worker
puskesmas	<i>pusat kesehatan masyarakat</i>	community health center
pustu	<i>puskesmas pembantu</i>	secondary community health center
Rastra	Beras Sejahtera	Rice Assistance
RSUD	<i>rumah sakit umum daerah</i>	regional public hospital
RT	<i>rukun tetangga</i>	neighborhood unit
satap	<i>sekolah satu atap</i>	one roof school
Upsus Pajale	Upaya Khusus Padi Jagung Kedelai	Special Effort of Rice, Corn and Soybeans
Upsus Siwab	Upaya Khusus Sapi Indukan Wajib Bunting	Special Efforts to Make Cows Pregnant
URI		upper respiratory tract infection

Executive Summary

Introduction

The Eastern Indonesia National Road Improvement Project (EINRIP) is the Indonesian and Australian government's initiative to improve national roads in eastern Indonesia. The EINRIP project aims to improve road links so that the national road network provides acceptable standards of service and accessibility and can support local and regional economic development. Between 2007 and 2015, EINRIP worked on improving the quality of the national road in nine provinces.

The SMERU Research Institute (SMERU) has been conducting a qualitative longitudinal study to record the changes in the socioeconomic conditions of the people living near four of the EINRIP roads by comparing the conditions between baseline and endline studies. A baseline study was carried out shortly before the road improvement works started, and an endline study (first monitoring) was carried out approximately one year after the road works were substantially completed. Thereafter, SMERU conducted a follow-up study (second monitoring) in Sumbawa and South Kalimantan in 2017, followed by South Sulawesi and East Nusa Tenggara in 2018.

Many factors have affected the dynamics of community income in the studied *kabupaten* (districts) in addition to the improvement of the EINRIP roads. Road improvements have both direct and indirect impacts on the dynamics of community income at the individual and community levels. These impacts resulted in either an increase or decrease in income or in some cases may not have affected the community income. The 2018 study specifically sought to find out how and to what extent the EINRIP national road improvements affected the community income in the sample villages in Kabupaten Nagekeo and Kabupaten Bulukumba.

This study used the contribution analysis method to analyze factors that contribute to changes in the economic development and community welfare in the study villages. This method was chosen in order to determine which factors have contributed to the changes in community welfare over the past ten years (2008–2018), both directly and indirectly. Using contribution analysis made it possible to determine how far the national road improvements implemented through the EINRIP program were able to increase the local community income. The current study adopted a qualitative approach and the data were collected through in-depth interviews and focus group discussions.

Research Sites

The village chosen in Kabupaten Nagekeo was Desa Woedoa, located in Kecamatan Nangaroro. The village was chosen because the EINRIP road, which forms part of the

Nangaroro–Aegela route, passes through the village. The village consists of four *dusun*.¹ All of the *dusun* are in proximity to the national road improved by EINRIP.

Meanwhile, in Kabupaten Bulukumba, the research was conducted in Desa Bulo-Bulo, Kecamatan Bulukumpa. The national road improved by EINRIP, which connects Bulukumba to Sinjai, passes through Bulo-Bulo. Bulo-Bulo is located in the middle of this route and lies 28 kilometers from the capital of Kabupaten Bulukumba and five kilometers from the *kecamatan* (subdistrict) capital.

Findings

Kabupaten Nagekeo

The economy of Kabupaten Nagekeo has been steadily growing over the past eight years. Agriculture remains by far the largest sector, though its share is falling. The trade and service sector remains small but is growing faster than other sectors.

Farming Sector

The *kabupaten's* main crops are paddy, corn, cacao, and coconuts. The government has also encouraged farmers to cultivate cloves due to their relatively high price compared to other types of agricultural produce and has been providing the farmers with clove seeds. However, so far, the number of farmers who grow cloves is still relatively low.

Despite continually being the largest contributor to the regional income, the agriculture sector has been experiencing difficulty to develop significantly. The *kabupaten* government has taken several initiatives to develop the agricultural sector. Measures taken includes mentoring and supervision by the extension field workers (PPL) regarding modern cultivation techniques as well as the provision of free and subsidized fertilizers from the agriculture agency.

The main types of livestock kept are pigs, goats, and cows. The livestock sector also faces difficulty in developing as livestock farmers still use traditional breeding methods despite the animal husbandry agency's effort in disseminating information on the proper breeding technique. However, the animal husbandry agency has been providing vaccines for various livestock and animals.

At the village level, there has been increasing development of the agricultural, farming, and livestock sectors considering that the road improvement has enabled farmers to be exposed to intermediaries and traders outside the village, therefore giving the farmers more options to sell their produce. Aside from being accessible for outsiders, farmers of both crops and livestock have a wider range of market accessible for them therefore extending their selling options.

¹A *dusun* is an administrative area within a village, consisting of a number of neighborhood units (RT).

Industrial Sector

The growth of the industrial sector has been particularly limited since the government allocates a rather small investment for the sector in addition to the overall small investment by the private sector. In recent years, the main area for investment has been the salt mining industry, with the most recent one being in the establishment of PT Cheetham Garam in 2016 in Kecamatan Aesesa.

Nongovernmental organizations (NGOs) have entered the field of raw-material processing industries, with Oxfam providing training for women in the production of coconut oil. However, in general, farmers are not interested in processing their produce even though they could sell their produce for a higher price. Since processing agricultural produce takes more time, farmers prefer to sell unprocessed produce immediately.

Land Transportation

The land transportation sector has grown considerably since 2008 with increasing numbers of operators of both passenger and freight vehicles in response to the rising demand for transportation, particularly for trips to the weekly markets. In particular, there has been a marked increase in the number of illegal, black-plate, passenger transportation operators, who are able to offer faster point-to-point services, as they do not stop to pick up passengers along their route.

Passenger Transportation Market

A range of vehicle types are involved, such as minibuses, minivans, wooden trucks, pickup trucks, *ojek* (motorcycle taxis), and travel minivans—the newest form of passenger transportation service. The use of wooden trucks has been declining as the condition of the road in the *kabupaten* has improved and it becomes possible to use less robust vehicles.

The overall improvement of the road infrastructure—village, *kabupaten*, and national road—combined with the increase in income, has resulted in an increasing demand for public transportation. However, the growth in the number of people using public transportation has not kept pace with the increase in the number of passenger transportation operators. Consequently, there is fierce competition among operators combined with reduction in the number of passengers per operator.

Freight Transportation Market

The competition in the freight transportation market is not as intense as that in the public transportation market, though it varies by area of operation. Ende Port in particular attracts a lot of operators from other *kabupaten* such as Maumere, Nagekeo, Bajawa, and even Labuan Bajo, while goods to be transported are limited.

The situation with freight services to local markets is distinctly different. The improvement of the road infrastructure has eased access to the weekly markets, thus increasing the demand for freight transportation without generating an excessive increase in the supply of transportation services.

Trade and Services Sector

The trade and services sector contributed 23.4% to Kabupaten Nagekeo's gross regional domestic product (GRDP) in 2017. Trade has been progressing as evidenced in the increased number of both buyers and sellers in the weekly markets. This has been particularly attributed to the increased accessibility to the market.

With an improved road infrastructure, traders and buyers of commodities from outside the *kabupaten*, namely Maumere and Ende, have started to conduct their business in the weekly markets across Nagekeo. The market in Nangaroro is particularly favored by buyers and sellers due to its proximity to the improved national road, making the market much more accessible.

Similarly, at Desa Woedoa, small enterprises have been growing along the improved national road, motivated by the heavier traffic flow after the road improvement. Stalls located beside the national road have been enjoying increased economic activities as they are accessible to not only local villagers, but also passersby.

Kabupaten Bulukumba

Likewise, the economy of Bulukumba is still dominated by the agricultural sector. Nevertheless, the growth of other sectors has been evidenced by their increased share in the GRDP. All in all, when the research was conducted in 2018, Bulukumba had been experiencing economic growth in the last three years.

Farming Sector

The primary agricultural commodities for consumption (food and horticultural crops) of the *kabupaten* are rice, corn, peanuts, bananas, chili peppers, and coconuts. Meanwhile, the main plantation crops are cacao, coconuts, rubber, cloves, pepper, and coffee. Currently, the small-scale processing industries in the *kabupaten* are available for coffee and cloves.

In Bulukumba, areas of the farming sector which are major contributors to the local economy are not merely crop and livestock, but also fisheries since Bulukumba is also a coastal area. The economic growth in the agriculture, forestry, and fisheries sectors in general fluctuated during 2011–2017. This agriculture sector's growth was affected by the slowdown in activities regarding food and horticultural crops due to the prolonged El Niño-induced drought in 2015–2016.

While the agriculture subsector experienced fluctuation, the livestock subsector accelerated. The growth of livestock sector had reached 13.63% during 2013–2018. Cattle and goats were the current primary livestock commodities of Bulukumba. Their population had experienced positive trends over the last three years before the follow-up study.

The study shows that at the village level, the farming sector has been growing exponentially. Exposure to more markets has been reported to increase selling options, therefore presenting farmers with benefits of competitive price offering.

Better access to agricultural inputs and assistance from the government have also been identified to contribute to enhancing the economic activities of the farming sector at the village. Livestock farmers benefit from the national, *kabupaten*, and village road improvements as they have allowed for more timely delivery of government assistance.

Industrial Sector

The manufacturing sector has been fluctuating during 2011–2017. As a matter of fact, the contribution of the industrial sector has been slightly decreasing during 2015–2018. No new businesses within the sector have been established. The existing industries in Bulukumba are cotton, paint, wood manufacturing factories, and grain-drying industry.

Trade and Services Sector

The trade and services sector in Bulukumba has been growing steadily and its share in GRDP has been increasing over the past eight years. Along the national road as well as in the city center and tourist attractions in Bulukumba, the service and trade activities have multiplied, characterized by the emergence of shops, minimarkets, banks, financial service providers, gas stations, and hotels.

One of the main factors driving the services sector is the growth of tourism in Bulukumba. The tourism activities in Bulukumba have risen rapidly during 2013–2018,, in line with the Kabupaten government's objective to develop the tourism potential of Bulukumba. These efforts are complemented with policies on supporting infrastructure development in Bira region and on easing the application for business licenses. As a result, the number of tourists visiting Kabupaten Bulukumba continues to increase from 136,488 in 2013 to 206,970 people in 2017.

The economic activities within the trade sector alone have also been increasing. In conjunction with that, the Bulakumba government has helped to build 12 traditional markets and 10 modern market across the *kabupaten*.

Land Transportation Sector

The transportation sector in Bulukumba has been fluctuating in the last eight years before the follow-up study. The increasing rate of vehicle ownership has resulted in the slow decrease of land transportation sector's share to the GRDP. The reduction in the demand of public transportation services has led to the government's ceasing of permit issuance. In 2018, the government had already stopped issuing permits for public transportation vehicles for the last three years. Nevertheless, the passenger transportation market continues to be saturated with illegal transportation operators (black-plate vehicles used as passenger transportation). At the time of the follow-up study, the regional government has not done very much to protect the yellow-plate vehicle operators' competition against the black-plate vehicle operators.

Contribution of the EINRIP Road Improvements to Economic Development

During the course of 2008–2018, Kabupaten Nagekeo and Kabupaten Bulukumba have experienced a shift in its economic structure. Although the agricultural sector is still the highest contributor to their GRDP, its proportion continues to decrease. Meanwhile, other sectors, such as the trade and services sector and construction sector, have slightly increased their contribution to GRDP. The national road improvements in both locations played a role in the shift of the economic structure through a number of elements.

The current study aims to examine the model of change and how well the theory explained the impact of the road improvement. Evidence from the field indicated that most of the key elements were proven, however some elements were not.

The national road improvement brought upon the core benefits, which were transportation cost and travel time savings. The improvement had contributed to reduced maintenance costs for vehicle parts—such as tires, brakes, shock absorbers, and bearings—and fuel consumption. Nevertheless, the reduction of fuel consumption is heavily dependent on the vehicle's speed and the weight of the vehicle's load. In some cases, fuel consumption increased after road improvement since their freight load and driving speed increased.

The reduction of travel time was largely due to the ability for users to increase their driving speed since the improved national roads in both locations led to a better road condition (flatter and wider road surfaces). With shorter travel time, traveling to the market, school, *puskesmas*, and city becomes easier for users. Meanwhile, for transportation operators, shorter travel time in principle would allow them to make more trips and cut down operational cost. However, due to the saturation of the market, particularly for passenger transportation, operators have not been able to take advantage of the travel time reduction. Instead, they have been drawing fewer passengers, thus embarking on fewer trips.

The study also proves that the road improvements have resulted in not only more transportation providers available, but also the increased output and labor absorption in the transportation sector. With the increase of transportation services, the transportation market has expanded, which resulted in the increase of income for new transportation providers.

Shorter travel time, combined with the increased variation of transportation services for users, have enabled them to access a competitive pricing for various goods, particularly agricultural goods. Both producers and consumers are presented with the benefit of market extension and competitive prices. However, some conditionalities were found in both locations.

The advantage of consumer and producer prices could be experienced by medium- and large-scale businesses. Owners of small enterprises, including stall owners and firewood sellers, did not enjoy a significant income increase as they were unable to properly manage their businesses, thus losing to other stall owners and firewood sellers around the

village. While medium-scale businesses were able to cut down travel expenses by having suppliers delivering the goods for sale, small-scale businesses have failed to reduce travel expenditure as they continued to purchase stock of goods by themselves.

The advantage regarding agricultural input pricing was also found insignificant since users would use agricultural inputs subsidized by the government. The main benefits, however, were enjoyed by PPL who were able to save travel time when visiting the farmers.

Three external factors were examined and found to be proven in the study, namely external market forces, private sector investments, and government policies and support. Firstly, the external market forces, namely the commodity prices in the international market, have been found to play a role on farmers' income. Higher prices of several commodities have led to an increasing margin of profit received by farmers. In Bulukumba, clove prices have increased during the course of 2015–2018 and have boosted the income of many villagers. In Nagekeo, candlenut and cashew prices rose and boosted the income of the farmers. Additionally, price increases are also found in livestock products.

Secondly, the private sector in both *kabupaten* has grown quite significantly after the road improvement. Despite not being the single driving force, the heavier flow traffic along the national road contributed to the growing number of businesses along the national road.

In Bulukumba, the improved national road, which lies between Jeneponto and Sinjai, has made the *kabupaten* more open to the surrounding *kabupaten/kota*, including Makassar. The increased distribution of goods and people from Makassar to Bulukumba has triggered economic activities in Bulukumba. Between 2015 and 2018, private investments in trade and services sector such as hotels, gas stations, minimarket chains, and financial institutions had rapidly grown and provided more jobs. In Nagekeo, the improved national road connects the *kabupaten* with neighboring areas, namely Ende and Bajawa, but it does not pass the city center. Thus, economic activities at the city center are not affected much by the road. Economic growth is only found along national road, which are predominantly rural areas. New established businesses at the village level include a concrete brick business as well as several kiosks, and motorcycle workshops.

The last confirmed external factor was the government's policies and support, especially initiatives to enhance the agricultural sector as identified in this study. With the road improvement, there has been wider outreach of government initiatives. Extension officers have reported more intensified mentoring and extension activities. Government support in other fields, such as in education and health, also have better reach as the improved road has enabled users to access more services. Other local government policies contributing to the increase of income and overall welfare of the community include infrastructure development policies, loans to small and medium enterprises, and policies related to business licensing.

An element which was disproved in the current study was the assumption on the reduction of transportation prices. Findings from the current study indicate that despite the lower operational cost and reduction of travel time, transportation prices have continued to increase. This was largely the result of the 2014 fuel subsidy policy enacted

by the national government, which resulted in the increased fuel price. After the road improvements in 2018, the fare has remained the same.

Findings in the field study identified new elements contributing to the increased of community income, namely competition and travel comfort. Competition was found to be the impact of the road improvement and its intensification occurred in all sectors, predominantly in farming and land transportation. Travel comfort, on the other hand, influenced the quality of commodities transported and the preferences of the road users.

The intensified competition was found to be beneficial for the farmers. As stated previously, the road improvement has led them to be more accessible to traders outside the village. The road improvement, which resulted in an increase of traffic volume, has motivated villagers to establish small-scale businesses which greatly benefit the community by provision of varied services. Nevertheless, competition was found to cause a great deal of loss for existing players as the distribution of income has been stretched out to accommodate new players.

While the competition among transportation providers is perceived to negatively influenced operators, users benefit from with the provision of varied services, allowing them to choose services according to their needs and resources. With the heightened competition, users are also presented with a more stable price offering from operators. Operators are unable to play around with prices anymore because given that there are more of them available, users are free to choose operators to their liking.

I. Introduction

1.1 Background

The Eastern Indonesia National Road Improvement Project (EINRIP) is the Indonesian and Australian government's initiative to improve national roads in eastern Indonesia. The EINRIP project aims to improve road links so that the national road network provides acceptable standards of service and accessibility and can support local and regional economic development. Between 2007 and 2015, EINRIP worked on improving the quality of the national road in nine provinces² with a total length of around 400 kilometers.

The road improvement involved widening the road to 6–7 meters and road shoulders to 1–1.5 meters on both sides. The roads were built with a design life of 20 years, with thicker pavements than normal in Indonesia and improved alignments. Particular attention was paid to the provision of drainage. The result was a smoother, stronger, and more durable road. There are no more sharp curves and steep inclines and descents. The roads now have road signs, school safety zones, and longer and more frequent guardrails, so that road users feel safer.

The SMERU Research Institute (SMERU) has been conducting a qualitative longitudinal study to record the changes in the socioeconomic conditions of the people living near four of the EINRIP roads by comparing the conditions between baseline and endline studies. A baseline study was carried out shortly before the road improvement works started, and an endline study (first monitoring) was carried out approximately one year after the road works were substantially completed. Thereafter, SMERU conducted a follow-up study (second monitoring) in Sumbawa and South Kalimantan in 2017, followed by South Sulawesi and East Nusa Tenggara in 2018 (see Table 1).

Table 1. Time Frames and Locations of the Studies

Province	Kabupaten (District)	Package	Road Name	Baseline	Monitoring	
					Endline	Follow-up
West Nusa Tenggara	Sumbawa–Dompus	ENB 03	Cabdin Dompus–Banggo	2008	2013	2015 2017
South Kalimantan	Banjar	EKS 01	Martapura–Tungkap	2008 2012 (repeat)	2014	2017
South Sulawesi	Bulukumba	ESS 05	Bulukumba–Tondong (Sec 2)	2009	2016	2018
East Nusa Tenggara	Nagekeo	ENT 01	Nangaroro–Aegela	2010	2016	2018

²West Kalimantan, South Kalimantan, Bali, North Sulawesi, Central Sulawesi, South Sulawesi, Southeast Sulawesi, West Nusa Tenggara, and East Nusa Tenggara.

Through several monitorings, the study recorded changes in the socioeconomic conditions of the people by comparing the conditions before and after the EINRIP road improvements. The monitoring studies up to 2016 found some social impacts that were related to the improvement in accessibility, such as facilitation of the provision of education, health, and agricultural extension services; improved provision of mobile retailing services; and increased personal mobility (particularly for women). Furthermore, the road improvements had encouraged economic developments, especially the emergence of new businesses located in the areas passed by the improved roads.

1.2 Objective of the 2017/2018 Study

The objective of the follow-up study was to make a longer-term assessment of the socioeconomic outcomes and impacts of the improvement of the EINRIP project roads in each research site. The assessment considered the findings of the baseline study and the endline study. In general, the main focus of the follow-up study was the relationship between road improvements and economic development in the research sites by exploring differential impacts on different livelihoods. The topics explored included local economic welfare and transportation services and distribution systems, as well as the changes since the baseline study. The exploration of local economic welfare included the dynamic of local economic activities, sources of economic advancement, and factors influencing economic development and community welfare. The exploration of transportation services and distribution systems included the role of traders and changes in connectivity within and between villages.

Many factors have affected the dynamics of community income in the studied *kabupaten* (districts) in addition to the improvement of the EINRIP roads. Road improvements have both direct and indirect impacts on the dynamics of community income at the individual and community levels. These impacts resulted in either an increase or decrease in income or in some cases may not have affected the community income. The 2018 study specifically sought to find out how and to what extent the EINRIP national road improvements affect the community income in the sample villages in Kabupaten Nagekeo and Kabupaten Bulukumba.

1.3 Methodology

1.3.1 Contribution Analysis

This study used the contribution analysis method to analyze factors contributing to the changes in the economic development and community welfare in the study villages. This method was chosen in order to determine which factors have contributed to the changes in community welfare over the past ten years (2008–2018), both directly and indirectly. Using the contribution analysis made it possible to determine how far the national road improvements implemented through the EINRIP program were able to increase the local community income.

A contribution analysis can trace attribution through assessing a program's contribution (Mayne, 2008); in our case, the contribution of the improvement of the EINRIP national

road to the observed results, namely the changes in welfare level by using income indicator—either declining, increasing, or unchanging.

1.3.2 Theory of Change

A contribution analysis is carried out based on an explicit model of change showcasing the expected linkage between the actions which, in this case, are the improvement of the ENRIP national road and their outcomes. The contribution analysis in the current study is equipped with a Theory of Change based on a study funded by the Asian Development Bank on the relationship between road development and poverty reduction³, which sets out a simplified cause-and-effect relationship between the ENRIP national road improvements and changes in income based on characteristics of the community and the occupation typology. The key elements of the theory are:

- a) Road improvements reduce vehicle operating costs and travel time.
- b) If the transportation services market is competitive, users (passengers or freight shippers) will experience cost savings; if not, the cost savings will increase the income of the transportation operators.
- c) If transportation prices fall in response to road improvements, and markets are competitive, the prices of agricultural and industrial products brought into the area will fall, and the prices paid at factories or farm gates should increase.
- d) If input costs/output prices change, the profitability of economic activities in the area will increase, and producers will be encouraged to expand production.
- e) The reduction in travel time arising from a road improvement also facilitates:
 - (1) private investments (by outsiders), as it is easier for managers and investors to visit the area;
 - (2) support from the government, such as providing agricultural extension services, which helps increase output locally; and
 - (3) access to health care and education, which improves quality of life and makes a long-term contribution to improving economic welfare.

The interview program in the villages was directed toward testing these general propositions. In addition to exploring developments in economic activities and incomes, the researchers looked at changes in the transportation and distribution systems and sought information on the degree of competition in the markets for transportation services and agricultural products. This information was then used to test and refine the Theory of Change, as described in Chapter 6.

1.3.3 Data Collection

The 2018 study roads were ESS 05: Bulukumba–Tondong (Sec 2) in South Sulawesi and ENT 01: Nangaroro–Aegela in Flores. Both areas had been visited in the previous studies. The current study focused on the factors contributing to the differences in economic activities in each location. To investigate those factors, the current study adopted a

³Asian Development Bank (2004) TA No. 3900-PRC: Socioeconomic Assessment of Road Projects: Final Report.

qualitative approach, and the data were collected through in-depth interviews and focus group discussions (FGDs).

a) Interviews

In both study sites, interviews were conducted at the *kabupaten, kecamatan* (subdistrict), and village levels. At the *kecamatan* and *kabupaten* levels, interviews were conducted with relevant officials to determine the dynamics of the regional economy during the course of 2008–2018 and factors influencing the dynamics as well as seek evidence of the role of EINRIP in the regional economy. Information regarding changes in vehicle operating costs and prices of transportation services was mostly obtained at the *kecamatan* level. At the village level, interviews were focused on understanding the changes in income and the contribution of EINRIP roads to village officials, the community, and some transportation operators. A more comprehensive elaboration on the interviews conducted is presented in Table 2.

Table 2. Type of Informants and Information

Informant		Objective & Type of Information
Kabupaten	Business owners Regional Development Planning Agency (Bappeda) as well as regional agencies regarding transportation, agriculture, animal husbandry, and investment and licensing Chamber of Commerce	<ul style="list-style-type: none"> • Identify government initiatives and how the road improvement facilitated the implementation of the initiative (e.g. reduction in travel time and cost) • Seek evidence of the private sector investment in the areas • Identify factors affecting the local economic environment
Kecamatan	Head of <i>kecamatan</i> Transportation operators Traders/merchants	<ul style="list-style-type: none"> • Identify changes in income since the road improvement • Seek evidence of the private investments in the areas • Identify factors affecting the local economic environment • Reduction of travel time, and, if any, consequences • Seek evidence in the changes in vehicle operating cost and prices of transportation services
Village	Village officials Transportation operators Business owners Households	<ul style="list-style-type: none"> • Identify changes in income since the road improvement • Seek evidence of the private sector investment in the areas • Identify factors affecting the local economic environment • Reduction of travel time, and, if any, consequences

Informant	Objective & Type of Information
	<ul style="list-style-type: none"> • Seek evidence in the changes in vehicle operating cost and prices of transportation services • Seek evidence of the government initiatives

b) Mini Focus Group Discussions (Mini FGDs)

Mini FGDs were held at the village level with villagers from various occupational backgrounds to determine changes in welfare during the course of 2008–2018. In each village, the team conducted 4–6 mini FGDs with villagers with the most common occupations in the village. Aside from determining changes in welfare in the past ten years, the FGDs were also conducted to investigate how the road improvement has contributed to the changes in the welfare/income of various occupations.

Due to the differences in the local economic environment, there were differences in the occupation typology in each village. In Kabupaten Nagekeo, mini FGDs were conducted across four typologies, namely rice farming, pig farming, construction work, and candlenut farming. In Kabupaten Bulukumba, mini FGDs were conducted across six typologies, namely rice farming, cattle farming, clove farming, laying hen farming, and rice trading.

1.4 Report Structure

Chapters 2 and 4 provide an overview of the economic developments of Nagekeo and Bulukumba at the *kabupaten* level. These chapters discuss the growth and composition of gross regional domestic product (GRDP) and outline government policies in support of economic growth. The state of transportation infrastructure and transportation services is described, together with a brief discussion of economic linkages with other areas.

Chapters 3 and 5 provide detailed information on the local economic and social structures in the villages chosen for the study (Desa Woedoa in Flores and Desa Bulu-Bulu in South Sulawesi). The chapters describe the changes in the local economy in the last five to ten years before this research was conducted in 2018, with particular attention to the government’s role, the way in which agricultural inputs and outputs are marketed, the degree of competition in agricultural markets, and how the improvements in accessibility brought about by the EINRIP roads have affected these developments.

Finally, in Chapter 6, the basic Theory of Change linking road improvements to economic changes is presented in detail. The linkages specified in the theory are reviewed in light of the information collected during the study. There is also a modified theory, which highlights the role of competition in product markets and the role of the road improvement in facilitation of government support services.

II. Kabupaten Nagekeo

2.1 Overview

Kabupaten Nagekeo is located in Flores (East Nusa Tenggara), on the south coast some 40 kilometers west of Ende on the main national road connecting Maumere (the main port in the east) with Labuan Bajo, in the west. Nagekeo was created in 2007 when it was split off from Kabupaten Ngada. Nagekeo is bordered by Kabupaten Ngada on the west, Kabupaten Ende on the east, the Flores Sea on the north, and the Sawu Sea on the south. The total area of Nagekeo is 1,417 km², which is divided into seven *kecamatan*, namely Mauponggo, Keo Tengah, Nangaroro, Boawae, Aesesa Selatan, Aesesa, and Wolowae. The number of *kecamatan* and *kelurahan*⁴ has not changed since 2010 while the number of villages increased from 84 villages in 2010 to 105 villages in 2018.

Nagekeo in 2017 had a population of 142,804, an increase from 130,120 in 2010. The two most populous *kecamatan* are Aesesa and Boawae with the population of 37,206 and 37,223 respectively. The most densely populated *kecamatan* are Mauponggo and Keo Tengah with 220 and 225 people per km², well above the *kabupaten* average of 101. Most of the people are native to Flores, so there are not many migrants. The majority of the people work in the agricultural, plantation, and livestock sectors. Although the service and trade sectors are growing, people working in those sectors are mostly migrants from various regions such as Java and Sulawesi.

Kecamatan Nangaroro has a population of 18,846 people, making it the fourth most populous *kecamatan* in Nagekeo. Most of the people in Nangaroro work as farmers producing crops such as rice, corn, coconuts, candlenuts, and cloves, or raising livestock. They use the mixed-crop cultivation system based on the season that suits the crop. The agricultural products are used mainly for household consumption and the rest are sold.

In general, the farmers in Nangaroro work on their own land. However, they can also work on other people's land if they need extra money. This practice is known as *sore kasih*⁵.

According to the Head of Kecamatan Nangaroro, local communities lack the ability and interest in opening business which hampers the economic development of the *kecamatan*. This can be seen from the market in Nangaroro that is dominated by sellers from Ende, Manggarai, and Maumere.

2.2 The EINRIP Road

There was only one EINRIP road improvement project in East Nusa Tenggara Province, ENT-01: Ende–Aegela, which is 15.6 km-long (see Table 1) and forms part of the main road

⁴A *kelurahan* is a village-level administrative area located in an urban center.

⁵*Sore kasih* is a local term which means that a farmer works on his/her own land in the morning and on other people's land in the evening with wage ranging from Rp50,000 to Rp70,000, depending on the area of the land.

system linking the port cities of Maumere in the east, Ende—the provincial capital on the south coast, and Labuan Bajo in the west. ENT-01 is located in Kabupaten Nagekeo (see Figure 1). The local name for the road is Ruas Jalan Aegela–Nangaroro (Table 3).

Figure 1. Transportation Route in Flores Island



Source: BPS (2010) and Google Map/Earth (2016).

Note: SMERU used mapping software (QGIS v.2.16.3) to overlay digital images from these sources to create this map.

Before the improvement, the carriageway was 4.5 meters wide and the surface was in poor condition. The road is now 6 meters wide, with shoulders of 1.5 meters wide. Traffic signs and safety barriers have been installed, and side drains have been constructed. Curves and slopes have been eased and sightlines improved. As in other areas of this study, the national roads other than that of the EINRIP project have also been improved with funds from the national budget (APBN). The improvements of the national roads in Flores Island were accelerated due to the Tour de Flores⁶, an international road bicycle racing event on 18–23 May 2016.

Table 3. EINRIP Roads in East Nusa Tenggara

Package	From	To	Kabupaten	Length (km)	Started at km	Ended at km
ENT-01	Ende	Aegela	Nagekeo	15.6	39.2	54.8

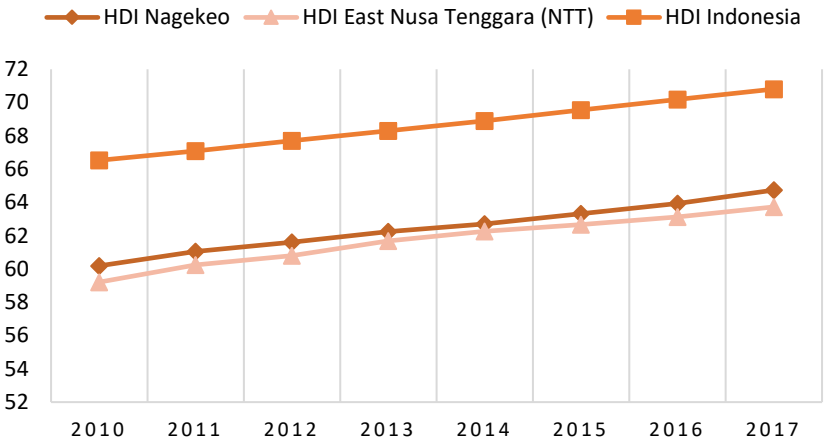
⁶Tour de Flores riders took on 743 kilometers of distance. It was divided into five stages, starting from Lantuka (Kabupaten Flores Timur) and ending in Labuan Bajo (Kabupaten Manggarai Barat) (Tanjung, 2016).

2.3 Welfare Levels

2.3.1 Human Development Index (HDI)

Overall, the welfare of people in Kabupaten Nagekeo has increased as evidenced by the steady increase of the HDI from 60.19 in 2010 to 64.74 in 2017 (Figure 2).

Figure 2. HDI of Kabupaten Nagekeo, 2010–2017



Source: Direktorat Analisis dan Pengembangan Statistik BPS (2018).

The HDI⁷ of Nagekeo is lower than national average but is consistently above the average of the provincial HDI. This is also reflected in the components of HDI, particularly educational attainment and health.

2.3.2 Education

People are increasingly aware of the importance of education and the average years of schooling in Nagekeo increased from 6.42 years in 2010 to 7.52 years in 2017. However, that figure shows that on average, people go to school only until the seventh grade. The 2016 social research carried out as part of the EINRIP monitoring and evaluation (M&E) program found that the *kabupaten* government had made efforts to make educational facilities more accessible, such as by providing new school buildings or using the one roof school (*satap*)⁸. There are more schools for elementary (SD), junior-high (SMP), and senior-high (SMA) levels than 2009 (the year before the baseline study).

⁷The HDI achievement has adopted new calculation method (Direktorat Analisis dan Pengembangan Statistik BPS, 2018).

⁸The one roof school (*satu atap/satap*), a program implemented by the Ministry of Education and Culture since 2005, combines primary education (grades 1–6) and junior secondary education (grades 7–9) in one compound, aiming at making the transition to secondary education both physically easier and financially more feasible, at least for poor students living in remote and isolated areas (Sammon et al., 2017).

2.3.3 Health Services

The life expectancy of the community in Nagekeo also slightly increased from 65.99 in 2010 to 66.36 years in 2017. The community access to health services is also better than 2008. Although Nagekeo does not have a regional public hospital (RSUD), there are two maternity hospitals, community health centers (*puskesmas*) in every *kecamatan*, and other types of health centers in every village (such as *pustu*⁹, *poskesdes*¹⁰, or *polindes*¹¹). However, for serious health problems, people are usually referred to the RSUD in Ende or Bajawa (the capital of Kabupaten Ngada). The improvement made to the national road through both EINRIP and APBN have made it easier to do this.

Since 2010, the number of *poskesdes* has increased from two units to six units, while the numbers of *puskesmas*, *pustu*, and *polindes* are the same. Now, every village in Kecamatan Nangaroro owns a health facility including the *puskesmas* which is located in Kelurahan Nangaroro.

Generally, the health of the Nagekeo residents in 2018 was better than in 2009 as the number of patients infected with malaria and upper respiratory tract infection (URI) had decreased. According to the 2016 social research, malaria was no longer one of the ten most widespread diseases in Nagekeo, while there have been no cases of malaria in Kecamatan Nangaroro since 2014. Meanwhile, the number of URI patients in Nagekeo decreased from 34,431 in 2010 to 20,192 in 2017 (BPS Kabupaten Nagekeo, 2018a: 73).

2.4 Economic Development

The economy of Kabupaten Nagekeo has been growing steadily during 2010–2017 (Figure 3). The achievement consistently around 4% pa with the highest growth is 5.0% pa in 2017 and the lowest is in 2010 with 4.4% pa.

At constant price, the total GRDP of Nagekeo rose from only Rp917 billion in 2010 to Rp1,255 billion in 2017 (Table 4). The farming sector¹² continues to be the largest contributor to the GRDP with Rp547 billion in 2010 to Rp664 billion in 2017. The second largest contributor to the GRDP is trade and services sector¹³ which grew from Rp195 billion in 2010 to Rp294 billion in 2017.

⁹secondary community health center.

¹⁰village health post.

¹¹village maternity center.

¹²This study classifies the industries to five sectors of economic activities, i.e., farming, trade and services, government expenditure, manufacture, and mining sectors. The classification aims to simplify the process of analysis.

¹³Trade and services sector includes 14 subsectors, i.e., electricity and gas; water supply, sewerage, waste management and remediation activities; construction; wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities; information and communication; financial and insurance activities; real estate activities; business activities; education; human health and social work activities, and; other services activities.

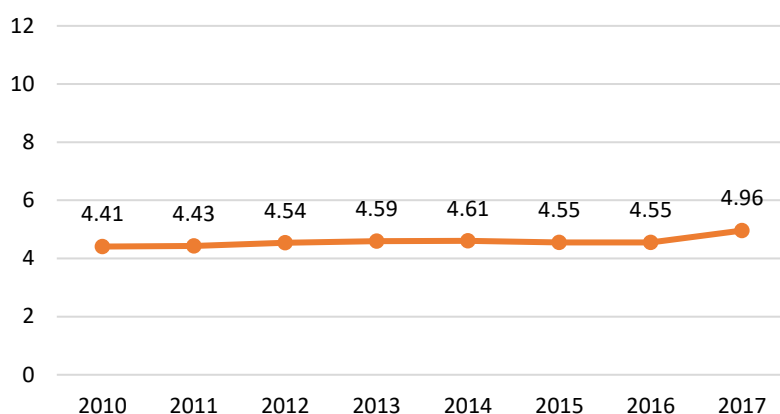
Table 4. Gross Regional Domestic Product of Nagekeo at 2010 Constant Market Prices by Industry, 2010–2017

Industry	Gross Regional Domestic Product (Million Rupiah)							
	2010	2011	2012	2013	2014	2015	2016	2017
Agriculture, Forestry, and Fishing	547,151	561,158	575,958	591,570	608,671	627,351	643,154	663,679
Mining and Quarrying	7,123	7,327	7,690	7,977	8,282	8,595	8,871	9,106
Manufacturing	18,292	19,179	19,603	20,052	20,444	20,997	21,577	22,232
Electricity and Gas	266	282	299	325	354	388	410	412
Water Supply, Sewerage, Waste Management, and Remediation Activities	116	119	123	126	131	135	140	145
Construction	43,603	45,798	48,485	51,268	53,968	56,973	60,079	63,226
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	48,158	50,920	53,527	56,500	60,253	63,235	67,172	71,371
Transportation and Storage	28,629	29,454	30,417	31,281	32,387	33,601	34,761	35,856
Accommodation and Food Service Activities	1,299	1,343	1,407	1,473	1,538	1,607	1,683	1,765
Information and Communication	39,597	43,866	47,404	51,785	56,303	61,040	66,967	73,051
Financial and Insurance Activities	12,299	13,009	13,878	14,720	15,543	16,436	17,428	18,496
Real Estate Activities	6,496	6,795	7,190	7,557	7,963	8,350	8,817	9,170
Business Activities	435	454	459	473	483	496	510	520
Public Administration and Defense, Compulsory Social Security	149,383	162,884	177,974	193,938	209,861	226,587	245,491	266,586
Education	11,694	12,278	12,831	13,541	14,271	14,950	15,596	16,201
Human Health and Social Work Activities	953	986	1,016	1,049	1,087	1,126	1,167	1,212
Other Services Activities	1,803	1,876	1,926	1,967	2,012	2,073	2,137	2,204
GRDP	917,295	957,727	1,000,189	1,045,601	1,093,552	1,143,940	1,195,958	1,255,230

Source: BPS Kabupaten Nagekeo, 2017.

However, the share of the farming sector tends to decline, while the trade and services sector increases its share to the GRDP. The proportion of farming sector contribution decreased from 59.6% in 2010 to be only 52.8% in 2017. Conversely, the share of trade and services sector increases slightly from only 21.3% in 2010 to 23.4% in 2017. Another sector that also makes a considerable contribution to GRDP is government expenditure. In 2017, the sector contributes 21.2% or about Rp267 billion.

Figure 3. Economic Growth of Kabupaten Nagekeo, 2010–2017 (% pa)



Source: BPS Kabupaten Nagekeo, 2017.

2.4.1 Farming Sector

a) Crop Production

The *kabupaten's* main crops are paddy, corn, cacao, and coconuts. Since 2013, the government of Nagekeo has been promoting the cultivation of these crops through the agricultural extension program. The *kabupaten* government is also encouraging farmers to cultivate cloves due to their relatively high price compared to other types of agricultural produce and has been providing the farmers with clove seeds. However, so far, the number of farmers who grow cloves is still relatively low.

Despite continually being the largest contributor to the regional income, the agriculture sector has been experiencing difficulties to develop significantly. The *kabupaten* government has taken several initiatives to develop the agricultural sector. Measures taken include mentoring and supervision from the extension field workers (PPL) regarding the modern cultivation techniques as well as provision of free and subsidized fertilizers from the agriculture agency. However, the farmers are reluctant to make full use of fertilizers as even the subsidized fertilizers are still perceived to be expensive.

The farmers are also reluctant to use the modern techniques suggested by the extension field workers and continue to use the traditional cultivation processes.

The lack of irrigation infrastructure is also a problem. At present, only Kecamatan Aesesa has a pumped irrigation facility. The irrigation supplies water to agricultural land covering an area of 3,525 hectares (BPS Kabupaten Nagekeo, 2018b).

b) Livestock

The main types of livestock kept are pigs, goats, and cows. According to the animal husbandry agency, as many as 70–80% of the people in the region raise pigs as they have significant cultural values.

The livestock sector also faces difficulty in developing as livestock farmers still use traditional breeding methods despite the animal husbandry agency's effort in disseminating information on the proper breeding technique. However, the animal husbandry agency has been providing vaccines for various livestock and non-livestock animals to ensure their health and the farmers are happy to accept this assistance.

c) Markets for Crops and Livestock

The process and area of distribution for crops and livestock are rather different. For crops, farmers would sell to intermediaries instead of selling them to big traders directly. Intermediaries will then sell the produce they have obtained to big traders. In terms of distribution area, produces are mostly distributed in Flores Island while some produce such as candlenuts and cashews are transported to Surabaya (East Java) as well. In recent years, intermediaries have slightly altered their business process by opening a kiosk in their village so that they are able to receive crops outside market day. Previously, they would only accept products on market day.

The main market for large livestock, such as cows, horses, and buffaloes, is Sulawesi. The buyers from Sulawesi have a network of people in the villages who act as agents. Purchased livestock are then transported to Sulawesi through the Marapokot Port on the north coast. Small livestock such as chickens and pigs are sold in weekly markets.

Prices of commodities in the *kabupaten* are subject to the fluctuation of international and national markets. While the prices of agricultural produce and livestock have increased substantially since 2013, they are very vulnerable to the significant market fluctuation since the *kabupaten* is yet to have an agency that is similar to the National Logistics Agency (Bulog) with the capability to buy and sell commodities to stabilize the price.

2.4.2 Industry

Based on an interview with the Nagekeo government, the growth of the industrial sector has been particularly limited since the government allocates a rather small investment for the sector in addition to the overall small investment by the private sector. In recent years, the main area for investment has been the salt mining industry, with the most recent one being in the establishment of PT Cheetham Garam in 2016 in Kecamatan Aesesa.

There has also been investment in raw material processing industries such as wood, asphalt, and agricultural produce. However, the activity and overall development of the processing industry is limited as people lack the necessary knowledge and the government has only made limited efforts to provide training. Nongovernmental organizations (NGOs) have entered the field, with Oxfam providing training for women in the production of coconut oil. However, in general, farmers are not interested in processing their produce even though they could sell their produce for a higher price. This

is because processing the agricultural produce requires additional time, unlike unprocessed agricultural produce which allows farmers to sell it immediately.

2.4.3 Transportation Infrastructure

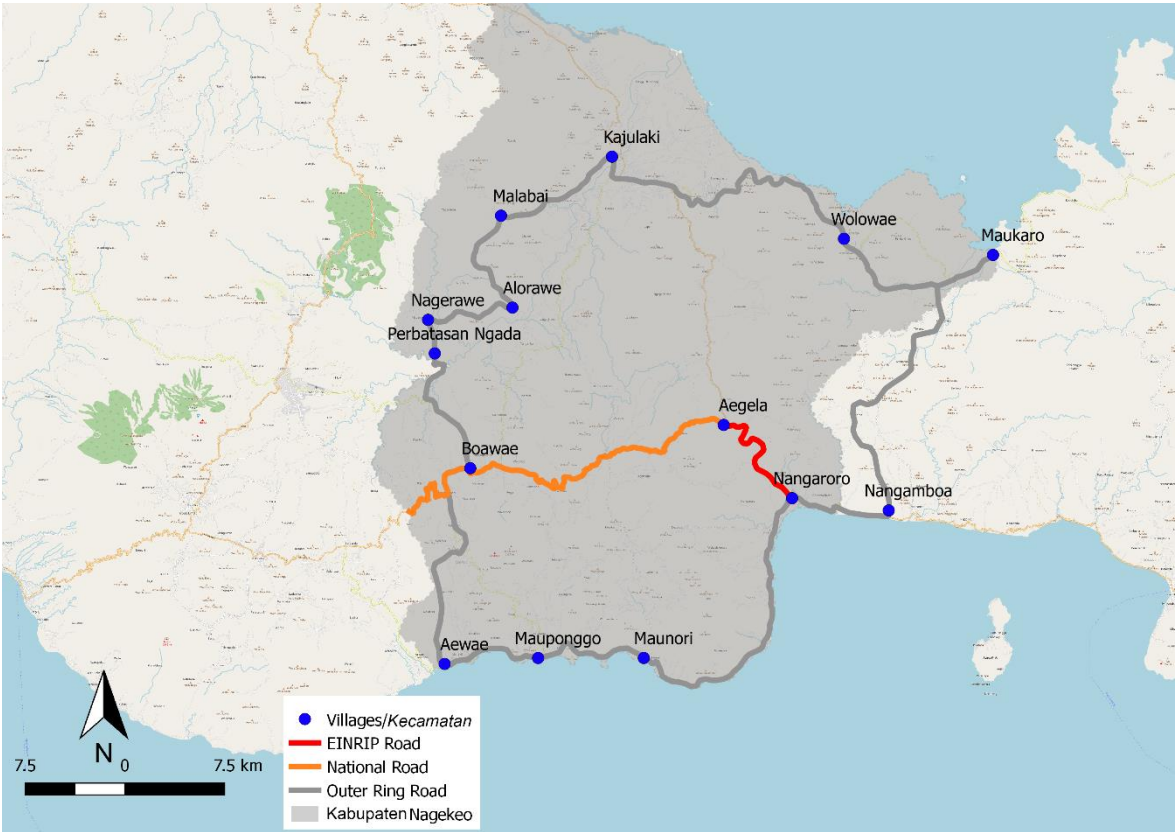
It is difficult to separate the condition of the regional economic development from the condition of transportation infrastructure. In Nagekeo, it is reflected in the unequal economic growth in the *kabupaten* whereby the southern part of the *kabupaten* is more developed than the north. The southern part of the region has the advantage of the Trans-Flores road, which provides residents of that area with higher accessibility, while the road network in the northern region is sparse and poor in quality. For example, Kecamatan Boawae is difficult to access as there is no bridge connecting the *kecamatan* with the surrounding area.

In 2017, the *kabupaten* government tried to boost the economy of the northern region by declaring the area a Special Economic Zone. However, since the plan was not accompanied by the necessary budget, it did not come to fruition as expected.

According to Bappeda, in 2018 the government of Nagekeo allocated Rp50 billion for all forms of infrastructure construction and maintenance, considerably less than the neighboring Kabupaten Ngada's allocation of Rp160 billion for road construction. The government of Nagekeo has attempted to increase connectivity with other *kabupaten* through the construction of the Nagekeo outer ring road (Figure 4), which stretches from the border of Kabupaten Ende to Jawakisa in Kecamatan Aesesa Selatan (a *kecamatan* in Kabupaten Nagekeo). Unfortunately, the road is in a bad condition due to poor maintenance.

The economic growth of the *kabupaten* is also limited by the inadequate seaports and airports. The *kabupaten* is yet to have an airport while the Marapokot Port is unable to handle significant volumes of cargo for three main reasons. First, the road leading to the port is in poor condition. Second, for freight transportation, the port only has a route license to Sulawesi, so it is unable to serve the larger markets in Java. Last, the port is small and unable to handle large vessels. As a result, traders and investors opt to utilize hubs in Kabupaten Ende, which are better able to handle large volumes of cargo.

Figure 4. Location of the Nagekeo Outer Ring Road



Source: Interview with Bappeda and Chamber of Commerce of Nagekeo, 2018.

2.4.4 Land Transportation

a) Road Transportation Services Regulations

The Dinas Perhubungan Darat or Land Transportation Agency (LTA) is responsible for regulating the freight and passenger transportation markets.

(1) Trucks

Freight transportation is subject to technical regulation (vehicle safety inspections, etc.), but there are no restrictions on the routes that can be run, and the rates are market-based, depending on the agreement between the operator and the customer.

(2) Passenger Transportation

With the exception of *ojek* (motorcycle taxis), which are no longer regulated, all vehicles carrying fare-paying passengers and their drivers are required by law be registered with the LTA. An annual licence fee of Rp150,000 is payable.

Further regulatory requirements include:

- i) Vehicles are subject to a regular six-monthly technical inspection.
- ii) Except for taxis, vehicles can only operate on registered routes: this applies to buses, mini/micro-buses, and travel minivans.

- iii) Taxis are not route restricted.
- iv) Fares are controlled and set by the LTA; charges for carrying baggage are not regulated but are negotiated between each passenger and driver.
- v) The LTA reviews fares from time to time, usually following changes in the fuel price. The last fare review in Flores was in 2015.
- vi) All registered public transportation vehicles must use yellow plates.

There are also large numbers of unregistered public transportation operators (black plates) operating illegally. They avoid paying registration fees and are able to switch routes should it be convenient. Fares charged by black-plate operators generally follow the official rates but are subject to negotiation between each operator and passenger.

b) Passenger Transportation Market

The land transportation sector has grown considerably in the past 10 years, with increasing numbers of operators of both passenger and freight vehicles in response to the rising demand for transportation, particularly for trips to the weekly markets. In particular, there has been a marked increase in the number of illegal, black-plate, passenger transportation operators, who are able to offer faster point-to-point services, as they do not stop to pick up passengers along their route.

A range of vehicle types are involved, such as minibus, minivan, wooden bus¹⁴, pickup truck, *ojek*, and travel minivan, which is the newest form of passenger transportation service. The usage of wooden buses has been declining as the condition of the road in the *kabupaten* has improved and it becomes possible to use less robust vehicles. Currently, wooden buses are operating as passenger transportation in isolated areas or areas with difficult terrain. Pickup trucks are used to transportation goods and passengers although the law only allows them to transportation goods.

The overall improvement of road infrastructure—village, *kabupaten*, and national roads—combined with the increase in income, results in an increasing demand for public transportation. However, the growth in the number of people using public transportation has not kept pace with the increase in the number of passenger transportation operators. As a consequence, there is fierce competition between operators combined with a reduction in the numbers of passengers per operator. In response to the saturated market, passenger transportation operators attempt to establish a more personal relationship with passengers so that they want to use their service again in the future. A number of passenger transportation operators have also changed their route to the less crowded ones to be able to obtain more passengers.

¹⁴A wooden bus is a local mode of transportation which is a large truck with a wooden cargo compartment fitted with passenger seats and a roof.

c) Freight Transportation Market

The competition in the freight transportation market is not as intense as that in the public transportation market, though it varies by area of operation. Ende Port in particular attracts a lot of operators from other *kabupaten* such as Maumere, Nagekeo, Bajawa, and even Labuan Bajo, while the goods to be transported are limited. On some days, there are no incoming containers to be transported from the Ende Port. A queuing system has been established at the port and operators attempt to reduce the unit cost of carrying cargoes by overloading their vehicles.

The situation with freight services to local markets is distinctly different. The improvement of road infrastructure leads to weekly markets being more accessible, thus increasing demand for freight transportation, without generating an excessive increase in supply of transportation services. Nevertheless, to compete, freight transportation operators establish a more personal relationship with farmers so that farmers will still use the same operator in the future.

As noted previously, there are no regulated rates for cargo, which are set by negotiation between the operator and the shipper (customer), but operators naturally take account of fuel costs, distance, weight of the goods and rates charged by competitors in the market.

d) Impact of Road Improvement on Operators

The road improvement has benefited transportation operators as vehicle spare parts have become more durable. Vehicle drivers have stated that vehicle parts such as shock absorbers, tires, and brake linings last longer after the road improvement. Fuel consumption has generally decreased, but a number of freight transportation operators experienced an increase of fuel consumption since the improved road condition enables vehicles to carry a heavier load.

In principle, the road improvement should make it possible for operators to use their vehicles more intensively (making more trips per day). However, because of the increase in the number of competitors (particularly in the passenger market), the operators have not been able to take advantage of the reduction in travel time and are undertaking fewer trips due to the reduced number of passengers they can attract.

In the regulated passenger market, fares are set by the LTA, so the benefits of reduced operating costs are not passed onto the passenger as lower fares but are retained by the operator. In the more competitive black-plate passenger and freight markets, it would be reasonable to expect some reduction in fares and freight rates, but the social research has uncovered little evidence regarding the fare reduction. Most transportation providers reported the opposite.

2.4.5 Trade and Services

As previously mentioned, the trade and services sector has been slightly growing in the last ten years (2008–2018). Trade has been developing, as evidenced in the increased number of both buyers and sellers in the weekly markets. This has been particularly attributed to the increased accessibility to the market. With an improved road

infrastructure, traders and buyers of commodities from outside the *kabupaten*, namely Maumere and Ende, have started to conduct their business in the weekly markets across Nagekeo. The market in Nangaroro is particularly favored by buyers and sellers due to its proximity to the improved national road, making the market much more accessible.

As competition has increased, traders are looking for new strategies to maintain their businesses. For example, some traders have been opening kiosks in the villages so that they can accept produce from farmers outside of days of weekly markets. Through the kiosks, intermediaries are also able to offer loan to the farmers. With the loan, the farmers are able to purchase their household needs even before gaining income from harvesting. Leniency through loan is aimed to prevent farmers from switching to other intermediaries.

Another challenge faced by traders is the heightened flow of information experienced by everyone, including potential sellers. Traders have also reported that the easy access to information due to the increased usage of mobile phone has made it difficult for them to attract potential sellers with the prices they offer.

Aside from traders and merchants in the weekly markets, the stalls in *kecamatan* have also been experiencing growth, particularly those located by the side of the improved national road since the road improvement also brings heavier flow of traffic. The locations of the stalls matter to potential buyers. The closer they are to the road, the more buyers they attract due to their accessibility.

III. Desa Woedoa

3.1 Overview

Desa Woedoa is located in Kecamatan Nangaroro and is bordered by Desa Bidoa and Kelurahan Nangaroro. The EINRIP road, which forms part of the Nangaroro–Aegela route (see Figure 5), passes through Desa Woedoa. The route is a main road connecting several cities between the eastern side (Ende, Maumere, and Larantuka) and the western side (Bajawa, Ruteng, and Labuan Bajo) of Flores Island. The route also connects Nangaroro with the capital of Kabupaten Nagekeo (Mbay).

Woedoa occupies an area of around 16.2 km². The village consists of four *dusun*¹⁵ with a total of 12 neighborhood units (RT), increased from nine RT in 2011. Woedoa has a population of 914 individuals and 214 households. The names of *dusun* in Woedoa are Ateman, Kodikapa, Sorowea, and Boalobo. All of the *dusun* are located in proximity to the national road improved by EINRIP. Dusun Sorowea is the center of the village administration as the village administration office and the only *pustu* are located here.

In general, villagers' houses are located along the roadside of the national road. The 2016 study found that some villagers had requested PT Conbloc, the contractor responsible for the national road improvement, to fill up the land on the slope below the level of the road so that the land has the same height as the road. After that, villagers built a house or a place of business on the side of the national road. Typically, a land owned by a household would consist of a residential land and a land allocated for farming, regardless of the occupation.

3.1.1 Infrastructure

All the houses in the village have access to electricity. However, water infrastructure continues to be less developed. The village currently has two dams located in Dusun Boalobo and Dusun Sorowea, but those dams could only be utilized for livestock. To anticipate household needs for clean water, in 2016 part of the Village Fund was allocated to build clean water network so that by 2018, all households could access clean water. However, to store clean water, the village still requires three water retention basins which have not been constructed due to lack of funds. The request for fund assistance from the regional budget (both level I and II) has been made, but it has not been granted. Besides that, the village government has allocated Village Fund for the building of drains in Dusun Boalobo to overcome the flood problem there.

With the improvement of the national road, the village government has been motivated to build or improve the existing village roads, especially the farm feeder road as most of the villagers are farmers. The program is not yet completed, but the main road in the village, which leads to the national road, has been improved by using the Village Fund program. Some of the improved village roads are connected to the plantation area. The

¹⁵A *dusun* is an administrative area within a village, consisting of a number of RT.

improvement of village roads has made access easier. As a result, the number of peddlers and intermediary traders from outside of the village has increased.

Figure 5. Desa Woedoa and Its Surroundings



Source: In-depth interviews with local agencies, 2018.

3.2 Welfare Development

Welfare in Desa Woedoa has been improving steadily. According to the Head of Kecamatan Nangaroro, the level of Woedoa welfare is in the middle compared to the other villages in Nangaroro. Currently, the status of the village has been upgraded to a developing village, one of the indicators being the number of poor households in the village, which has declined from 62 to 54.

The welfare growth is reflected in the shift of household composition occurring between 2008 and 2018. While there is no household which could be classified as a rich household,¹⁶ the number of households occupying the relatively prosperous category surpasses the number of households in the other two categories: poor and very poor (Box 1). According to the village government, in recent years there has been a trend in which a number of poor households moved upward to the relatively prosperous category. Those households which have moved up the social ladder usually have multiple sources of income such as owning livestock as well as other businesses and harvesting commodities.

Box 1

Welfare Classification Based on Interviews with Woedoa's Village Officials

In Woedoa there are three categories of welfare, namely relatively prosperous, poor, and very poor.

Households categorized as relatively prosperous are characterized by the ownership of a permanently built house, ownership of a land of approximately 2–3 hectares, and household head having what is considered as a respected occupation, such as a civil servant or a business owner.

Poor households, which were the majority between 2008 and 2018, are characterized by the ownership of a semipermanent house and a land of approximately 0.5 hectare.

The very poor households are those who also own a land of 0.5 hectare but live in a nonpermanent house.

3.3 Livelihood

The dominant occupations in the village are crop farmers, livestock farmers, and seasonal construction workers. Farm and plantation produce include rice, corn, cassava, candlenuts, cashews, coconuts, and cacao. The villagers still practice multicrop cultivation system where they raise several crops on one plot. The main crops are rice, candlenuts, and corn. Rice and corn are commonly for household consumption whereas other commodities are sold.

a) Tree Crops

Desa Woedoa has a high potential for growing cloves, owing to its moderate and humid climate in certain areas of the village. Cloves are now being grown in some highland areas such as in Dusun Sorowea. In the last three years before this follow-up study was conducted, a growing number of farmers have shifted their interest from growing candlenuts to growing cacao and cloves since they command high prices. However, cloves require a lot more maintenance than candlenuts, which can be easily grown due to their suitability to the village's climate and soil.

In general, commodity prices are subject to the demand and available supply in the market. The plantation commodities are usually either sold through intermediaries coming

¹⁶Statement of village officials.

to the village or directly to the traders in the weekly markets. Table 5 shows prices of main commodities in Desa Woedoa during the data collection in 2018, 2016, and 2010.

Table 5. Commodity Prices (Rp000 per kg)¹⁷

Commodities	2018	2016	2010
Candlenut	36.0	13.0	13.0
Cashew	15.0	12.0	8.0
Copra	4.7	9.0	5.0
Cacao		n/a	n/a
Dried	30		
Semi-dried	20		
Wet	15		
Clove	125	125	50–80

Source: In-depth interviews with farmers and government officials, 2018.

b) Rice

There is no irrigation system in the village and farmers adopt traditional, rainfed farming techniques and harvest scheduling. Therefore, the production of rice in Desa Woedoa is susceptible to weather changes. For example, the village experienced a long dry season in 2015, caused by El Niño, which resulted in harvest failure for rice and corn. Rainfed rice field production could be more productive if the farmers make use of fertilization. Fertilization system has not become the farmers' tradition since they do not want to take a risk of fertilizing their plants amid the erratic weather condition. Furthermore, the rainfed farmers' access to subsidized fertilizer is limited. For the farmers, a fertilizer which costs Rp90,000 to Rp115,000 per 50 kg for a 0.25-hectare farm area is still perceived to be unaffordable.

The village officials who have used fertilizers for their rainfed crops (rice and corn) in the last couple of years stated that their harvest increased four to five times the earlier amount after they applied fertilizers. As a result, they can use the harvest not only for their own consumption, but also for sale; thus, they could make an additional income.

c) Livestock

Villagers have become more interested in livestock farming, particularly pig farming, in the last few years. In general, villagers tend to keep a small number of farm animals, such as cows, goats, pigs, and chickens, which they sell or consume, but pig farming has been growing due to the animal's cultural value. Pigs are customary dishes in several cultural and religious ceremonies. Pig farmers can sell an average of ten pigs per four months. They usually sell pigs in the weekly markets in Raja, Boawae, and Mbay. The farming method, which has been improved, includes keeping pigs in a pen and using the fattening

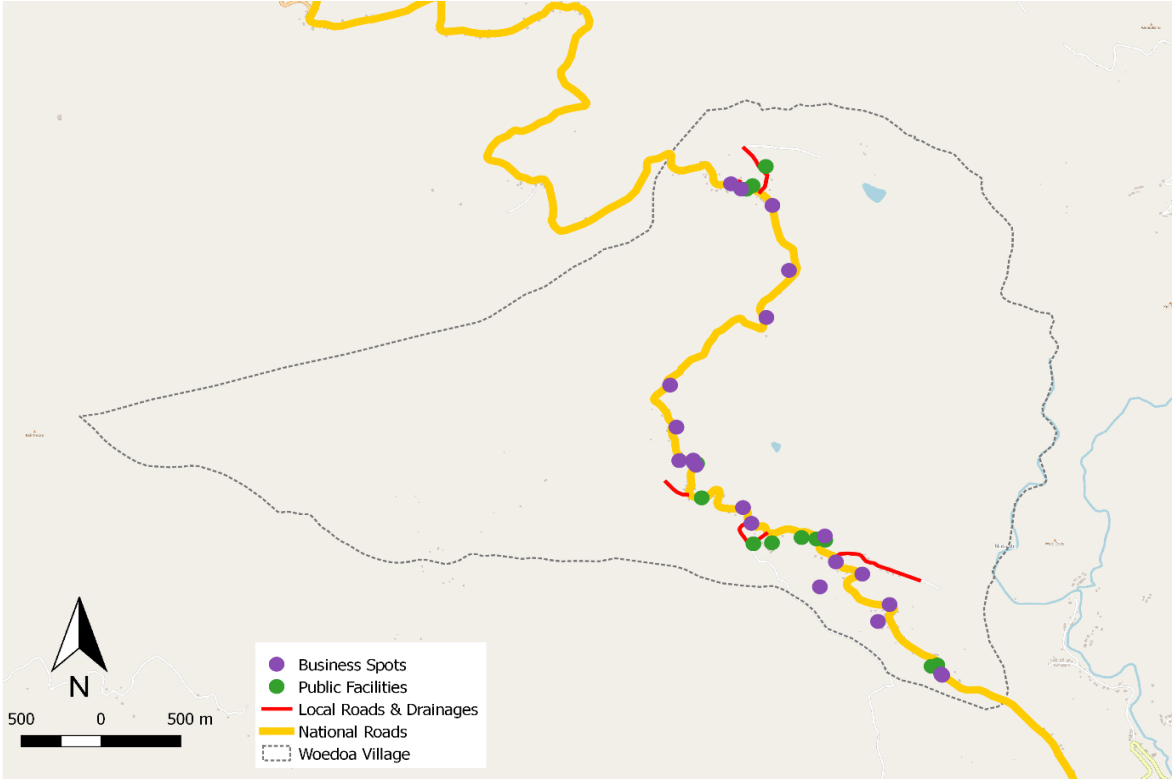
¹⁷Prices in 2016 and 2010 were based on the report of the 2016 study.

system by feeding them with pig feed purchased from the store. Another form of livestock farming in the village is through the plasma scheme used by the broiler chicken business owner.¹⁸ Due to the high capital required for broiler business, there is only one person in the village that owns a broiler business through the plasma scheme with PT NIS for almost four years.

d) Other Businesses

The improvement of the national road brought upon development of new businesses and requests for commodities previously considered not sellable. In the village, businesses are scattered among a number of sectors such as trade, services, and transportation (Figure 6).

Figure 6. Business Spots Along the National Roadside in Woedoa



Source: Transect walk with village officials, 2018.

The new economic activities emerging along the national road which was improved by EINRIP include fruit businesses, furniture workshop businesses, and concrete brick-making businesses. In terms of the fruit businesses, for example, villagers can sell soursops for Rp10,000 per fruit and sweet potatoes for Rp3,000 per kg (or dried sweet potatoes for Rp18,000 per kg). Since the road goes through the forest, vehicle drivers who pass by the road can see the forest and would sometimes request fruits or other crops (such as sweet potatoes and mushrooms). In general, the village officials and traditional leaders believe

¹⁸A small-holding partnership (plasma scheme) means the owner prepares land and chicken coops while the company is responsible for providing chicks, feed, medicine/vaccines, counseling/training, and business permits. After 35 days, the company will take all the chickens at a price that has been agreed upon previously. In the early days of business activities, the company also provides routine assistance every two or three days.

that the national road improvement has positive effects on the economic growth of the people in Woedoa.

The better and improved road has encouraged people to open businesses at the roadside. Some people build a stall or a kiosk; some people just use a table to display and sell their goods. People sell bananas, vegetables, fruits, woods, and many others. The ones who do not have kiosks can entrust their goods to those who have. (Village official, Desa Woedoa, 2018)

There is an increase in the number of kiosks and stalls as well as motorcycle workshops and tire repair shops. There are three intermediary traders in Woedoa who own their own kiosks and accept commodities such as candlenuts, cashews, cacao, and cloves throughout the week. Such intermediary scheme began after the national road was improved by EINRIP. The existence of the kiosks by the side of the road encourages farmers to sell their crops to the kiosks as they are closer than the market, and farmers do not have to wait for the market day to have an income. Meanwhile, there has been an increase in the number of transportation operators in Woedoa between 2013 and 2018. They use pickups as the means of transportation. The increasing number of passenger transportations services in Woedoa makes villagers' access to the market easier.

3.3.1 Development Programs

Desa Woedoa has received several programs from both the central and the *kabupaten* governments as well as nongovernmental organizations. Table 6 shows some programs in Woedoa during the data collection in 2018.

Table 6. Programs and Assistances in Desa Woedoa

Name of Program/ Assistance	Notes
Village Fund	<p>The Village Fund is provided by the central government. It is mostly allocated for infrastructure development. The proportion ratio is around 30:70 (30% for empowerment and 70% for infrastructure development) or 40:60 (40% for empowerment and 60% for infrastructure development). In 2015–2016, the Village Fund was used to construct agricultural feeder roads, the neighborhood road, as well as health and education facilities.</p>
Budget for People toward Prosperity (Anggur Merah)	<p><i>Anggur Merah</i> is a provincial government program which distributes funds amounting to Rp250 million per village for the development of productive economic activities.</p> <p>In Desa Woedoa, <i>Anggur Merah</i> became a cooperative¹⁹ in 2013 and provides a credit loan up to Rp10 million, which is mainly used to start a business. However, the cooperative prioritizes those who raise goats because it already has a trading partner interested in goat breeding in the</p>

¹⁹The cooperative (*koperasi*) in Indonesia was first established in 1896 by a mayor in Purwokerto, Central Java to protect the citizens from being trapped by loan sharks. Savings-and-loan cooperatives were the first type of cooperatives established, which then developed to agricultural-sector cooperatives. According to the data from Ministry of Cooperatives and SMEs, until 2016, there were 212,135 units of cooperatives with 37,783,160 members in total (Azhari et al., 2017).

Name of Program/ Assistance	Notes
	village. Therefore, after the establishment of the cooperative, the number of goat farmers has increased significantly.
Village-owned Enterprise (BUMDes)	Desa Woedoa has established BUMDes in the form of a savings and loan enterprise since 2016. The village has prepared Rp53 million for the initial capital. In 2018, there has been around Rp234 million circulated through savings and loan activities. Besides offering savings and loan services for business capital, BUMDes also assists the community in marketing their livestock products.
House rehabilitation assistance program	The <i>kabupaten</i> government provided the assistance in 2017, amounting to Rp5 million per household for poor households with uninhabitable houses. There are 56 houses receiving this assistance.
Self-help Housing Stimulus Assistance (BSPS) program	The provincial government provides the BSPS in 2018, amounting to Rp15 million per house; the beneficiaries are 50 poor households. The beneficiaries must be willing to cover the rest of the expenses. There are 42 houses beside the national road improved by EINRIP receiving the assistance. The other eight houses are located quite far from the national road. The house construction is mostly located besides the national road because the housing lots of the communities are mostly located along the road.
Rice and corn seeds and the subsidized fertilizer assistance	The agriculture agency provides them every year. Farmers' groups need to submit a proposal to the agriculture agency in order to obtain seed assistance. Also, the purchase of the subsidized fertilizer must be done via farmers' groups.
Training for pig farmers	On 20 May 2018, Hivos (an international nongovernmental organization) conducted a training program on pig feed focusing on how to fatten the pigs and the type of feed suitable for pigs. The event was held at the village administration office and was attended by the livestock PPL, village staff, and representatives from farmers' group. The training was a part of BUMDes program for pig farming, which started in 2018.
Empowerment Program for Cacao Farmers	In 2018, Nagekeo Cocoa Learning Center (CLC) under Sahabat Cipta Maumere Foundation conducted a training on cacao farming techniques.

Source: Interview with village officials, 2018.

3.3.2 Social Assurances

Other government programs, such as the Family of Hope Program (PKH), National Healthcare Financing Scheme-Indonesia Health Card (JKN-KIS), and Smart Indonesia Program (PIP), have provided enormous assistance to the community. This is because the cash subsidy programs, such as PKH and PIP, contribute to the household income. Meanwhile, although not contributing to the household income, the JKN-KIS program helps reduce the household health expenditure.

a) Extension Services

In Desa Woedoa, there is a PPL handling all types of crops. The agricultural agency provides an assistance for the 13 farmers' groups in the villages in the form of seeds, fertilizers, and PPL guidance. The PPL visits the village every Monday. The assistance received by the farmers' groups depends on the proposal submitted by the farmers' groups to the PPL. In the last couple of years, PPL has started providing guidance for farmers regarding clove farming. At the moment, in Woedoa, there are three farmers' groups that receive clove seeds from the agricultural agency. Those farmers are farmers who already have their own land in the highlands in Kodikapa and Sorowea since cloves can only be cultivated on highland. More intensive mentoring activity from the PPL has enabled farmers to have more advanced techniques of farming.

3.3.3 Landholding

Every villager in Woedoa has equal access to the land as every household has a residential area and farmland or plantation field. In addition to the individually owned land, there is a customary land. According to the Head of Desa Woedoa, the customary law regulates how land can be acquired. Idle land can be cultivated for agricultural purposes by villagers under a customary agreement. This land will be owned by the person cultivating it, but it cannot be sold. Land is usually owned through inheritance. Females, however, are not entitled to the idle land. Requests to cultivate idle land could only be asked by the male member of the community. So far, land issues have been limited to different understanding regarding land boundaries, and these issues can usually be resolved through negotiation and mediation in accordance with the customary system. The institution responsible for managing the customary land issues is called Lembaga Pemangku Adat (LPA), a community institution that has the authority to manage and resolve issues related to customs and traditions.

The study found that the price of land, especially the one situated along the national road improved by EINRIP, has increased. The Head of Desa Woedoa stated that the land price in 2018 is Rp15 million per 1,000 m² while it was only Rp8 million per 1,000 m² previously. The increase of the land price is due to the increasing number of people from other villages attracted to buying the land along the national road, especially for business purposes.

3.3.4 Education

The level of education of the people in Woedoa is getting higher. In recent years, the minimum educational attainment among villagers is high-school level with no distinction between males and females. Villagers now have easier access to education particularly since a junior high school was built in the village in 2015, so students did not have to go out of the village. In Woedoa, there are four education facilities in total: two elementary schools, one junior high school, and one kindergarten. One elementary school and the junior high school are located in Sorowea, while the other elementary school is located in Dusun Boalobo.

The Head of Desa Woedoa stated that every year many people send their children to high schools in Kelurahan Nangaroro and to colleges in Ende since the access to towns or cities

has become easier, thanks to the improved national road. Meanwhile, according to the chairman of Bolo Chapelry²⁰, schooling is now considered as both a necessity and a prestige. Pursuing higher education is now becoming a symbol of pride. People are ashamed of not sending their children to school. Many villagers who had finished their college education returned to the village and will have an occupation in the cooperatives or in the village government. Given the increasing demand for motorcycle workshop services and heavier traffic on the national road, parents are interested in sending their children to automotive or mechanic schools given the potential of opening a motorcycle workshop along the side of the national road.

3.3.5 Health Care

There are three integrated health service posts (*posyandu*) available in Woedoa. With the road improvement, villagers are able to easily and more comfortably access *puskesmas* located in the *kecamatan*.

3.3.6 The Role of Women

Women in Woedoa are involved in the activities in the village, including the farmers' gathering group and Family Welfare Empowerment Program (PKK)²¹. The PKK is usually more active during the national holidays (such as participating in cooking competitions and other similar competitions at the *kecamatan* level). In addition, women are also involved in road construction projects where they usually have the task to provide food and drinks. According to the community leaders in Woedoa, traditionally the roles of men and women are different. The *mosolaki* (traditional leader) stated that women have double roles because they are responsible for doing domestic chores as well as having their share of work at the farm or plantation. In general, the study mapped different roles between women and men in several aspects as presented in Table 7.

²⁰Chapelry is a part of the structure of Catholic churches within a parish. In Desa Woedoa, there are two chapelries, namely Sorowea Chapelry and Bolo Chapelry.

²¹Family Welfare Empowerment Program (PKK) is a women's organization working with the government to promote social welfare, beginning at the family level (Adzmy and Disyacitta, 2018: 2).

Table 7. Gender Roles in Woedoa

Aspect	Women	Men
Position in the household	Women are positioned as "helpers".	Men are the breadwinners of the household.
Domestic work	Women take care of domestic chores such as cooking, washing the dishes and clothes, cleaning the house, and taking care of livestock.	Men also have some domestic chores, such as taking their children to school. Men whose wives are migrant workers also have to raise and take care of their children.
Farming	Women usually help their husbands with work in the field.	Men usually take care of the farm.
Livestock management	Women take care of small animals, such as pigs and goats.	Men usually help by looking for food for the bigger animals, such as cows.
Commodities' selling	Women usually sell crop commodities and chickens.	Men usually only sell pigs as it is difficult for women to carry pigs.
Others	For families that have stalls or kiosks, women are usually the ones who take care of them.	-

Source: Interview with village officials and a female village activist, 2018.

As shown by the table, the role of women in the family's economic activities is very important. Women are responsible for the farm or plantation, livestock, and domestic work. They also play a role in selling agricultural products and livestock in the market. A female village facilitator in Desa Woedoa said, "All the activities in pig farming are done by women. Men, mostly young men, feel embarrassed to deal with pigs."

However, although women play an important role in the household's economy, there are jobs that are still considered taboo to be done by women, such as working outside the village or going abroad. The community will treat with contempt women who leave the village to work. Women are also considered to have insufficient technical skills in work related to house construction. They should not be involved in traditional rituals such as hunting and only be in charge of cooking the hunted animal.

Traditionally, women cannot be involved and do not have a voice in public matters, such as village forums or family discussions. However, the chairman of Bolo Chapelry stated that those old beliefs have gradually faded away, especially after people have been exposed to information about gender equality, which has been advocated by the village officials and religious figures. Nowadays, women are required to get involved in village forums. Since the National Program for Community Empowerment (PNPM) was launched and the Village Law was enacted, the role of women in determining policies at the village level tends to increase. There is a regulation which requires the presence of women (30% of the total participants) in village development planning meeting (*musrenbangdes*).

Therefore, nowadays women are actively voicing their needs at the village level. For example, they have proposed the construction of village roads and cooking training for women, as well as made requests for village fund allocation for PKK activities.

Regarding family or customary matters, however, women still do not have proper representation. For customary affairs, women have no right to speak and make decisions. For example, women should not make decisions in land affairs, community conflicts, *belis* (dowry) agreement, and land disputes. So far, the church has been playing a key role in changing the perspective on women's position in society. The church always brings up issues on gender equality in its regular sermons and in pre-marriage counseling to prospective spouses. The church also encourages women to be actively involved in its activities such as handicraft and the church's gatherings.

The national road improvement brings about several changes to women activities. Economic participation of women has been higher since the national road was improved. Women's access to the market is easier, more efficient, and more comfortable. With the road improvement bringing more outside intermediaries directly to the farmers' house, women have less urgency to go to the market to sell agricultural products. With shorter travel time to the market, women have more time to do their domestic work or even manage a stall, thus helping the household's economy. In general, households started to open stalls during and after the road improvement work. Aside from opening stalls, the improved national road also encourages women to sell their agricultural products, such as fruits and firewood, and other things along the road.

3.4 Development of Welfare by Occupation

3.4.1 Farming Sector

a) Rice Farmers

In general, the rice field in Desa Woedoa is rainfed. The income of rainfed rice field farmers in 2018 is lower than in 2008. This is because in 2008 the land was still new and, therefore, more fertile. By 2018, however, the land had been cultivated so frequently that it was no longer fertile. Land that is planted repeatedly becomes infertile, which can be seen through soil hardening. Inadequate water sources have made it difficult for the rainfed rice field farmers to transform their rainfed farmland into an irrigated farmland. As a result, they continue to be dependent on rainfall. To solve this problem, a water retainer made of wood was built to irrigate the dry soil when it rains.

The usage of fertilization has not become a part of the farmers' tradition. As stated in the previous section, the rainfed rice field farmers are not really interested in using fertilizers and they continue to use the traditional method of cultivation, which is the one that provides no specific treatment to the crop and the land. With the unpredictable weather condition, they are afraid of using fertilizers as plants will die if the weather suddenly gets warmer and there is not enough water after the fertilizer has been applied.

Rainfed rice farmers cultivate rice on a small scale because they are concerned with the erratic rainfall. Therefore, to anticipate crop failure, they plant other crops such as

candlenuts, cacao, corn, and cashews using a multicrop cultivation system. Farmers who have irrigated rice field also adopted the same system by planting rice on their irrigated rice fields and other commodities on their other fields. If the rice yield drops and it is difficult for them to harvest paddy, the farmers will then sell other commodities to buy rice for the household's consumption.

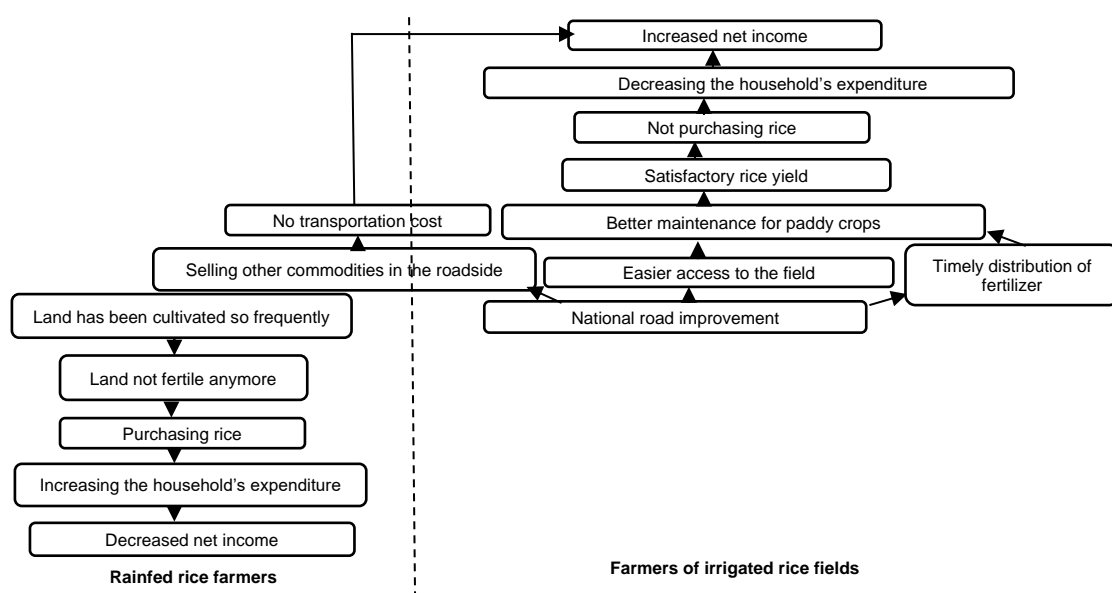
In certain areas in Woedoa, there is also an irrigated rice field. In contrast with the rainfed rice field farmers, the income of farmers of irrigated rice fields increased slightly in 2018 compared to that in 2008. They tend to plant on a larger scale because they have access to irrigation water and fertilizers distributed by PPL.

The national road improvement has an indirect influence on the farmers' net income since the harvested rice is for personal household consumption and no sold. The improved roads help them manage their land better; if the yield increases, the household can spend less money on purchasing rice for their own consumption, thus increasing the household's net income.

Prior to the national road improvement, the fertilizer distribution for farmers of irrigated rice fields was often carried out by PPL after the planting season had finished. With the road improvement, PPL can distribute fertilizers to the farmers on time, causing the harvest to have better quality and more promising amount. The road improvement has also facilitated farmers with better access to their fields, reducing their travel time to the fields so that farmers can go farming more frequently. Combined with a timely visit from the PPL for the fertilizers, farmers of irrigated rice fields have been experiencing an improvement in their agricultural products, in terms of both quantity and quality.

The following diagram (Figure 7) shows the farmers' assessment of the factors affecting their income as developed in the mini focus group discussions combined with the findings from follow-up and in-depth interviews with relevant stakeholders.

Figure 7. Factors Affecting the Change in Rice Farmers' Income



b) Pig Farmers

The majority of pig farmers in Woedoa have been earning higher income in 2018 than they did in 2008. In 2008, the farmers cared for their livestock traditionally, while in 2018, they have adopted a more modern farming method by ensuring sufficient nutritional intake of the pig feed and making piggens. Pig farmers have received some training for a better and more measured pig farming method. The training has been conducted by the animal husbandry agency since 2014 and by a local NGO since 2016. Since the farmers received a variety of extension services from the animal husbandry agency and the NGO, their knowledge has increased. The farmers are given information about the importance of yearly vaccination for the livestock. They have also become knowledgeable of the types and suitability of feed for their pigs. In addition, the extension services help the farmers better understand the appropriate vitamins for their pigs and how they can keep the piggens clean.

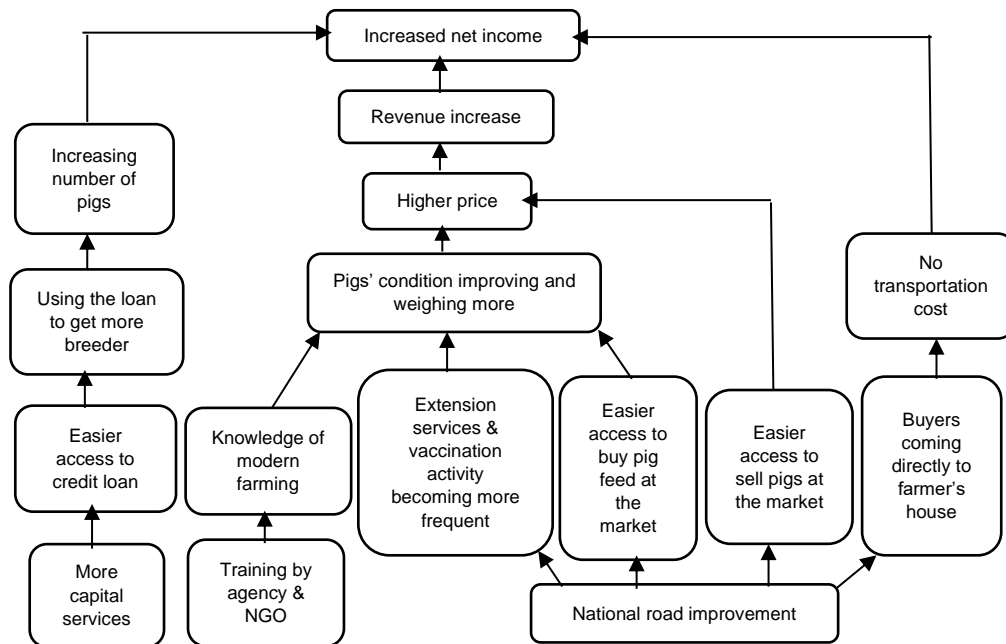
Nowadays, there are more capital lenders with lower interest rates than in the past. This makes it easier for farmers to expand their business. They have used the loans to get more breeder pigs to produce piglets.

In Woedoa, the most referred capital lender is Koperasi Anggur Merah. Koperasi Anggur Merah is a cooperative which became a financial institution in 2013. It was established by the provincial government to distribute funds amounting to Rp250 million per village for the development of productive economic activities. Villagers reported that they were able to borrow up to Rp15 million with an interest rate of 2% per annum. Another available capital lender is People's Business Credit by BRI Bank. Lenders are allowed up to Rp15 million with an interest rate of 7% per annum.²²

Figure 8 shows the pig farmers' assessment of the factors affecting their income as developed in the mini focus group discussions, combined with the findings from follow-up and in-depth interviews with relevant stakeholders.

²²Information obtained from the Bank BRI official website: <https://bri.co.id/kur>.

Figure 8. Factors Affecting the Increase in Pig Farmers' Income



The improved national road condition helps the officials from the animal husbandry agency to provide extension services such as monitoring and vaccination for the villagers' livestock. A notable effect of the extensions is that the growth of farm animals has become significantly faster.

The current road condition also makes it easier for livestock farmers to go to the market in Mbay or Ende to buy animal feed. With a more efficient process of buying animal feed, the nutrition intake of the livestock is now better maintained which leads to significant increase in the animals' weight. Nowadays, farmers are able to sell three-month old farm animals because they have enough weight.

In general, the sales of farm pigs usually increase significantly during the months of July, August, September, and October. In those months, people often hold important events, such as weddings, baptism ceremonies, and other customary rituals. In May and June, pig sales reach the lowest point as new school year begins. During this time, people use their money to pay for their children's school needs. Also in May and June, farmers usually sell the livestock to intermediaries, while during a festive season, many buyers will instead come directly to the farm to purchase pigs.

After the national road improvement, there have been more transportation services for passengers and goods launched. This condition enables pig farmers to sell their livestock to the market in Raja, Boawae, Mbay, and Ende easily. Travel time has become shorter because the road condition is now smooth and comfortable. In the past, it took one and a half to two hours to go to the market in Mbay, but now the travel time is only one hour. The improved national road also enables various retail buyers to go directly to farmers' places to buy livestock. Those buyers are usually from the neighboring villages or *kecamatan*, and some even come from Ende.

However, the improved road condition has increased livestock theft incidents. Before the road was improved, thieves stole farm animals without motorized vehicles. As seen during this follow-up study, the livestock can be stolen more easily using pickup trucks. This condition is worsened by the fact that there is lack of streetlights along the road.

c) Candlenut Farmers

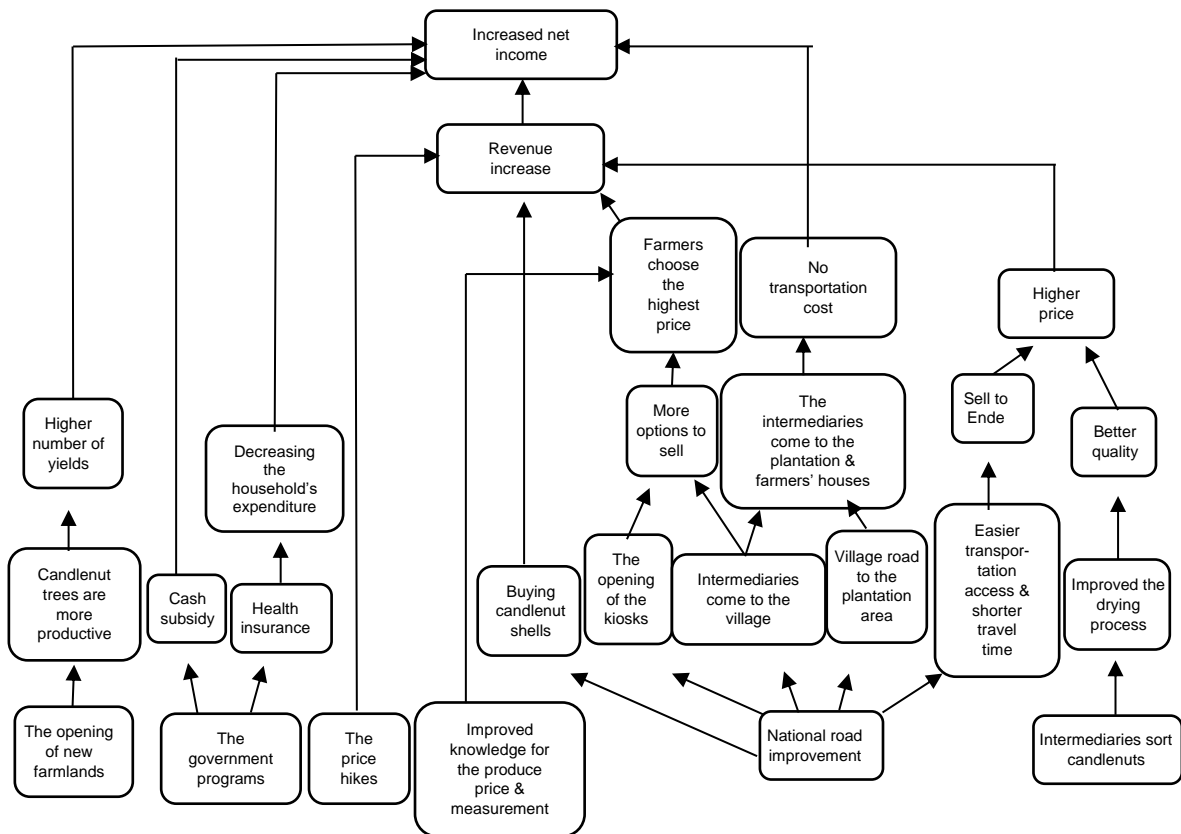
The income of candlenut farmers in Woedoa in 2018 has improved compared to the condition in 2008 as the price of candlenuts has increased. One possible explanation for the price hike is the superior quality of candlenuts compared to that of the previous yield. Now, candlenut traders sort candlenuts based on the quality, separating the good ones from the bad ones. Farmers also improve the quality of candlenuts they produce by improving the drying process. Meanwhile, the number of candlenut trees has increased every year due to the opening of new farmlands for candlenut plantations. Furthermore, candlenut trees are known to be more productive in the early years of their life. When the follow-up study was conducted, there has not been a specific education program on candlenut farming, so farmers still use the traditional farming method.

Another factor which helped boost the candlenut farmers' income is their improved knowledge about the product's measurement. Since 2016, candlenut farmers in the village, especially female candlenut farmers, have understood the right crop's measurement to sell where seven condensed milk cans is equal to 1 kilogram of candlenuts. This knowledge has proven to be helpful in dealing with dishonest intermediaries. Moreover, to ensure they get the right selling price, some candlenut farmers have taken the initiative to find information about the price to the intermediaries at the market before they sell. If the price is low, the farmers opt to store the commodity and wait for the price to rise instead.

In 2008, selling candlenuts could only be done at the market. Today, there are more options, not just through intermediaries in the market, but also through kiosks in the village. The improved condition of the national road has enabled candlenut intermediary traders from Ende, Bajawa, and Maumere to reach the village and farmers directly, either coming to their houses or their plantations. This brings advantage to the farmers as this can reduce transportation costs in bringing the commodity to the market. Previously, they could only sell their candlenuts once a week when they went to the weekly markets. Now, they can sell them anytime the traders come. In addition, more traders lead to more competition in the purchasing price. Farmers can choose to sell their commodity to traders with the highest bid and weight therefore increasing their income.

The national road improvement has motivated the government to build village roads which connect the national roads to those leading to the plantation area. These roads have enabled traders to reach the plantation by pickup trucks to buy the commodity. The purchasing price when the traders come directly to the plantation is usually Rp2,000–Rp3,000 per kilogram, lower than the normal price. However, farmers do not need to carry the commodity by themselves and spend extra cost to transportation the commodity to the market. Furthermore, while in the past farmers used to carry the commodity on foot, now they can carry the commodity on their motorcycle thanks to the newly constructed roads (Figure 9).

Figure 9. Factors Affecting the Increase in Candlenut Farmers' Income



The national road improvement was followed by the emergence of small kiosks along the side of the national road that buy commodities from farmers, including candlenuts. At the moment, there are at least three such kiosks in the village. With the existence of such kiosks, farmers do not need to wait until Thursdays to sell their commodity to the weekly market in Nangaroro. This also provides more options for farmers as to where they can sell their commodity. Before this, there was only one option, which was selling the candlenuts at the market. Now, there are two more options, which are selling the commodity to traders who come to them, or to the kiosks along the national road. This condition benefits the farmers in that there is a purchase price competition among the traders and kiosk owners. As a result, farmers can have a better bargaining position to choose from the highest bid and weight, hence the increase in income.

Selling the commodity to kiosks' owners is also considered more flexible than selling it to the traders coming from outside the village. For one thing, the kiosk owners are willing to buy and pay in advance of the harvest season. This benefits those farmers who need cash in a hurry or for an emergency before the harvest season. Under such system, the kiosk owners usually buy the commodity at a lower price. Secondly, farmers sometimes are "forced" to sell to a certain kiosk because they have debt from buying daily needs, such as rice, sugar, and coffee, at that kiosk. Thirdly, the kiosk owners are usually willing to use the barter system; 1 kilogram of candlenuts is exchanged for 3 kilograms of rice (Rp10,000 per kg). The existence of such trading system is essential since for the farmers, practicality is one of their considerations when deciding to whom or where they sell their commodity.

The selling of commodities on the roadside has also become a popular option because the roads have become more crowded after being improved. In terms of prices, if there is a gap of Rp1,000–Rp3,000 between selling their harvested crops in the market in Nangaroro and on the roadside, farmers would still opt to sell on the roadside because they fear of not making any profit by selling in the market in Nangaroro—taking into consideration the transportation expenses.

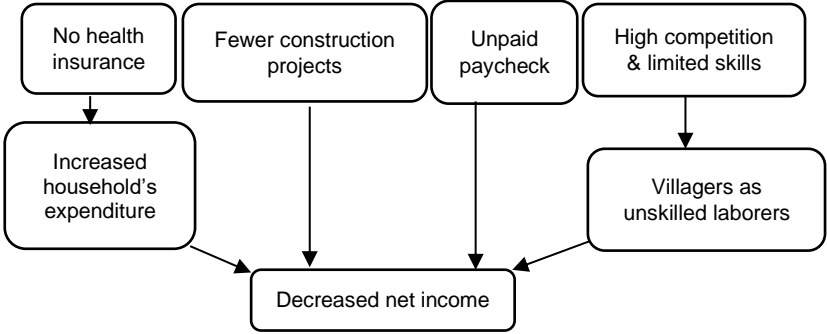
Easier access to transportation has enabled farmers to sell their candlenuts in Ende, which can offer them a higher selling price than in the Nagekeo. Moreover, in the last two years before this follow-up study, easy access to transportation had encouraged some intermediaries from Nangaroro and Fataleke to directly come to the village to buy candlenut shells from farmers for Rp1,000 per kilogram. This leads to the increase in candlenut farmers’ income.

3.4.2 Other Occupations

a) Construction Workers

Construction workers in Woedoa have been experiencing a lower income in 2018 as the result of the decreasing number of construction projects (Figure 10). In 2018, there was only one project which was the concrete road construction funded by the government of Woedoa. Though the number of construction projects is not the same every year, there were at least three to four projects within a year in the previous years.

Figure 10. Factors Affecting the Decrease in Construction Workers’ Income



The capacity of the construction workers is rather limited. Most of the workers are laborers without any bricklaying skills. They are still learning from the senior co-workers who have more experience and skills as bricklayers. As of 2018, there was no special training on improving bricklaying skills for the construction workers. Infrastructure projects which are funded using the regional and national budget usually employ workers, especially experts and bricklayers, from outside the village while villagers are only employed as unskilled laborers. In general, competition is fierce among construction workers in the village as they share relatively the same skill, at least as unskilled labor.

Sometimes, the person who provides contracts runs away or refuses to pay. Normally, for one construction project, the payment is made in two terms, 30% at the beginning of the project and 70% at the completion of the project. The daily payment for one project is

Rp65,000 for each construction worker and Rp75,000–Rp80,000 for each bricklayer. In 2009, piecework jobs²³ would bring approximately Rp1 million with the work duration of three weeks. However, there is no health insurance provided for construction workers. Therefore, when they get sick, they will have to cover the cost themselves.

The existence of the Village Fund program has led to more infrastructure construction projects funded by the village government, and this has provided an opportunity for construction workers to gain more income. For example, in 2017 construction workers built a podium in the village football field and its perimeter walls as well as a volleyball arena. Also, in 2016 they built teachers' housing and renovated schools using the Village Fund. In addition to the construction projects from the village government, there have also been projects from outside the village (jobs given by individual clients) and *kabupaten* (jobs given by private companies or *kabupaten* government).

In general, the national road improvement does not have an impact on the income of the construction workers. However, the construction of the national road by EINRIP opened up job opportunities for the construction workers. Between 2014 and 2016, they were involved in the construction of the retaining wall. At the time of construction, the unskilled labor came from within the village whereas the skilled labor came from outside the village.

Additionally, the national road improvement has resulted in shorter travel time, especially to reach the project located outside the village. Before the road was improved, it took two hours to travel to Mbay or Ende and now it only takes an hour. The current road condition also facilitates the distribution of building materials, making the completion much faster than before the road was improved. However, those results do not contribute to the increase of the construction workers' income.

b) Medium-Scale Business Owners

There are a number of medium-scale businesses in Woedoa, three of which are a broiler chicken farm, a concrete brick producer, and an intermediary trader of agricultural products. Each of these businesses is located on the side of the national road which was improved by EINRIP. However, the development of each business has been different especially for broiler chicken business.

(1) Broiler Chicken Business

There is only one chicken broiler business in Woedoa since it requires a large amount of capital to start such business. The business utilizes a plasma scheme with PT NIS, whereby the broiler chicken farmer is only responsible for taking care of the chickens as well as their cage and feed. Other forms of maintenance such as the necessary feed, medicine, and chicks are provided by the partner company. The partnered company is also

²³Construction workers usually work in a piecework mechanism. They are paid a particular amount of money to complete the construction within a set period. Money is therefore not paid based on the working hours. Sometimes when materials arrive late, the construction can be delayed from the agreed deadline. During this pause, workers are not paid until materials have completely arrived.

responsible for purchasing all harvested livestock, distribution of the chicken broilers to the market, and the transportation from the farmers to the partnered company's office.

Plasma schemes reduce the risk of price fluctuation on farmers as they will be paid in accordance with the contract established in the beginning of the cycle. Therefore, the farmer's income has been relatively stable throughout the years. The farmer's income increased in 2016 as there was an increase in the number of chickens harvested in one cycle, from 4,500 chickens to 9,000 chickens.

According to an informant, the national road improvement does not influence his income from the broiler business since he does not partake in the distribution of the chickens. The number of harvests in a year and the number of chickens harvested are the contributing factors in the farmers' income. Currently, the farmer is only able to harvest four times in a year despite a relatively fast cultivation cycle (35–40 days). This is due to the lack of day-old chick producers on the island and, therefore, the chicks have to be transported from Denpasar or Kupang. The distribution of the chicks is often faced with weather issues as they are transported by sea. If the number of the harvests increases, the farmers' income from the business would increase as well.

(2) Brick Making

This is significantly different from the broiler chicken business and intermediary trader business. In recent years, the income of the concrete brick business has increased while the intermediary trader's business has remained relatively stagnant. The increase in the concrete brick business income is reflected in the increasing demand for concrete bricks particularly since 2016. There are a number of factors contributing to the increase in income from the concrete brick business, ranging from the increased infrastructure development to the establishment of supporting policies. In recent years, the number of physical construction projects has increased, particularly those funded using the Village Fund, thus increasing the demand for concrete bricks. In addition, the concrete brick business in the village is protected by the establishment of the regulation which mandates all goods and services used during the construction in Woedoa to be sourced locally, eliminating the threat of competition from concrete brick producers outside the village. Another factor leading to the growth of the concrete brick business is networking with the village government; therefore, the business will be used as a referral for future construction projects.

While a more significant factor in influencing the income of the business would be the increase in the number of orders, which thus far the road improvement has no effect on, the reduction of distribution expenses leads to a lower operational cost, thus contributing to the increase in income. The improvement of the national road by EINRIP leads to a reduction of distribution expenses from Rp300,000 to Rp200,000 per load of sand and Rp1,000 to Rp500 per brick. In addition, damage to the bricks during distribution has also been minimized by the improved road condition.

(3) Trader

For the intermediary trader, income has been relatively stagnant over the past few years despite being influenced mostly by the national road improvement. The intermediary

trading business has been operating since 2009, but the business operation changed in 2016 as a result of the national road improvement which led to the establishment of kiosks.

According to one kiosk owner, he expected an increase in his commodities' trading volume and his overall income due to the increased traffic on the national road. However, the improved national road also leads to heightened connectivity and accessibility for farmers leading to more competition as the intermediaries from outside the village have easier access to Woedoa farmers. Previously, business operation of the intermediary traders is more segregated and zoned but with increased connectivity competition among intermediaries from different villages becomes more fluid. Therefore, the kiosk has become a form of strategy to accommodate the competition by providing a debt system to the farmers.

The national road improvement has a positive impact on the operational cost of the kiosk. Akin to the concrete brick business, the improved national road has led to a reduction in transportation expenses as now suppliers are willing to travel to the village directly to supply goods for the kiosk, thus eliminating travel expenses to the market. Despite the reduction of the operational cost, followed by the reduction of the prices of the goods sold, the income from the kiosk business is stagnant due to the low purchasing power of the villagers.

c) Small-Scale Business Owners

(1) Roadside Stalls

Small-scale businesses, such as stalls, have been growing in the village. As reported by the village officials, after the road in the village improved, at least two stalls exist in every *dusun* (hamlet). The income of stalls located on the roadside of the national road peaked during the construction of the road. A stall had a revenue of Rp3 million per week during the road construction. Furthermore, in comparison, the income after the national road improvement was higher than that prior to the improvement due to the increasing volume of traffic on the national road. Now, stalls are not only accessible by villagers but also vehicle users passing by the national road. In addition to the increasing accessibility, another benefit of the national road improvement is the reduction of travel time in terms of purchasing supplies for the stalls. While big kiosks can enjoy the benefit of the supplies being delivered to stores after the national road improvement, small kiosks do not have such advantage as the owners must purchase supplies on their own. However, with the road being improved, travel becomes faster and more comfortable for the small kiosk owners.

(2) Motorcycle Workshops

Another small-scale business in Woedoa is motorcycle workshops which income has been increasing since the national road improvement by EINRIP. The road improvement has led to an increase in traffic volume, thus increasing the number of potential customers. Small-scale businesses such as motorcycle workshops could flourish due to the easier access to financial institutions such as Koperasi Anggur Merah. For example, a motorcycle workshop owner accessed such an institution when starting his business. Aside from the national

road improvement, an important factor contributing to the business growth is the owners' mechanical skills, including automotive skills. In the past, there were a number of motorcycle workshops in Woedoa, but they closed down because the owner lacked automotive skills, hence failed to provide satisfactory services.

(3) Ojek

One of the available transportation services in Woedoa is *ojek*. With the increasing number and variety of passenger transportation services passing through the village, the income of *ojek* drivers has been declining in the past few years. The decline is furthered by the fact that the number of private motorcycle owners in the village has also increased.

With the decline on the number of passengers, *ojek* services in the village do not operate on the daily basis but based on demand. The routes commonly requested are to the *puskesmas*, *pustu*, or the weekly market. Within a week, *ojek* drivers reported there are days where there are no villagers using their service.

The benefit *ojek* drivers obtained from the national road improvement by EINRIP is limited to the durability of the spare parts of the vehicle. With the surface of the road improved and becoming much smoother, spare parts of the motorcycle become much more durable, therefore reducing their maintenance cost. Nevertheless, the saved cost from less vehicle maintenance cannot compensate for the decreasing number of passengers. Therefore, there is a negative income trend for *ojek* drivers.

(4) Freight Transportation Services

In contrast to the *ojek* drivers, the freight transportation services in Desa Woedoa are flourishing. Freight transportation services are rented at least once a week and can be up to three times a week during the festive season to transportation livestock or guests attending traditional ceremonies. As noted elsewhere in this report, the road improvement has reduced expenditure on spare parts, and combined with the steady volume of business, freight transportation operators' net income has increased.

IV. Kabupaten Bulukumba

4.1 Overview

Kabupaten Bulukumba is located on the south coast of South Sulawesi Province. The *kabupaten* borders Kabupaten Sinjai to the north, the Flores Sea to the south, the Gulf of Bone to the east, and Kabupaten Bantaeng to the west. Bulukumba covers an area of 1,155 km² and has ten *kecamatan*: Ujung Bulu, Gantarang, Kindang, Rilau Ale, Bulukumpa, Ujungloe, Bontobahari, Bontotiro, Kajang, and Herlang. Seven of the *kecamatan* are coastal areas with potential resources for fisheries and marine tourism, while the other three *kecamatan* are located in the highland area and are centers for agriculture and plantation (Pemerintah Kabupaten Bulukumba, 2016).

The population of the *kabupaten* reached 415,713 people in 2017, up from 395,268 people in 2010, marking a growth rate of 0.7% pa. The most populated *kecamatan* is Gantarang, which borders Bantaeng. The population density in 2017 was 360 people per km², with Ujung Bulu, the capital of Bulukumba, having the highest density. Most of the people in Bulukumba work in agriculture, forestry, hunting, and fisheries sectors. People in Bulukumba also conduct other business activities such as wholesale trade, retail trade, restaurants, and hotels.

Kecamatan Bulukumpa had a population of 52,422 people in 2017, up from 50,835 in 2010. The density in 2017 reached 306 people per km². The majority of the population is of Bugis and Makassar ethnicities. The number of migrants in the *kecamatan* is relatively small; most of them are Javanese who occupy around 50 of the total 4,701 households. The native people of the *kecamatan* work as farmers for their livelihood. They grow paddy, cloves, cacao, pepper, and nutmegs. They also raise livestock such as cows and chickens. According to the head of the *kecamatan*, the people originating from the surrounding *kabupaten*, such as Kabupaten Bone, Soppeng, and Wajo, dominate the economic activities by trading clothes, construction materials, and glassware. Meanwhile, the Javanese people sell food, beverages, and traditional herbs.

4.2 The EINRIP Road

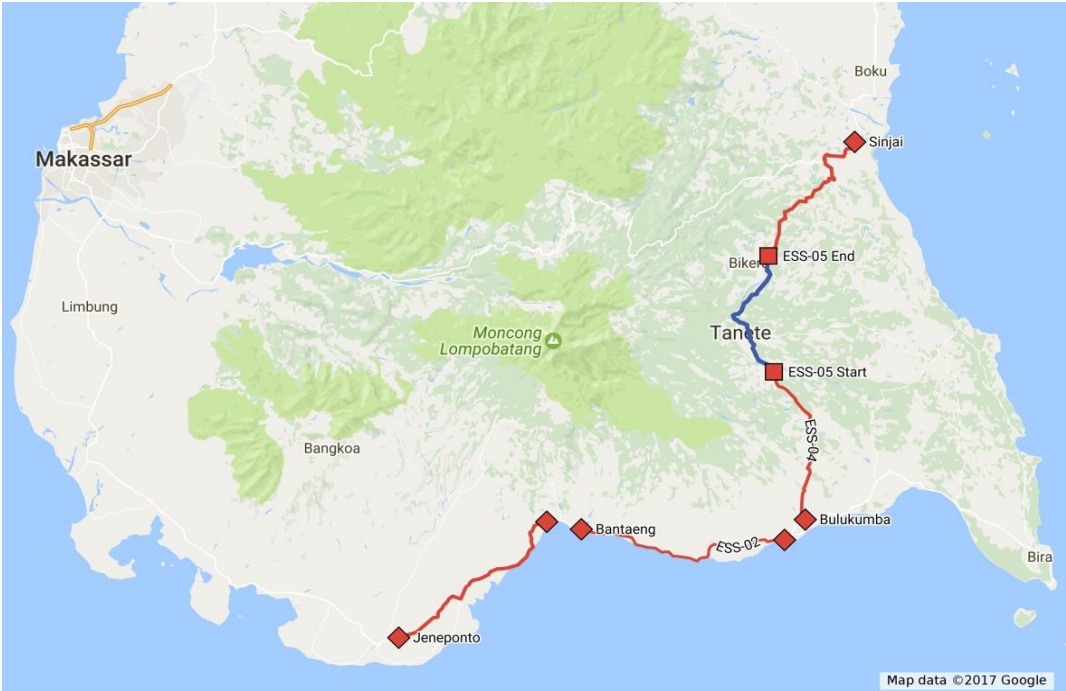
EINRIP improved six roads in South Sulawesi (Table 8), of which five (ESS 02–06) form an almost continuous stretch of 118 kilometers from Jeneponto, through Bulukumba to Sinjai.²⁴ These roads form part of the main south coast highway linking Sinjai to Makassar (See Figure 11). The social research focused on ESS 05, the middle section of the Bulukumba–Sinjai road.

²⁴ESS 01: Sengkang–Impa Impa lies well to the north of the study area and is not part of the social research.

Table 8. EINRIP Roads in South Sulawesi Province

Package	From	To	Kabupaten	Length (km)
ESS-01	Sengkang–Impa Impa	Tarumpakkae	Wajo	24.2
ESS-02	Bantaeng	Bulukumba	Bantaeng	26.9
ESS-03	Jeneponto	Bantaeng	Jeneponto & Bantaeng	25.8
ESS-04	Bulukumba	Tondong	Bulukumba	20.7
ESS-05	Bulukumba	Tondong	Bulukumba & Sinjai	20.0
ESS-06	Bulukumba–Tondong	Sinjai	Sinjai	24.5

Figure 11. EINRIP Roads in the Survey Area



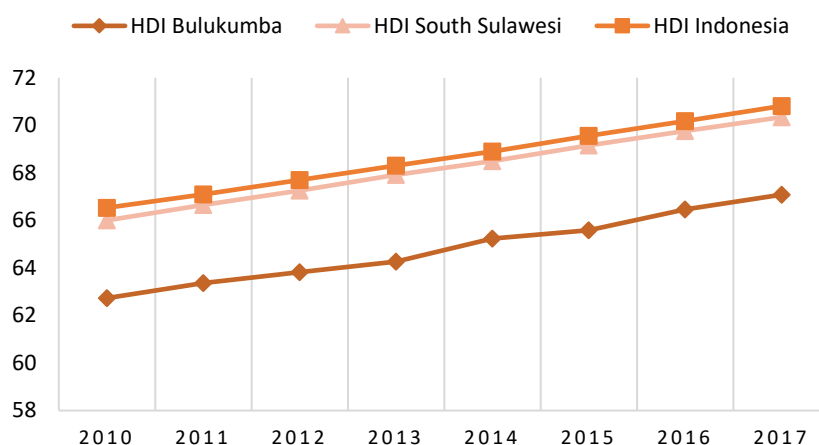
Source: In-depth interviews with provincial agencies, 2018.

4.3 Welfare Levels

4.3.1 Human Development Index (HDI)

The HDI of Bulukumba increased from 62.73 in 2010 to 67.80 in 2017. Although the HDI increased each year slightly, it was still below the provincial and national achievement which reached 70.34 and 70.81 in 2017 respectively (Figure 12).

Figure 12. HDI of Kabupaten Bulukumba, 2010–2017



Source: Direktorat Analisis dan Pengembangan Statistik BPS (2018).

4.3.2 Education

Access of the community in Bulukumba to schools has improved in the last eight years. The average years of schooling in 2017 was 7.16 years, a rise from 6.58 years in 2010. However, it was still lower than the national achievement, which was 8.1 years. The expected years of schooling²⁵ also increased from only 10.79 years in 2010 to 12.65 in 2017.

The government of Kabupaten Bulukumba has committed to improving the education sector since 2015 by, among others, implementing several projects in 2017, such as the construction of school facilities and a regional scholarship program for outstanding students. When this follow-up study was conducted in 2018, the availability of school facilities at the *kecamatan* level has not changed since the past three years. The study in 2016 found that between 2009 and 2014, there was one public high school that just finished being built in Desa Bonto Minasa in addition to newly built junior high schools and elementary schools in several villages in the *kecamatan* within the same period.

4.3.3 Health

Life expectancy in Bulukumba increased insignificantly from 66.5 years in 2010 to 66.69 in 2017. Access to health services in Bulukumba is getting better, indicated by the increasing number of health facilities and their even distribution. There were 19 *puskesmas* in Bulukumba spread in 10 *kecamatan* in 2013, while in 2018 the number increased to 20 *puskesmas*. At the village level, the number of *posyandu* increased from 506 units in 2011 to 569 units in 2017.

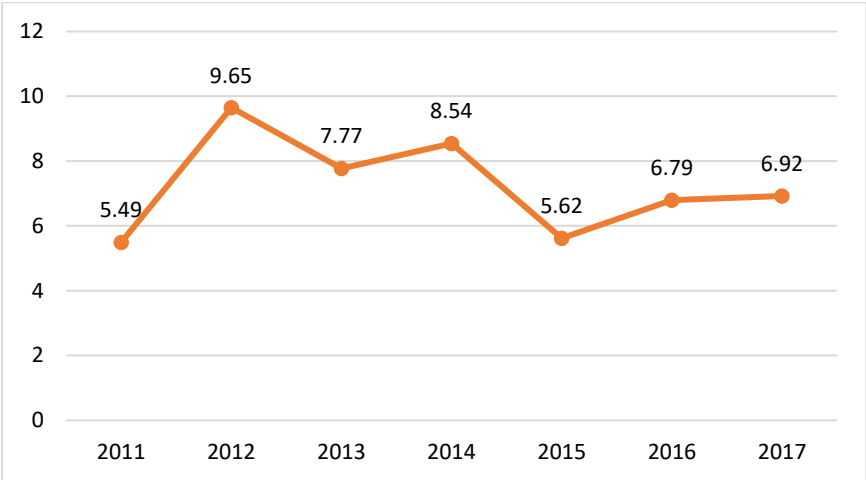
²⁵Expected years of schooling is the number of years a child of school entrance age is expected to spend at school or university, including years spent on repetition. It is the sum of the age-specific enrollment ratios for primary, secondary, post-secondary non-tertiary, and tertiary education (World Bank, 2017).

The government of Bulukumba has taken several steps to level up the health status of the community by: (i) providing locally subsidized national health insurance (JKN) program²⁶ to cover poor households; (ii) improving the service quality of the regional hospital which provides free health facilities and seven emergency units; (iii) establishing public service center (PSC) which provides free ambulance 24 hours a day; (iv) facilitating the Expanding Maternal and Neonatal Survival (EMAS) program by AusAID to lower the mortality rate of mothers and infants, and; (v) allocating 75% of revenue from tobacco excise to improve health care and services.

4.4 Economic Development

The economic growth rate of Bulukumba during the course of 2008–2018 has fluctuated. However, the growth has always been above 5% pa. The highest growth was in 2012, which reached 9.7% pa, while the lowest growth was in 2011, which was only 5.5% pa (Figure 13).

Figure 13. Economic Growth of Kabupaten Bulukumba, 2011–2017 (% pa)



Source: BPS Kabupaten Bulukumba, 2017.

The GRDP of Bulukumba (at constant prices) increased from Rp4,741 billion in 2010 to Rp7,234 billion in 2016 (Table 9). From 2010 to 2015, the farming sector was the largest contributor to the GRDP, but in 2016 it was overtaken by the trade and services sector²⁷, which become the largest contributors with an output of Rp3,108 billion (43%) against Rp 3,043 billion (42%). The share of the trade and services sector rose to 43.8% in 2017.

²⁶The *kabupaten* governments in Indonesia at the time of this follow-up study were integrating their local health care insurance (or previously known as Jamkesda) to JKN to cover those unregistered in the national subsidy scheme.

²⁷The subsectors include wholesale and retail trade, repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities; and business activities.

Table 9. Gross Regional Domestic Product of Bulukumba at 2010 Constant Market Prices by Industry, 2010–2017

Industry	Gross Regional Domestic Product (Million Rupiah)							
	2010	2011	2012	2013	2014	2015	2016	2017
Agriculture, Forestry, and Fishing	2,217,607	2,270,400	2,468,520	2,603,169	2,871,182	2,916,529	3,043,341	3,204,454
Mining and Quarrying	61,521	69,338	82,138	87,425	104,220	121,457	139,546	157,737
Manufacturing	338,715	362,255	390,960	418,433	435,148	470,353	495,887	511,174
Electricity and Gas	7,471	8,359	9,584	10,211	10,970	11,459	12,961	13,696
Water Supply, Sewerage, Waste Management, and Remediation Activities	1,442	1,641	2,015	2,381	2,819	2,833	2,947	3,081
Construction	397,087	420,178	465,268	502,375	519,943	565,180	612,853	669,446
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	636,133	675,958	751,546	831,679	909,725	991,354	1,100,173	1,202,253
Transportation and Storage	93,497	101,339	113,064	121,077	133,578	142,983	152,197	165,810
Accommodation and Food Service Activities	20,235	23,340	26,743	30,453	33,503	37,545	42,583	47,799
Information and Communication	116,520	130,229	148,431	194,033	223,668	241,395	265,245	290,114
Financial and Insurance Activities	133,313	156,695	180,811	193,608	207,880	225,563	255,511	263,324
Real Estate Activities	153,796	168,104	192,048	225,544	249,874	281,339	320,267	360,444
Business Activities	656	723	833	957	1,201	1,276	1,347	1,481
Public Administration and Defense, Compulsory Social Security	357,138	385,379	393,792	410,770	419,988	449,704	447,552	469,544
Education	129,019	142,818	164,259	176,579	181,080	196,211	212,607	232,903
Human Health and Social Work Activities	46,053	49,986	55,113	59,314	64,690	70,730	76,752	83,704
Other Services Activities	30,427	34,019	38,121	41,281	44,231	48,408	52,586	57,747
GRDP	4,740,632	5,000,760	5,483,245	5,909,291	6,413,699	6,774,321	7,234,355	7,734,710

Source: BPS Kabupaten Bulukumba, 2017.

4.4.1 Farming Sector

a) Crop Production

Aside from being used for basic consumption, agricultural produce is used as raw materials for the processing industry. The primary agricultural commodities for consumption (food and horticultural crops) of the *kabupaten* are rice, corn, peanuts, bananas, chili peppers, and coconuts. Meanwhile, the main plantation crops are cacao, coconuts, rubber, cloves, pepper, and coffee. Currently, the small-scale processing industries in the *kabupaten* are available for coffee and cloves.

Within the agricultural, livestock, and fisheries sector, food crops accounted for 35.6% of the total value added, followed by fisheries (27.3%), plantation crops (22.9%), livestock (6.9%), horticultural crops (5.1%), agriculture services and hunting (1.9%), and forestry and logging (0.3%).

Economic growth in the farming sector in general fluctuated during 2015–2017. This sector's growth was affected by the slowdown in activities regarding food and horticultural crops due to the prolonged El Niño-induced drought in 2015–2016.

The area of land used for agriculture has declined in the last ten years. In 2017, the rice field area in Bulukumba was 22,958 hectares, which was 7.4% lower than in 2008 (24,523 hectares). Similarly, the area used for plantation fell by 4.2% from 31,783 hectares in 2008 to 30,448 hectares in 2017. The decrease of land used for agriculture and plantation activities was mainly due to the conversion of agricultural land into settlements and other productive activities.

Most of the rice fields are irrigated and the area of rainfed cultivation has continued to decrease as the *kabupaten* government has extended the irrigation networks.

Aside from building and renovating the irrigation system, several efforts were taken by the *kabupaten* government, supported by the national government, to help develop the agricultural sector in 2017 such as by (i) conducting intensive campaigns to mechanize cultivation process in farming and plantation; (ii) turning idle land into farming or plantation land; (iii) building *kabupaten* road infrastructure to enhance distribution process and accessibility to the field; (iv) increasing the number of credit services, whether from the private or the public sector; (v) providing subsidized fertilizers and seeds through the farmers' groups; (vi) providing pesticides which are distributed through the farmers' groups; and (vii) providing mentoring and training by the PPL for farmers who are members of certain farmers' groups.

b) Livestock

The livestock sector has grown by 13.6% cumulatively during the course of 2013–2018. Cattle and goats are the current primary livestock commodities of Bulukumba. The population has experienced positive trends over that last three years. The population of cattle increased rapidly during 2015–2017—68,344 in 2015, 70,662 in 2016, and 73,177 in 2017. Meanwhile, the number of goats grew from 32,130 in 2015, 32,678 in 2016, to 33,677 in 2017 (Dinas Peternakan Kabupaten Bulukumba, 2018).

The *kabupaten* government, supported by the national government, has taken special initiatives during the period of 2015–2017 such as: (i) intensifying cattle artificial insemination program; (ii) controlling diseases on livestock, mainly through the provision of vaccines; (iii) conducting an active/passive survey on livestock ownership; (iv) mentoring and dissemination of information for livestock farmers; (v) processing animal feces into usable products; and (vi) providing insurance on the livestock which is a program by the central government in collaboration with Jasindo since 2016. In addition, since 2013, the national government together with the provincial and *kabupaten* government have implemented the National Integrated System of Information on Livestock Health (iSIKHNAS) in all provinces.

c) Markets for Crops

Agricultural and plantation produce from Kabupaten Bulukumba is marketed to the surrounding *kabupaten*. Rice is usually distributed by traders who come from Kabupaten Sinjai, Sidrap, and Bone to their own regions. At present, more and more traders are coming to Bulukumba, especially to rice-producing regions, such as Kecamatan Gantarang and Bulukumpa, to buy rice directly from farmers in the harvest season. Likewise, cloves and other types of plantation produce are purchased by traders from neighboring *kabupaten*.

4.4.2 Industry

There had been no significant changes in the industrial sector between 2015 and 2018. As shown in Table 7, the contribution of manufacturing to the GRDP of Kabupaten Bulukumba decreased slightly from 6.9% in 2015 to 6.6% in 2017. In that period, no new business developed in Kabupaten Bulukumba, nor in the industrial area in Kelurahan Jalanjang and Mario Rennu, both located in Gantarang. According to the 2016 study, industries in the *kabupaten* includes: cotton, paint, wood-manufacturing factories, and grain-drying industry.

4.4.3 Land Transportation

According to BPS Kabupaten Bulukumba (2017), the growth rate of the transportation and warehousing sector grew 7.9% annually on average during 2015–2017. Its contribution to GRDP during the course of 2015–2018 has remained stable at approximately 2.3%. The share of land transportation subsector in the sector's GRDP decreased slightly from 38.2% in 2015 to 37.6% in 2017.

a) Public Transportation

Increasing ownership of personal vehicles apparently caused the decline of land transportation contribution to GRDP. According to the transportation agency of Bulukumba, the number of privately-owned vehicles, especially motorcycles, has grown significantly between 2013 and 2018. The trend is reflected in the increasing usage of motorcycle among junior and senior high school students. Declining preferences for public transportation are also evidenced by the usage of school buses. In 2018, the central government provided four units of school buses for the *kabupaten* government. However,

on a daily basis, the bus is only used by roughly 5–10 students. Although the bus is free, students prefer to use their own vehicles, particularly motorcycles.

Because of the reduced demand for public transportation, the government of Bulukumba has issued no new permits for public transportation vehicles in the last three years before this follow-up study. Similarly, the transportation agency has not designated any new routes in the last few years. The 500 route licenses (for yellow-plate vehicles), which were given in 2016, were reduced to 416 route licences in 2017. However, the data on the number of route licenses alone does not capture the actual number of operating transportation services because the number of illegal (black-plate) public transportation services is difficult to identify as they are not officially registered.

The *kabupaten* government is not very active in protecting the yellow-plate operators by controlling the activity of the illegal black-plate vehicles. With that, there is a tendency for yellow-plate transportation operators to change into black-plate operators to reduce operational cost because they do not have to obtain a permit. By offering black-plate transportation services, operators are not bound by routes, therefore allowing them to take passengers to their intended destination. However, there are disadvantages experienced by black-plate vehicle drivers such as the difficulty in obtaining passengers on the street since potential passengers are unable to identify them as public transportation. Black-plate vehicle drivers are also at risk of getting caught when the police conduct a license inspection on the street.

The entry of black-plate vehicle operators on routes in Kabupaten Bulukumba has resulted in more intense competition, placing older transportation operators at a loss on how to earn revenue. Newcomers view that income-wise, working in this sector is a step-up from being farmers or unemployed.

Official fares have increased during 2008–2018, mainly due to the increased fuel prices. This is normally in response to drivers' demand to increase the standard fares. The demand is then discussed at the *kabupaten* level by relevant stakeholders: the transportation agency, drivers, and the land transportation organization (*Organda*).

b) Road Infrastructure

During the course of 2008–2018, the quality of roads in Kabupaten Bulukumba has improved. According to BPS Kabupaten Bulukumba (2009), in 2008 the total length of road²⁸ in the *kabupaten* is 1,344 kilometers with two-thirds of the roads already paved. Of the total length of the road, 44% is considered in good condition, 15% in moderate condition, 4% damaged, and 37% severely damaged. Meanwhile, the *kabupaten's* total length of road in 2017 is 1,212 kilometers with 69.4% of the road already paved. Of the total length of the road, 52% is in good condition, 30% severely damaged, 12% damaged, and 6% in a moderate condition (BPS Kabupaten Bulukumba, 2018a). As noted, there is a reduction in the length of the road network presumably due to the shift of the road status from *kabupaten* road to provincial or national road.

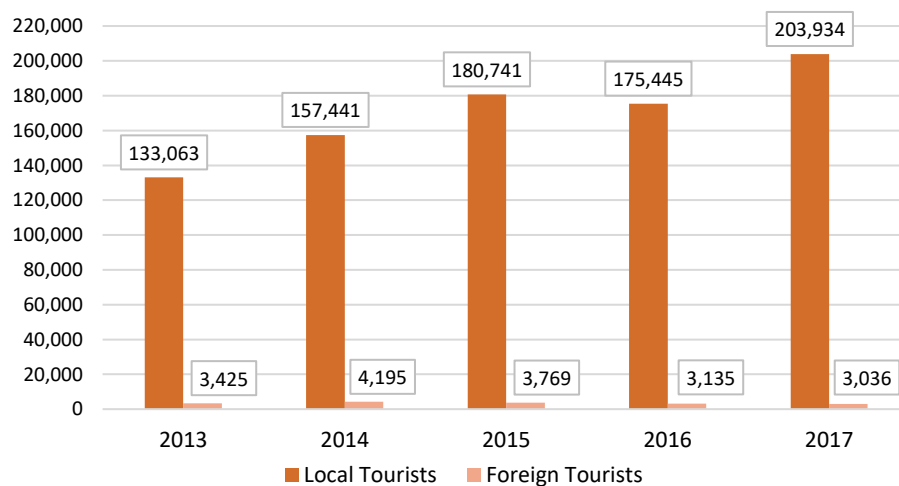
²⁸The number represents the total length of the *kabupaten* road (not the national and provincial road) in the respective year.

4.4.4 Trade and Services

The trade and services sector in Kabupaten Bulukumba had been growing rapidly and its share in GRDP has been increasing over the course of 2008–2018. Also, based on the data from BPS Kabupaten Bulukumba (2017), the accommodation and food services sector had grown significantly between 2015 and 2018, at an average of 12.3% per year. Along the national road as well as in the city center and tourist attractions in Bulukumba, the service and trade activities had multiplied, characterized by the emergence of shops, minimarkets, banks, financial service providers, gas stations, and hotels.²⁹ In 2018, there were 1,429 businesses of various legal standings and 142 hotels compared to only 438 businesses and 35 hotels in 2008 (BPS Kabupaten Bulukumba, 2009; BPS Kabupaten Bulukumba, 2018a).

One of the main factors driving the services sector is the growth of the tourism in Kabupaten Bulukumba.³⁰ The tourism activities in Kabupaten Bulukumba have risen rapidly in 2013–2018 along with the government’s objective to develop the potential of tourism in Bulukumba. In the last couple of years before the follow-up study, the *kabupaten* government has attempted to develop 24 tourism locations (divided into several subsectors such as ecotourism, agritourism, cultural tourism, and marine tourism) and conduct national-scale events, such as Pinesi Festival, to attract tourists. These efforts are complemented with policies on supporting infrastructure development in Bira region and on easing the application for business licenses. As a result, the number of tourists visiting Kabupaten Bulukumba continues to increase (see Figure 14). The figure reached 206,970 people in 2017 from only 136,488 people in 2013.

Figure 14. Number of Tourist Arrivals in Kabupaten Bulukumba, 2013–2017



Source: Dinas Pariwisata Kabupaten Bulukumba, 2018.

²⁹There are two Alfamart (a convenience store chain) outlets, in Kecamatan Herlang and Kecamatan Gantarang. New restaurants were also established, namely Rumah Makan Sulawesi and Grand 99. Several furniture shops also started emerging at the national roadside. There are also two new gas stations along the national roadside in Desa Batukaropa (Kecamatan Rilau Ale) and Kecamatan Gantarang.

³⁰The growth of the tourism sector has encouraged the locals around the beach to open their businesses such as boat rentals, swimming equipment rentals, as well as food and beverage businesses.

In addition to the increasing number of tourist attractions, growing activities in the trade and services sector are also supported by policies related to licensing and business taxes. Since September 2017, there has been a change in the regulation of licensing procedure in Kabupaten Bulukumba. Kabupaten Bulukumba has abolished fees for several kinds of licenses, namely business location permit (SITU), disturbance permit (HO), certificate of company registration (TDP), and trade business license (SIUP). Furthermore, the processing time has also been shortened to a maximum of five days. The number of applications for the four licenses is increasing. Regarding business taxes, the government of Kabupaten Bulukumba abolished tax for the production of Pinisi boats which is located in Kecamatan Bonto Bahari.

To support trade activities, from 2016 to 2017 the *kabupaten* government has also built 12 traditional markets and ten modern markets, as well as renovated two old markets. However, these numbers are still deemed insufficient when taking into consideration the number of merchants and the distribution of the population. As a result, there are a number of merchants who are not accommodated in the market, causing them to conduct their businesses along the *kabupaten* or national road which results in other issues such as traffic jam and danger for drivers who are passing by the road.

Access to financial institutions has also become easier. For instance, the number of cooperatives in Bulukumba distributed in all *kecamatan* and villages rose from 245 units in 2009 to 275 units in 2017 (BPS Kabupaten Bulukumba, 2018a). Also, the number of banks and financial leasing entities has also grown. Easier public access to financial services means easier access to capital to start a business.

V. Desa Bulu-Bulu

5.1 Overview

Desa Bulu-Bulu is located in Kecamatan Bulukumpa and borders Kelurahan Ballasaraja to the north, Kelurahan Palampang and Kecamatan Rilau Ale to the south, Desa Bonto Bulaeng and Desa Balang Taroang to the west, and Desa Salassae to the east. The national road improved by EINRIP which connects Bulukumpa to Sinjai passes through Bulu-Bulu, Ballasaraja, and Palampang. Bulu-Bulu is located in the middle of this route and lies 28 kilometers from the capital of Bulukumpa and 5 kilometers from the *kecamatan* capital (Figure 15).

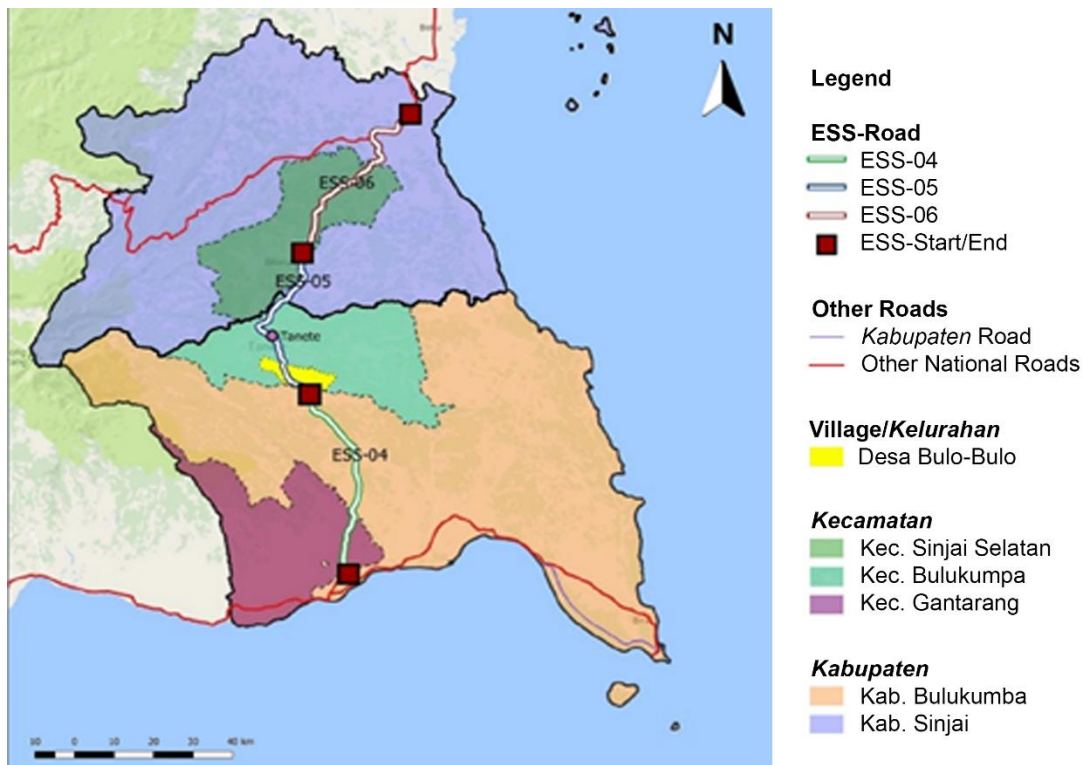
The total area of Bulu-Bulu is 17.2 km², which consists of 470 hectares of rice fields and 1,246 hectares of dry land (BPS Kabupaten Bulukumpa, 2018b). The village comprises six *dusun*: Sapabessi, Buhung Pute, Jammulolo, Samaenre, Palipi, and Sabberaga. Buhung Pete is the center of the village administration since the village administration office, elementary school, kindergartens, and early childhood education (PAUD)³¹ schools (or preschools) are located there. Sapabessi and Buhung Pute are located in proximity to the improved national road. The others are located inside the village and are connected to the national road by the *kabupaten* road.

Most of the residential areas are not located by the national roadside, but inside the village. The national roads only pass through rice fields and some parts of the residential areas. The residential areas are connected to the national road by the *kabupaten* roads. There are three *kabupaten* road networks in Desa Bulu-Bulu: (i) the road connecting the national road with Dusun Jammulolo, Samaenre, and Palipi; (ii) the road connecting the national road with Desa Bonto Bulaeng; and (iii) the road connecting the national road with Dusun Sabberaga.

For villagers' activities, the existence of national roads and *kabupaten* roads play an essential role. The national road improvement has also stimulated the village government to improve the road network under their responsibility. Village roads that connect residential area and rice fields were improved throughout 2015–2017 using village funds. The village government has built 6 kilometers of village roads, which link environmental roads to *kabupaten* roads and national roads. However, the *kabupaten* road heading to Sabberaga is still in poor condition. Currently, around 1.8 kilometers of road in Sabberaga has been built using the regional budget (APBD), while the remaining 1.3 kilometers still has not been paved and is in poor condition. The village government cannot take over the construction of the road because the road is under the authority of the *kabupaten* government.

³¹Early childhood education (PAUD) is a level of education before primary school which focuses on children's development from birth to the age of six years. The service provides educational stimuli to help with the children's growth and physical and spiritual development so they are ready to enter the next level of education which uses the formal, informal, and nonformal schemes (Ministry of Education and Culture Regulation No. 137/2014 on Early Childhood Education).

Figure 15. Desa Bulu-Bulo and Its Surroundings



Source: In-depth interview with agencies at the *kabupaten* level, 2018.

5.2 Welfare Development

Bulo-Bulo experienced an improvement in welfare condition in 2015–2018. When this follow-up study was conducted, according to the Head of Desa Bulu-Bulo, the village population consists of 25% poor households, 10% impoverished households, 55% lower-middle-class households, and 10% upper-middle-class households. Based on the number of household recipients of the rice assistance (Rastra) program, the number of poor households in Desa Bulu-Bulo slightly decreased from 128 households in 2015 to 125

households in 2018. Since 2017, the Rastra program has no longer been distributed equally to all, but only to those who are officially registered as recipients. They also receive assistance for free.

The improvement in welfare was mainly the result of the increasing prices of commodities such as rice, cloves, cacao, nutmegs, pepper, and rubber which have been the villagers' sources of livelihood for a long time. The village economy has also benefited from new activities such as the broiler chicken farming, laying hen farming, and cattle farming.

5.3 Livelihood

a) Crops

Most people in Bulo-Bulo are still involved in traditional economic activities such as agriculture and livestock farming. Plantation produce consists of several main commodities, including clove, cacao, nutmegs, pepper, and rubber, while the main agricultural commodities in this village are rice and corn.

Since the irrigation system is still simple and does not cover all farmland areas, the farmers in Desa Bulo-Bulo rely on rainfall. In 2015–2016, a prolonged drought resulted in massive harvest failure. However, the condition has since improved, and the rice production has become more stable.

In the agricultural sector, there is also a trend that farmers only plant commodities that have a high selling price. Thus, the variation of commodities in the village will follow the price fluctuation in the market. The head of Desa Bulo-Bulo stated that currently, the rising price of vanilla has caused some farmers to replant vanilla.

b) Livestock

The livestock business has grown rapidly in Bulo-Bulo. The number of cattle farmers has risen since the demand for cattle from traders who come to the village has also increased. In 2018, cattle population was also recorded higher in number than in 2015. Moreover, since 2017, there have been more villagers working as laying hen farmers. During the follow-up study, there were nine cages of laying hens spread in Dusun Palipi, Buhung Pute, and Samaenre. The number of broiler chicken farmers had also increased, and the number of broiler cages was 37 cages.

Cows, chickens, and goats make up most of the livestock produce. Cattle and goat farmers tend to work independently, while broiler chicken farmers have established a partnership with the private sector, which, in this case, is PT JAPFA Comfeed Indonesia.

c) Other Businesses

The improved national road has stimulated the growth of trade and services sector (Figure 16). The small businesses, most of which are shops and kiosks, are scattered along the national roadside. In 2013–2018, businesses—such as kiosks, shops, furniture shops, clinics, broiler chicken farms, motorcycle workshops, food stalls, etc.—were established by

the villagers and migrants in Bulo-Bulo. In the transportation sector, some villagers work as *ojek* drivers.

Figure 16. Business Spots Along the National Roadside in Bulo-Bulo



Source: Transect walk with a village official, 2018.

5.3.1 Existing Development Programs and Assistances

The central and local governments have initiated several programs to assist Bulo-Bulo. These programs and assistances have played a critical role in the increasing welfare and economic activities in the village. Table 10 shows some programs in Bulo-Bulo in 2015–2018.

Table 10. Programs and Assistances in Desa Bulo-Bulo

Name of Program/Assistance	Notes
Village Fund	Bulo-Bulo receives the Village Fund program from the national government. The amount of Village Fund received by Bulo-Bulo had increased significantly in 2015–2018, from Rp282.21 million in 2015 to Rp633.32 million in 2016, to Rp803.66 million in 2017. The fund is then utilized by the village government to build and improve the infrastructure of the village, conduct empowerment programs, and for other government administration expenses. Since 2016, the village government has built 6 km of village road

Name of Program/Assistance	Notes
	which connects the feeder road around the village with the <i>kabupaten</i> and national road.
Rice assistance (Rastra) program	The Rastra program was launched in Bulu-Bulu in 2015. Through this program, the national government provides low-income families with subsidized rice monthly. In 2018, there were 125 low-income families identified as beneficiaries of the program.
Aspiration funds from the legislative members of the Regional House of Representatives (DPRD)	In 2017, there were 25 groups of farmers that received aspiration funds from the local representatives of the DPRD. The farmers also receive assistance in the forms of seedlings and agriculture machinery from the DPRD.
<i>Kabupaten</i> road infrastructure program	In 2015–2018, the government of Bulukumba had been improving the roads connecting villages. One of them is the road connecting Bulu-Bulu with Salassae which was improved in 2016. However, there was a problem on the improvement of the road connecting Bulu-Bulu with Balang Taroang in 2014. Because of that, from the total of 1,800 m, there is around 1,300 m of road that has not been improved, and only 500 m has been covered with asphalt.
Tomato and water spinach seedlings	In mid-2017, members of <i>dasa wisma</i> , a women's organization, received tomato and water spinach seedlings from the village government. Every household received 15 polybag plants. These plants were grown in the front yards. However, due to the heavy rainfall, all plants were damaged in the harvest season.
Agriculture equipment and machinery	In 2015, the agricultural agency gave two units of threshing machines to the farmers' group. The agricultural agency also gave three units of water pumps and two units of rice dryers in 2016.
Regular extension service	The agricultural agency conducted weekly mentoring activities since 2010. The PPL also sometimes provides extension services, which include training and counseling, once every three days.
Artificial insemination program	Since 2015, the artificial insemination program has been intensified through the national program of Upsus Siwab ³² .
Family Planning Village (Kampung KB)	In 2018, two <i>dusun</i> in Bulu-Bulu were chosen as pilot locations for the program. The Kampung KB program was initiated by the <i>kabupaten</i> government. The activities include women's group empowerment, dissemination of information to the general public regarding healthy lifestyle, and advocacy for cigarette-free public spaces.

Source: Interview with village officials, 2018.

³²Upsus Siwab is an intensive effort on enhancing artificial and natural insemination program for cattle launched in 2015 by the Ministry of Agriculture to increase cattle population (PSEKP Kementerian Pertanian, 2018).

5.3.2 Landholding

Land in the Bulo-Bulo area is owned by individuals. Each farmer owns an area ranging from 50 ares³³ to 2 hectares. Most of the areas already have ownership certificates. Therefore, it is easy for people outside the village to buy land and use it for productive activities.

The price of land in Bulo-Bulo has been increasing. The head of Desa Bulo-Bulo stated that the price of land in the village is approximately Rp250,000 per m², much higher³⁴ than in 2010 when the price was only Rp62,000 per m².

5.3.3 Education

The Bulo-Bulo villagers' participation in education has increased in 2018 as their access to primary and secondary education has improved in the last three years. In fact, some people have been able to pursue higher education in the city center of Bulukumba and Kota Makassar. To get to school, students are accustomed to using city transportation and private vehicles. There are three primary schools, one kindergarten, and one PAUD school in Bulo-Bulo. For junior and senior high schools, numerous options are available outside the village, and the distance to the schools is relatively short.

5.3.4 Health Care

Bulo-Bulo is relatively well-served with health facilities. There are one *pustu* and six *posyandu* in the village. From 2012 to 2014, the village government built four *posyandu* at the *dusun* level. Other health facilities in Bulo-Bulo are *pustu* and one private clinic located in Dusun Buhung Pute. To access *puskesmas*, villagers would go to Tanete and Salasae; both places are relatively easy to access for the villagers. On the other hand, the private clinic is located by the side of the EINRIP road.

5.3.5 The Role of Women

In general, women and men in Bulo-Bulo play different roles in their domestic and productive activities. Women carry out relatively similar roles as men in two spheres: the care of agricultural crops and livestock. However, in nontraditional economic activities, such as trade, women play a greater role in managing small-scale businesses because their husbands usually have other main jobs (Table 11).

³³An "are" is an area of 100 m².

³⁴The number refers to the price used in the land acquisition process of EINRIP road construction.

Table 11. Gender Roles in Bulo-Bulo

Aspect	Women	Men
Position in the household	Managing the household's finance	Head of the household
Domestic work	Responsible for domestic affairs, including cooking, washing, and house cleaning	-
Farming	In the maintenance stage, women help in cleaning the land; in the planting stage, women carry the seedlings from their home to the farmland, and during the harvest season, men and women collect crops together	In the planting season, men plant the seedlings in the soil; during the harvest season, men and women collect crops together, but men would carry the harvested crops home
Livestock management	Cleaning the cattle pen and feeding the cattle	Looking for grass (for cattle feed)
Commodity selling	Women get involved more in selling the harvested crops because they would be the ones managing the earnings from the sales	-
Others	For the works in shops or stalls, women attend the shops and serve the customers; Women are the ones who usually have the idea to open a stall/shop because they usually understand the economic condition of the household	Responsible for carrying goods to the shop

Source: Interview with village officials and a female village activist, 2018.

In agriculture, men and women's roles are complementary. For example, regarding rice production, men are responsible for ploughing the field while women are responsible for drying the produce. Another example would be in clove plantation where the women are responsible for collecting cloves picked by the men which later on will be dried by the women as well. However, there are also a number of women who are involved in picking cloves. In households which own livestock, the division of labor would usually entail the men to look for the feed and the women to clean the livestock pen. Women also help generate more income for the household by setting up stalls. A number of women also make snacks from yam or palm sugar.

In Bulo-Bulo, the contribution of women to the village government is relatively high, and female-headed households are common. The village government facilitates the women to establish their organizations such as the Family Welfare Movement (PKK), *dasa wisma*,³⁵

³⁵A group of women coming from 10–20 households in the same neighborhood unit (<https://kelbandungrejosari.malangkota.go.id/profil/lembaga-masyarakat/pkk-bandungrejosari/dasawisma/dasa-wisma-menuju-kesejahteraan-bersama/> accessed 2 July 2019). In

and *majelis taklim*³⁶. Women are active in voicing their needs in various forums at both village and *dusun* level. Women's participation is further supported by the regulation which mandates that women must constitute at least 30% of a forum's participants. One of the initiatives from the women to develop the village is the construction of drainage in the village.

The road improvement has allowed women to participate in more training, therefore enhancing their capabilities and knowledge such as in terms of recycling, culinary, and horticulture. In some cases, these female villagers participated in a training program to help reduce household expenses. With the training of horticulture, households are now able to plant their own vegetables for daily consumption. Aside from training, the road improvement has enabled female villagers, particularly PKK cadres, to conduct comparative study visits to other villages. The knowledge and skills they gained from the visits turned out to be useful in improving their economic activities in Desa Woedoa.

Naturally, with the road improved, female villagers benefit from easier access to their economic activities such as selling goods in the market or going to their farmland.

5.4 Development of Welfare by Occupation

5.4.1 Farming Sector

a) Rice Farmers

The income of rice farmers in Bulo-Bulo has increased since 2008. The increase is influenced by the improvement in farmers' access to agricultural supporting facilities and to the market where they sell the rice produced (Figure 17). One of the factors that play a role in increasing farmers' access to agricultural facilities is the implementation of the national government initiative to increase the production of rice, corn, and soybeans (Upsus Pajale³⁷) during 2015–2017. Upsus Pajale affects various other factors that contribute to the increase in rice production in Bulo-Bulo. Through the program, the agricultural agency has intensified the shifting from traditional agriculture to modern agriculture.

the study village, *dasa wisma* conducts a survey on its members' household activities. The data will then be reported to the head of *dasa wisma* in Desa Bulo-Bulo, namely the wife of the village head. *Dasa wisma* acts as the extension of the village head in the hamlet level. The group holds a monthly meeting to report the findings of the survey.

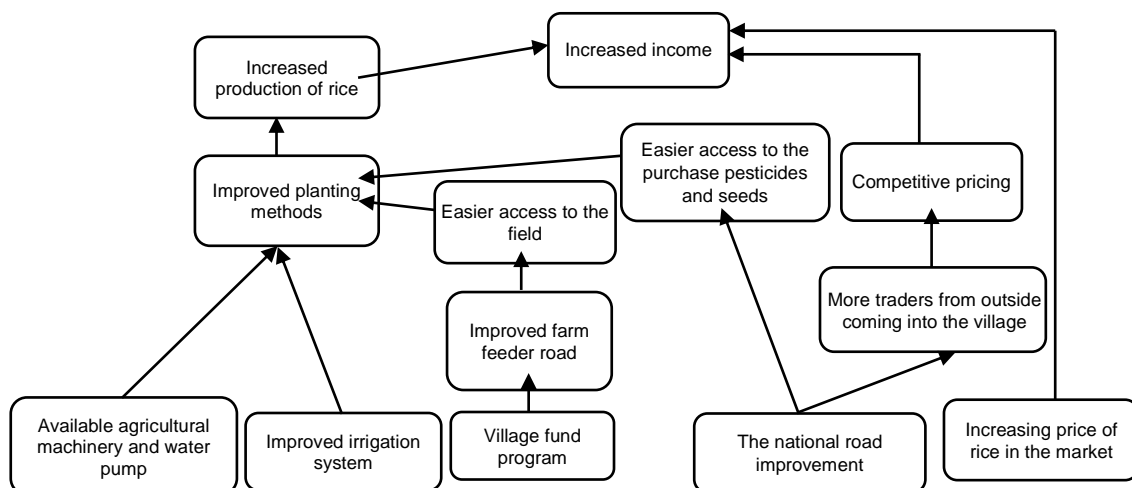
³⁶An Islamic teaching forum. *Majelis taklim* regularly conducts Islamic study group, but now their main activity is to recite the *tahlil* prayer for the newly deceased. Once a month, the members of *majelis taklim* meet for *arisan* (a regular social gathering in which members operate a rotating savings scheme) and they conduct *pengajian* (Islamic prayer recital) in the gathering or when someone passes away.

³⁷Special effort for rice, corn and soybeans (Upsus Pajale) is a special effort movement in increasing the production of three main food commodities, i.e., rice, corn, and soybeans in an effort to attain self-sufficiency in the food commodities. The program was initiated by the Ministry of Agriculture in 2015 and has been conducted in several regions which has a potential production of the crops (BB Biogen Kementerian Pertanian, 2018).

Farmers now have better access to agricultural machinery. In 2015–2018, the agricultural agency had delivered three tractors, two harvesting machines, and three water pumps owned and managed by the farmers’ group. To use the tractors, farmers had to pay with one sack of rice for every eight or nine sacks of rice processed. Aside from the official assistance, since 2010 hand tractors have been available in the market. With the current national road condition improved, the delivery of agricultural assistance from the agricultural agency has become timely.

Farmers also have better access to seeds and fertilizers. The *kabupaten* government now distributes the direct assistance of superior seeds (BLBU) every planting season, one type of seed at a time. In addition, current fertilizer distribution is somewhat better because farmers can get the subsidized fertilizers more easily from the distributors in the village. In addition to the fertilizers, farmers have been able to buy pesticides and herbicides at the markets in Tanete and Palampang since 2010. In the past, they had to go to downtown Bulukumba to buy them.

Figure 17. Factors Affecting the Increase in Rice Farmers’ Income



Other facilities that are also increasingly available to farmers in Bulukumba are irrigation systems. Bulu-Bulu has seven rice irrigations although only three are functioning properly. Based on BPS data in 2017, the traditional irrigation system available in Bulu-Bulu reaches an area of 384 hectares. Maintenance of the irrigation network has been carried out routinely by the public works agency and the village government. Unfortunately, the village government still complains about the cases of off-target irrigation improvements. The government argued that the improvement projects were often not based on the aspirations and needs of the village. As a result, the irrigation systems did not significantly increase rice production. At present, the village government has proposed an irrigation development plan in Dusun Palipi with funding sourced from APBD.

Aside from agricultural assistance, another important factor affecting farmers’ income is the increased availability of traders. With the road improvement, the network of traders from outside the village or even *kabupaten* could reach local farmers. The increased number of available traders led to the presence of competitive price in the market which resulted in the increase of farmers’ income.

(1) Transporting the crops

Ojek has become more popular for transporting rice. In line with the findings in 2016, the number of *ojek* has risen because it can be used to transportation goods, such as rice, from the field to the farmers' house or village roadsides. As a result, the number of horse-drawn vehicles, which used to be the main form of transportation for rice, has diminished. The *ojek* fare is Rp15,000 per sack, whereas the payment made for using horses was one sack of rice for every ten sacks of rice for short distance or two sacks of rice for longer distance. Therefore, using *ojek* is cheaper than using a horse to transportation rice from the field. Also, *ojek* is considered more practical in that it can still reach the fields despite the poor road condition.

(2) Extension Services

Another factor contributing to the increase is the weekly mentoring activities from the agricultural agency which have been more regularly held compared to 2008. As a result, the access of farmers to new knowledge on agriculture has improved. After the national road improvement, PPL can conduct more meetings with farmers' groups. It is now easier for PPL to make unscheduled visits to farmers' groups. In the past, when roads were still in poor condition, PPL rarely visited the village. They even frequently postponed a visit to the next day. Farmers would also often come late to meetings due to the poor road condition.

b) Cattle Farmers

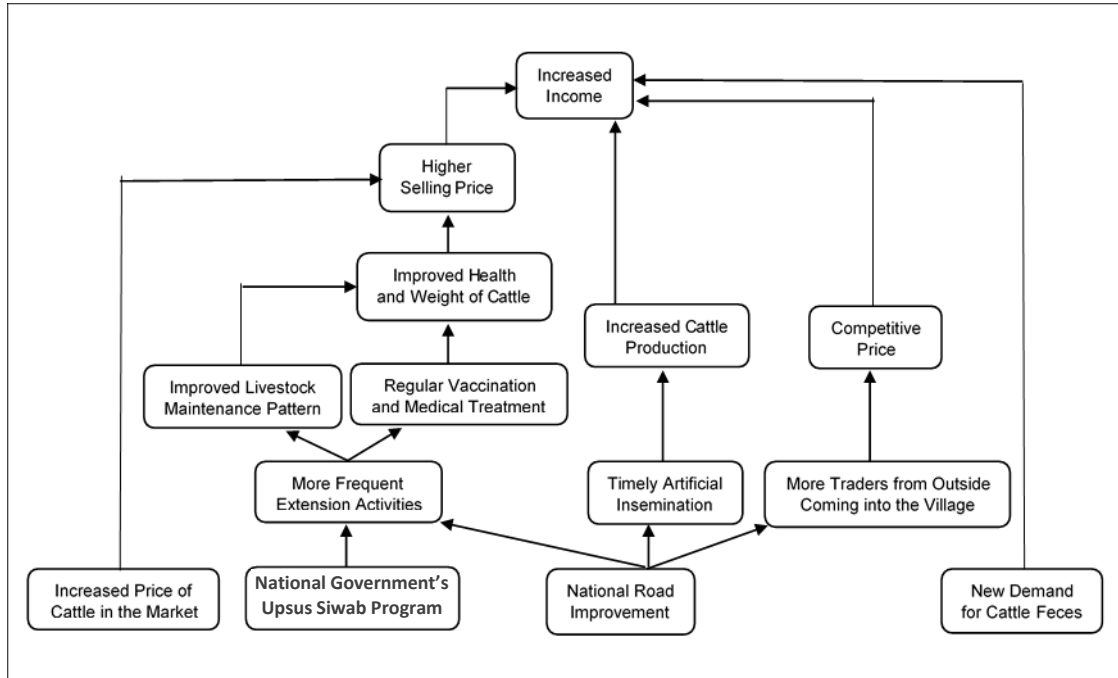
The income of cattle farmers increased significantly from 2008 to 2018 as a result of the improvement of their access to facilities and infrastructure which support cattle farming as well as access to the market to sell the livestock (Figure 18). Better access to assistances has led to an increase in the quality (animal's weight) and quantity of cattle farming. Apart from the dynamics of the rising cattle prices in the market, the improvement in the quality of the livestock in Bulu-Bulu has been followed by the increase in the price of cattle, from only Rp4 million–Rp5 million per head weighing 70 kg to Rp8 million–Rp10 million per head. Meanwhile, in terms of the quantity, the current population of cattle in Bulu-Bulu is larger than it was in 2008. Furthermore, better access to markets has an impact on the cattle selling price in that it becomes more competitive, thus benefiting the cattle farmers.

For over a decade, there have been changes in the method of raising cattle. Farmers have shifted to the modern method from the traditional one. Since 2015, farmers in Bulu-Bulu have started raising cattle in cattle pens. Cattle are no longer released into an open field, so farmers can better monitor their growth, including their health and weight. Farmers have also developed better forage field to maintain the quantity and quality of the feed. Also, farmers have shifted to a modern method of treatment for cattle diseases from traditional medicines. On some occasions, they even invite veterinarians to treat sick livestock.

The change in cattle breeding procedures occurs because farmers have a better understanding of cattle feeding and health care. The road improvement has aided the intensification of extension field services. Therefore, information on the maintenance procedures can be accessed by farmers more easily. Over the past few years, the PPL's

visits have become more frequent, so farmers have the flexibility to consult with the officers about the conditions of their livestock business.

Figure 18. Factors Affecting the Increase in Cattle Farmers' Income



The Upsus Siwab program carried out by the national government in 2015–2017 to achieve the national priority targets has encouraged local governments to increase their reach of cattle production centers in Bulukumba, one of which is in Bulu-Bulo. Various types of assistances from the provincial government and the Upsus Siwab program, which includes artificial insemination, have been received by cattle farmers in Bulu-Bulo. This program has been proven to increase cattle productivity in Bulu-Bulo. The program's success is attributed to the timely visits for the artificial insemination, which were facilitated or made possible by the improved national road.

Meanwhile, cattle farmers' access to the market is also improving. In 2008, the target market for cattle sales was only the residents around the village who needed cows for certain occasions. Nowadays, the buyers also come from outside the village. More and more traders enter the village to buy cattle from farmers. The broad market access has also increased farmers' knowledge about the market price so that they can sell their livestock at competitive prices. In addition, the national road improvement has introduced a new demand for cattle manure from farmers from Kabupaten Sinjai and Kabupaten Bantaeng for Rp10,000 per 50 kg.

c) Clove Farmers

Clove farmers' income in Bulu-Bulo has also increased significantly. The mini FGD indicated that the income in 2018 is perceived to double that of 2008. The clove farmers' income is mainly influenced by the international market prices of clove (Figure 19). Clove prices in 2018 range from Rp25,000–Rp28,000 per kilogram, higher than the price in 2008

Like other farmers, clove farmers are able to experience the benefit of market extension as the road improvement has enhanced their accessibility to outside traders as well as to more markets.

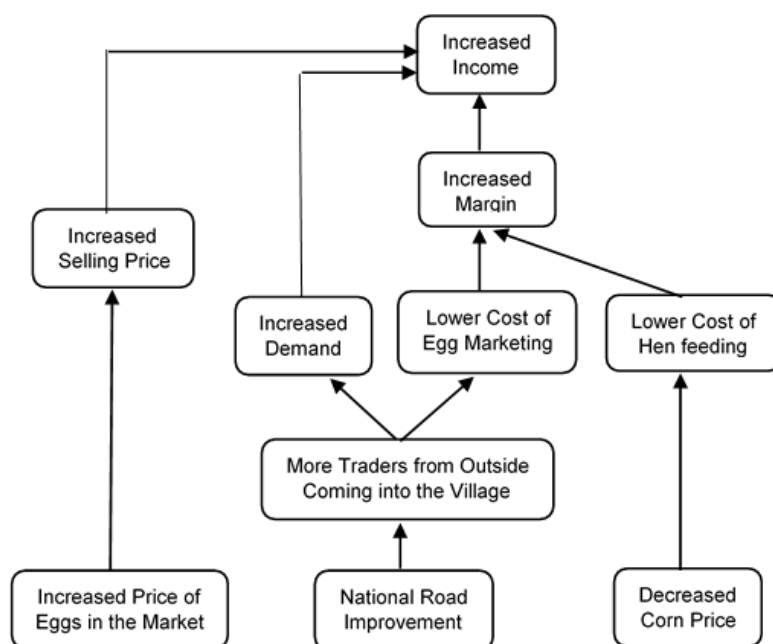
d) Laying Hen Farmers

Laying hen farming is a business that has become popular in Bulu-Bulu. Some people in the village started this business in 2016 in response to the increasing market demand for eggs. At present, there are at least ten farmers who are involved in the business. Compared to the year before, the income of laying hen farmers is significantly better. In general, the income of laying hen farmers is driven by the selling price of eggs and the production cost of such farming. The increase in the selling price of eggs, coupled with the decline in the price of corn as one of the raw materials for chicken feed, has helped laying hen farmers obtain higher profit margins (Figure 20).

Eggs are sold to traders from inside and outside Bulukumba who directly come to Bulu-Bulu. Road infrastructure improvements have contributed to the increasing economic activity of laying hen farming. With better national and *kabupaten* roads, more traders are buying eggs in Desa Bulu-Bulu. The better location and access from and to the Bulukumba city center has enabled the egg production business in the village to compete with that in Kabupaten Sidrap. The traders come once every three days.

With traders coming directly to farmers' house, farmers do not need to sell their eggs on the roadside. Farmers also benefit from the reduction of travel expenditure, or in some cases, even elimination of travel expenses. Eggs sold are usually distributed to Kabupaten Selayar, Sinjai, and Bantaeng. The number of egg traders in 2016 continued to grow, so farmers have the freedom to choose as to which trader they want to sell their eggs to—usually those who can offer the highest price.

Figure 20. Factors Affecting the Increase in Laying Hen Farmers' Income



5.4.2 Other Occupations

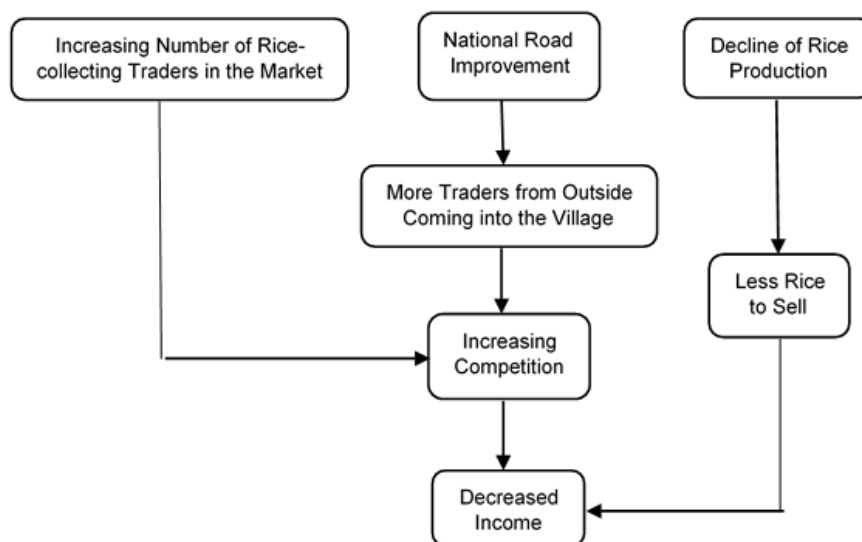
a) Rice-Collecting Traders

In general, rice-collecting traders have experienced a decline in income since 2008. Since 2015 and up to the time of the follow-up study, there had been a decline in rice production in Bulo-Bulo which caused a lack of rice supply in the market. In addition, there had been a change in the mechanism of rice trading, namely the changing preference of farmers and the increasingly tight competition among intermediaries (Figure 21).

In 2015–2016, there was a decline in rice production in Bulo-Bulo due to a prolonged drought. As a result, the rice produced was only enough for household consumption, leaving farmers with little or even none to sell. During this period, intermediaries found it difficult to get rice to collect from this village. Intermediaries usually get rice from farmers in their neighborhood and from the Tanete Market before selling it in retail or to big traders in Bulukumba.

In 2016, farmers began to sell rice in the form of grains because it is more profitable. Farmers do not have to spend money on rice milling, leading to the reduction of production cost. In addition, more and more traders from outside the area come and buy directly to the fields during the harvest season. As a result, the competition among collecting traders has become stronger as farmers have more options as to whom they will sell their commodities.

Figure 21. Factors Affecting the Decrease in Rice-collecting Traders' Income



In addition to competing with traders who buy grains from farmers, since 2015, rice-collecting traders also have to deal with other collecting traders. New collecting traders are willing to offer higher prices than the previous ones. Therefore, the latter is facing competition both in the village and at the market.

With the road improvement making the market less segregated, local rice-collecting traders are experiencing a declining income trend. Better road condition has encouraged

many big traders with substantial capital from Bulukumba and Sidrap to come directly to farmers in Bulo-Bulo to buy their rice. As a result, there is a smaller supply of rice available for collecting traders. In the past, collecting traders could take up to five sacks of rice to the market. In 2018, with more traders coming to the village, it was difficult for collecting traders to get even a sack of rice to sell to the market. With fewer sacks to sell, their income is declining.

Benefits reaped from the national road improvement include more choices of transportation to the market, reduction of travel time, and ease in transporting sacks of rice, which previously would be carried by the rice-collecting traders themselves but now are transported using *ojek*.

b) Medium-Scale Business Owners

There are a number of medium-scale businesses in Bulo-Bulo, such as clove distilleries, clove traders, mobile rice-mill operators, traders, travelling vendors, and kiosks. The only businesses located on the roadside of the EINRIP road are kiosks. The other businesses, however, make use of the EINRIP road, either for transporting raw materials or for distributing goods. The improvement of the national road by EINRIP leads to the reduction of vehicle maintenance cost, particularly for businesses that are using cars or motorcycles. Smoother distribution was identified to be another impact experienced by medium-scale business owners such as clove distilleries. Mobile vendors have expanded their selling areas since with the road improvement has enabled them to reach areas which were previously remote.

The road improvement has led to stronger competition among businesses, leading to the reduction of income. Aside from road improvement, their income is also influenced by the fluctuation of commodity prices in the market, weather condition, and people's purchasing power.

c) Small-Scale Business Owners

The national road improvement has resulted in a growing number of small businesses, particularly along the roadside. Currently, there are six food stalls along the national road which are in proximity to one another. With an increased volume of traffic, potential customers are also increasing. A number of food stalls have reported that the majority of their customers are passersby of the national road. Despite the growing number of small stalls and increasing competition, the income of kiosk owners tends to increase since 2016 although not as much as expected. For example, the income of a food stall owner selling fried meatballs has increased by threefold from Rp80,000 to Rp100,000 per day to the current income of Rp300,000 per day. Particularly in festive seasons such as Eid al-Fitr, the owner's income could reach up to Rp1.3 million per day. The owner of the meatball stall tends to target a daily income of Rp700,000.

Small-scale business owners experienced reduction, or in some cases, elimination of travel expenditure. With the road improvement, the village becomes much more accessible to merchants of raw materials such as eggs, chickens, and vegetables. For small businesses, such reduction is essential in helping them expand.

d) Passenger Transportation Services

(1) *Ojek*

Since 2015, the number of *ojek* has doubled. During the follow-up study, there were around 30 *ojek* in Bulu-Bulu. However, the number of *ojek* that were operating on a daily basis was only 10–15 *ojek* since some of the *ojek* drivers had other occupations. Nevertheless, there were still a number of *ojek* drivers who made being an *ojek* driver their only occupation. The number of *ojek* in Bulu-Bulu tended to increase while the number of potential customers tended to decrease. This is due to the fact that more and more villagers own private vehicles. Also, other types of passenger transportation services offered lower fare than that of *ojek* which was caused by the increasing number of passenger transportation services available. In a day, the maximum number of passengers an *ojek* driver could obtain was 2–3 passengers, but on a market day, they could obtain as many as ten passengers. In 2018, the average income of *ojek* drivers was Rp400,000 per month. Meanwhile, in 2013 the average income could be as much as Rp500,000–Rp600,000 per month.

To navigate the increasing intensity of competition, in 2017 *ojek* drivers in the village agreed to establish a queuing system. The *ojek* drivers who arrive earlier at the pool station will take the first passenger and the second *ojek* driver to arrive will take the following passenger. The routes requested are usually from Bulu-Bulu to Tanete Market (fare: Rp5,000 one-way), intra-village (fare: Rp5,000–Rp10,000 one-way), Bulu-Bulu to Salassae Market (fare: Rp10,000 one-way). Compared to 2013, the fare, in general, has increased by Rp3,000 due to the increase in fuel price. *Ojek* drivers would double the fare when driving passengers at night. Other than distance, the fare is also determined by the number of goods they are carrying; the more the goods, the higher the fare.

After the national road improvement, the number of passenger mini/micro-bus services have increased. This has resulted in the increasing preference for passenger transportation services than *ojek* since they are cheaper and allow passengers to carry more items. Therefore, now *ojek* is used more to carry passengers from the national road to *dusun* since passenger transportation services are not operating within these areas. Despite the decreasing income of *ojek* drivers, the number of new *ojek* drivers continues to increase since other kinds of occupations available require specific skills. Factors which lead to the continuously increasing number of *ojek* drivers are:

- i) obtaining credit for motorcycle purchase has become much easier;
- ii) limited number of occupations available in the village;
- iii) limited skills and capabilities requirements. Being an *ojek* driver does not require them to possess a specific set of skills, merely the capability to drive a motorcycle;
- iv) reduction in the available farming or plantation field, therefore, they opted to work outside the agricultural sector; and
- v) before 2013, *ojek* drivers had to be registered at the police and transportation agency to operate. Since 2013, however, the regulation was deregulated and, therefore, it has become easier to become an *ojek* driver.

The positive impacts of the national road improvement for *ojek* drivers are the reduction of travel time, increased travel comfort, and more extended durability of their spare parts, thus reducing vehicle maintenance cost.

(2) Car passenger transportation services

There are two routes of car passenger transportation services which go through Bulo-Bulo, namely the Tanete–Bulukumba and Tanete–Kajang routes. Black-plate vehicles would use a car while the yellow-plate ones would be in a form of minibuses for both routes. Since 2013 and up to the time of this study in 2018, the number of passenger transportation services has been increasing. For the Tanete-Kajang route, the number increased from approximately 20 units to 30 units. Out of the 30 units, 15 were active on a daily basis.

Meanwhile, for the Tanete–Bulukumba route, the number increased from 100 units to approximately 200 units. Similarly, out of the 200 units, only half were actively operating on a daily basis. In Desa Bulo-Bulo, there were three owners of passenger transportation services between 2013 and 2018.

However, the increasing number of passenger transportation services is not followed by an increasing number of passengers. The number of passengers tends to decrease because many people have started to own vehicles. This has resulted in the decline in the drivers' income. Currently, passenger transportation drivers of Tanete–Bulukumba route can earn Rp900,000 per month. In 2014, drivers of the Tanete–Bulukumba route reported an income of Rp1.5 million per month. Therefore, passenger transportation drivers have adopted a number of strategies and efforts to manage the competition among them, such as:

- i) establishing a queueing system in the terminal whereby the driver who arrives the earliest will take the first passenger;
- ii) developing a more personal relationship with passengers along with the provision of better services such as by allowing them to pay less than the established fare by Rp1,000–Rp3,000;
- iii) modifying the design of the vehicle to attract passengers; and
- iv) arriving early at the terminal by 6:00 a.m.

The best time for drivers to obtain passengers is when school children are going to school, coming back home from school, and during the market day. The majority of the passengers are school children and people who are going to and from the market.

The increasing number of passenger transportation services is the result of the lack of control by the *kabupaten* government in limiting the number of available passenger transportation services. The transportation agency has been perceived to be too loose in giving the permit to passenger vehicles without taking into consideration the number of existing transportation services and passengers. A wide variety of financial services are providing credits for new or used vehicles, so it is now easier for people to purchase a vehicle which will, later on, be used as a passenger transportation vehicle.

Other than the operational cost, drivers are also obliged to pay for a permit. However, not all drivers are disciplined about making a regular payment of the permit, and this is

worsened by the lack of monitoring from the transportation agency. Every year, passenger transportation vehicles are obliged to extend their route license which costs them Rp50,000–Rp300,000 and to renew their vehicle test (KIR) permit every six months which costs them Rp50,000–Rp150,000.

The national road improvement has increased the mobility of both passengers and drivers. Also, drivers benefit from the reduced travel time and more extended durability of their vehicles' spare parts.

e) Freight Transportation Services

Freight transportation services are used to distribute agricultural produce, such as cloves, rice, cacao, and other commodities. The services usually use pickups or trucks. Since 2008, the number of freight transportation services has declined mostly because the majority of traders and farmers already have their own vehicles so that they can transport commodities directly to traders on their own. The demand for goods transportation between 2008–2018 had continued to decline. Freight transportation owners reported in 2018 that the travelling frequency from the Tanete Market to Makassar is only 3–4 times a week, fewer than that of 2008. A freight transportation service can carry up to 100 sacks of agricultural produce in one way for Rp15,000 per sack. The increase in fuel price leads to an increase in the fare. In the past, owners of freight transportation services would charge Rp9,000 per sack. Freight transportation services utilizing trucks can carry more than 100 sacks in one trip. Pickups are generally used to transportation agricultural produce or goods to supply small kiosks.

On average, the gross income of pickup drivers is Rp15 million per month. Their net income would be Rp10 million per month after all expenses including food, vehicle maintenance, and fuel have been deducted. To survive the competition, freight transportation drivers would develop a more personal relationship with merchants, farmers, and traders. With the improvement of the national road, drivers can transport goods timely and safely. Drivers also benefit from reduced maintenance costs as spare parts are now more durable. In addition to the national road, the improvement of the *kabupaten* and village roads also plays an essential role in supporting the growth of freight transportation services as the drivers also pass on those roads when transporting goods.

The income of freight transportation drivers is dependent on agricultural seasons. Their income increases during the harvest season as the demand for the service increases. However, the emergence of financial and credit institution increases people's chance to purchase pickups, whether new or used, which has resulted in the decline in demand for freight transportation services.

VI. Contribution of the EINRIP Road Improvements to Economic Development

6.1 Introduction

During 2008–2018, Nagekeo and Bulukumba have experienced a shift in their economic structures. Although the agricultural sector is still the highest contributor to their GRDP, its proportion continues to decrease. Meanwhile, other sectors such as the trade and services sector and construction sector have slightly increased their contribution to the GRDP. In Bulukumba, at the macro level, the improvement of the national road at the Jeneponto–Sinjai segment has reduced the travel time from Makassar to the southern part of South Sulawesi Province. There is an increasing demand for the trade and services following the increasing number of people coming into the *kabupaten*. In Nagekeo, the improved national road segment has made transportation easier from the study village to the surrounding *kabupaten*, such as Bajawa and Ende, which are located in the southern part of Flores Island.

According to the findings, the national road improvement contributes to the change in the economic activities of the community. Both at the macro and micro levels, the improved national road brings benefits to villagers, business owners, transportation providers, and the governments in their activities which, in some cases, lead to welfare and income improvement. This chapter aims to examine the combined findings from both locations, Nagekeo and Bulukumba, and review the theory of change used in this study. The proposed adjustment to the model of change will be provided in the last section of the chapter. The adjustment will be made by using the findings from both locations.

6.2 Key Elements of the Theory of Change

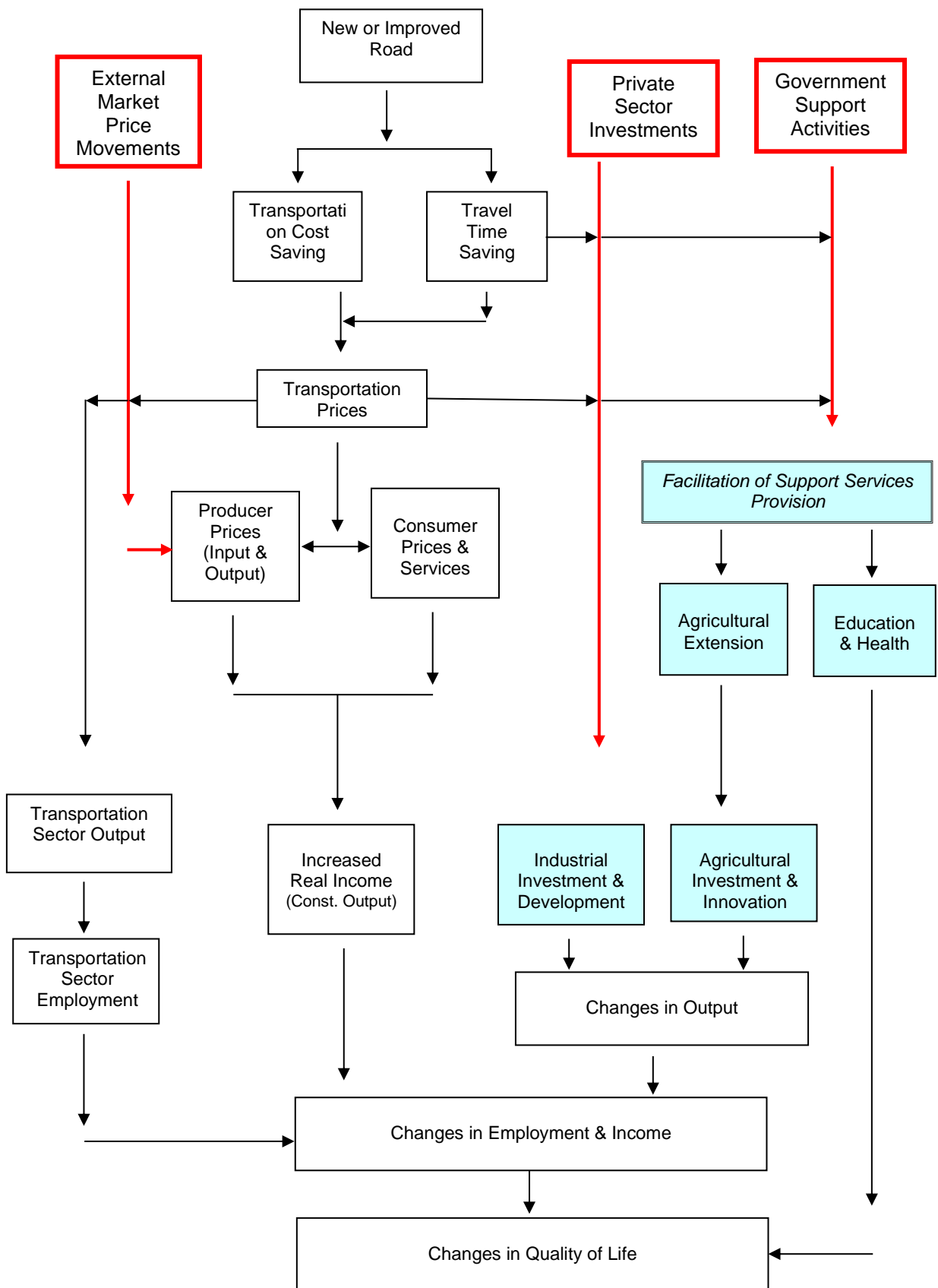
A model of change showing how road improvements may influence economic activities in the areas the road serves has been developed to guide this year's social research (Figure 22). It is an elaboration of the basic rural road model³⁹, modified in accordance with the social research findings over the last five years (2013–2018). The theory of change to be tested involves the following key elements:

- a) Road improvements reduce vehicle operating costs and travel time.
- b) The following are the costs and usage most affected by the road improvements.
 - (1) Capital costs: more journeys can be made in any given time, so the fixed costs of capital can be spread over more output (passenger-km or ton-km);

³⁹A full description of the original model can be found in ADB (2004) TA No. 3900-PRC: Socioeconomic Assessment of Road Projects: Final Report.

- (2) Crew costs: on the same basis as capital cost reductions;
 - (3) Spare parts consumption will be reduced, particularly suspension parts;
 - (4) Tire wear is reduced; and
 - (5) Fuel consumption is normally reduced, except when speeds increase dramatically.
- c) Travel time for passengers is reduced.
 - d) If the transportation services market is competitive, users (passengers or freight shippers) will experience cost savings; if not, the cost savings will increase the income of the transportation operators.
 - e) If transportation prices fall in response to road improvements, and markets are competitive, the prices of agricultural and industrial products brought into the area will fall, and the prices paid at factories or farm gates should increase.
 - f) It should be noted that:
 - (1) the likely change in transportation costs can be calculated (using HDM-4) or obtained by a survey of transportation operators.
 - (2) in most cases, the change in input/output prices resulting from the road improvements is likely to be small.
 - g) If input costs/output prices change, the profitability of economic activities in the area will increase, and producers will be encouraged to expand production.
 - h) Road improvements may help increase competition in local markets as it will be easier for traders to access the area and local producers to take their products to the market.
 - i) The reduction in travel time arising from road improvements also facilitates:
 - (1) private investments (by outsiders) as it is easier for managers and investors to visit the area;
 - (2) support from the government such as providing agricultural extension services, which helps increase output locally; and
 - (3) access to health and education, which improves the quality of life and makes a long-term contribution to improving economic welfare.
 - j) Finally, it is critical to allow for the impact of national- or international-level changes in product prices.
 - (1) Many of the crops grown in Indonesia are traded in international markets, where price fluctuations can be substantial (e.g., rubber);
 - (2) The prices of other crops are affected by the government's decisions on import controls (e.g., corn); and
 - (3) The price of key inputs to transportation and other activities (particularly fuel) is set by the government. Changes in fuel prices can easily outweigh any savings in consumption from road improvements.

Figure 22. Model of Change—Road Improvements and Economic Activities



6.3 How the Model Performed

6.3.1 Transportation Cost Savings

This study found that the improvements of national roads by EINRIP had an impact on the decrease in transportation costs, especially vehicle operating cost, in Nagekeo and Bulukumba. The national road improvements had contributed to reduced maintenance costs for vehicle parts, such as tires, brakes, shock absorbers and bearings, and fuel consumption. As presented in Table 12, the reductions varied as the condition prior to the road improvements differed between the locations. Tires and brake linings used to be changed every six months, but after the road improvements, they only have to be changed on a yearly basis. Shock absorbers and bearings have become more durable due to reduced shock during the trip.

Table 12. Comparison of Spare Parts' Durability Before and After Road Improvements

	Nagekeo		Bulukumba	
	Before	After	Before	After
Tires	5 months ^a 2–2.5 months ^b	8–12 months ^a 6–7 months ^b	6 months ^{a/b}	1 year ^{a/b}
Brakes	6 months ^a 1 month ^b	8–9 months ^a 2 months ^b	3 months ^a 6 months ^b	4–5 months ^a 1 year ^b
Shock absorbers	3–4 months ^b	1 year ^b	1 year ^b	2 years ^b
Bearings	3 months ^a 3 months ^b	1 year ^a 5–7 months ^b	2 months ^a 6 months ^b	3 months ^a 1 year ^b

Source: In-depth interviews with transportation operators in Nagekeo and Bulukumba, 2018.

^aMotorcycles

^bCars, trucks

Meanwhile, the use of fuel is very dependent on the vehicle's speed and the weight of the vehicle's load. In some cases, fuel consumption increased after road improvement.

6.3.2 Travel Time Saving

Both in Nagekeo and Bulukumba, the travel time along the national road has decreased. Flatter and wider road surfaces enabled road users to increase the speed of their vehicles. Both the freight vehicle and the passenger transportation operators reported that they had been able to increase the speed of their vehicles. As a result, their travel time became shorter and was reduced about 30%–50% after the road improvement. The detailed description is provided in Table 13.

Table 13. Comparison of Travel Time Before and After Road Improvement

Route	Before Road Improvement	After Road Improvement
Nagekeo		
Woedoa–Nangaroro	30 minutes–1 hour	10 minutes–0.5 hour
Woedoa–Mbay	1.5–2 hours	1–1.5 hours
Woedoa–Ende	1.5–2 hours	1–1.5 hours
Nangaroro–Aegela	1 hour	30 minutes
Bulukumba		
Bulo-Bulo–Tanete	20 minutes–30 minutes	10 minutes
Bulo-Bulo–Bulukumba	1 hour	30 minutes
Bulo-Bulo–Sinjai	1.5 hours	1 hour
Tanete–Bulukumba	More than 1 hour	30 minutes
Makassar–Bulukumba	5–6 hours	3–4 hours

Source: In-depth interviews with transportation operators and passengers in Nagekeo and Bulukumba, 2018.

^aThe road segment from Aegela to Mbay was still under construction when the study was conducted. The segment was under the provincial government supervision.

^bMakassar to Bulukumba is connected by the national road, which most of the segment (Jeneponto–Bulukumba) was improved by EINRIP.

The shorter travel time has benefited both transportation users and providers. For passengers, this made it easier for them to travel to markets, schools, *puskesmas*, and city centers as well as to transport commodities. In some cases, in Nagekeo and Bulukumba, shorter travel time has also contributed to the quality of commodities transported to the market. Fragile goods, such as eggs and bananas, are less likely to be broken upon arrival to the market. For villagers, shorter travel time has encouraged more traders to come to the village to buy their commodities. At the macro level, the shorter travel time has attracted many visitors from outside the region to come to tourist attractions in Bulukumba, which eventually promotes the growth of the service and trade sectors.

For long-distance freight operators, the faster travel time has also benefited them as they no longer need to spend long hours and much money to support the operational cost. In principle, the road improvements have made it possible for operators to use their vehicles more intensively (making more trips per day). However, because of the increase in the number of competitors (particularly in the passenger market), the operators have not been able to take advantage of the reduction in travel time and have undertaken fewer trips due to the reduced number of passengers they can attract.

6.3.3 Transportation Prices

Findings from the study revealed that lower transportation cost and shorter travel time did not directly influence the price of transportation services. In particular, despite intense competition between the operators in both Nagekeo and Bulukumba, the fare is regulated by the local governments with an agreement with the operators. In this case, changes in

the policy on the fuel subsidy by the national government in late 2014 became the sole contributor to the surge of fare in 2015, and the fare has remained the same since then.

Although the fare did not decrease, the increasing number of transportation providers has enabled villagers to save more time as they no longer had to wait for long and compete to get a seat in the vehicle. In Nagekeo, the emergence of a new mode of transportation such as *ojek* and pickups in the village made it unnecessary for women to get ready early and wait for long wooden buses. As a result, they can save time when travelling to the market. Meanwhile, in Bulukumba, the increasing number of *ojek* has removed the need for farmers to wait for the *pete-pete*⁴⁰. As a result, they can now easily buy fertilizers and insecticides in the market.

6.3.4 Transportation Sector Output and Employment

Both in Nagekeo and Bulukumba, the national road improvement has also contributed to the increased number of businesses in transportation services characterized by the emergence of various new transportation modes. It is relatively easy for new operators to enter the sector, so returns to individual operators are constrained. However, the increasing number of operators has expanded employment in the sector.

Similarly, the freight transportation services have provided users with more competitive pricing and services such as ensuring accurate weighing of goods. This has enabled traders, business owners, and merchants to reduce their operational costs, leading to an increase in their net income. Meanwhile, as the extent of competition in the freight transportation market differs from place to place, the income of freight transportation operators differs as well. A more saturated market is found in ports, such as Ende ports, as the number of service providers from various *kabupaten* is much higher than the number of goods available at the port. As a result, the drivers' income has been decreasing. Conversely, the market of freight transportation in the weekly markets in the villages is less saturated as the number of providers is still below the demand; therefore, the freight transportation services' income has increased.

6.3.5 Producer and Consumer Prices

Shorter travel time has improved the access of the community to a broader market. Many traders came from outside the *kabupaten* to buy agricultural produce in the village. In Bulukumba, cattle farmers now have a broader market with consumers ranging from people within the village to big buyers from Makassar and Bulukumba.

Accessibility of local farmers to outside traders has resulted in reduction in production costs, therefore enhancing farmers' profit margin. In Bulukumba, laying hen farmers has no urgency in allocating travel expenditure anymore since, given the road improvement, traders now come to the village.

In Nagekeo, the impact of the road improvement on production prices differs based on the size of the business. Those who had the initiative to open small businesses such as stalls and selling bundles of firewood have not experienced a significant increase in

⁴⁰A minibus-type of intracity public transportation

income as they were unable to properly manage their small businesses, thus losing to other stalls and firewood sellers around the village. While medium-scale businesses are able to reduce travel expenses due to the presence of suppliers, small-scale businesses have failed to reduce travel expenditure as they continued to purchase stock of goods by themselves.

With the road improvement, crop farmers in both locations are able to experience the benefit of market extension. The highly competitive market has provided more and more sales options for the community which will enable the equilibrium price to be achieved and maintained. This is a significant improvement from 2008 where farmers needed to look for traders or intermediaries to sell their rice.

However, the price of agricultural inputs is mainly subsidized by the government. Therefore, the road improvements have greater effect on the accessibility to agricultural inputs than on the prices of those inputs.

6.3.6 External Factors

a) External Market Forces

The commodity prices in the international market also influence farmers' income. Higher prices of several commodities have led to an increasing margin of profit received by farmers. In Bulukumba, clove prices had increased in 2015 and improved the income of many villagers. There is also a trend of shifting to other commodities such as cloves, which then leads to more extensive employment opportunities for poor farmers as they can also become clove pickers. In Nagekeo, candlenut and cashew prices have improved and boosted the income of the farmers. Additionally, price increases also occurred in livestock products.

b) Private Sector Investments

The private sector in both *kabupaten* has grown quite significantly after the road improvement was carried out. Although it is not the only factor that drove the growth of the private sector, easy access to villages and studied *kabupaten* contributed to encouraging communities and investors to start businesses. As evidenced in the study, with a heavier flow of traffic on the national road, there are a growing number of businesses along the improved national road.

In Bulukumba, the improved national road, which lies between Jeneponto and Sinjai, has made the *kabupaten* more open to the surrounding *kabupaten* and cities, including Makassar. The increased flows of goods and people from Makassar to Bulukumba has triggered economic activities. During 2015–2018, private investments in trade and service sectors such as hotels, gas stations, minimarket chains, and financial institutions had grown rapidly and introduced more job opportunities. Easier access to financial services also influenced the growth of small- and medium-scale businesses, such as food stalls, kiosks, and shops along the national road.

In Nagekeo, the economic activities are concentrated in two areas, namely along the national road, which is located predominantly in rural areas, and within the *kabupaten's*

capital city, Mbay. Along the national road, recently established businesses include concrete brick businesses, kiosks, and motorcycle workshops. The emergence of kiosks in the village has increased the income and the welfare of the people, enabling them to fulfill their necessities in two ways. Firstly, the kiosks established by intermediaries provide loan services. Secondly, the kiosks also accept farmers' commodities on days other than the market day so that farmers can reduce travel expenses.

The national road improvement by EINRIP has introduced new demands to the community. The study has identified different new demands as the result of the national road improvement in the area. In Nagekeo, the demand came in a form various assorted fruits which previously were considered by local villagers as mere animal feed. Meanwhile in Bulukumba, better road improvement has led to the demand for clove oil and cattle manure. In both locations, increased accessibility of the village to the outsiders contributed to the village's exposure to new demands.

c) Government Policies and Support

Local governments in both *kabupaten* had implemented various programs in 2015–2018. Programs and policies were implemented in various sectors with different approaches. For some programs, the improved national road had assisted the government in the operation.

In Nagekeo, the *kabupaten* government policies include advocacy for clove cultivation since the price of cloves is higher than the price of other commodities. The government also provides assistance in the form of seeds and mentoring by the PPL. The improvement of the national road by EINRIP and the *kabupaten* road by the *kabupaten* government facilitates PPL's mobility to access farmers' groups and farming or plantation areas, especially for PPL who live in Mbay. The improved road conditions have also positively contributed to the public's access to health and education facilities. In terms of education facilities, people can now access a one-roof junior high school which was built by the *kabupaten* government a couple of years before this follow-up study and junior high schools located outside the village. The national road improvement by EINRIP (and the regular occurrence of Tour de Flores since 2016) has motivated the government to improve the national roads in other segments.

In Bulukumba, in terms of agriculture and livestock, the national road improvement contributed to increasing the government's outreach to community services and other assistances for agricultural inputs such as fertilizers, seeds, agricultural equipment, and artificial insemination services. In addition, the improved condition of the national road has facilitated the distribution of agricultural equipment within the framework of the Upsus Pajale implemented in Desa Bulo-Bulo. People do not have to wait too long for the agricultural machinery to arrive. After the road improvement, the needed equipment such as harvesting machines can arrive on time. Eventually, the intensified extension at the cost of the road improvement has changed the pattern of maintenance of crops and livestock, which has led to increased production.

Regarding health and education services, the increased number of transportation options and shorter travel time have enabled people to get better education and health services.

The policies of the local governments in the two *kabupaten* that also affect community income are infrastructure development policies, loans for small and medium enterprises, and policies related to business licensing. The *kabupaten* government of Bulukumba has contributed to the easier procedure of the licensing services that help investors and citizens establish businesses independently. Meanwhile, in Nagekeo, the provincial government provided special assistance to businesses through the *Anggur Merah* cooperative which was beneficial for the creation of new businesses in the *kabupaten* and village areas.

Based on the implementation of Village Law, village governments have more autonomy in the financial aspect. It has encouraged them to utilize the village fund to build several basic infrastructures, such as village roads and irrigation systems. Regarding infrastructure availability, Bulukumba is in a relatively better condition than Nagekeo.

6.3.7 Missing Elements

a) Travel Comfort

National road improvement by EINRIP also has an impact on increasing travel comfort. The travel comfort component basically has the same channel as the reduction in travel time. The improved alignment and wider road surfaces have increased driving comfort. In turn, driving comfort has contributed to the quality of the products transported. In some cases, travel comfort also affects drivers' preference to use a national road segment such as in the case of using a private vehicle, therefore increasing traffic volume in the designated route. The heavier flow of traffic is then optimized by villagers to establish new businesses.

b) Competition

The component of the competition needs to be added to the diagram because it has become the main topic that encourages the creation of a competitive price. In both *kabupaten*, competition has increased along with the number of businesses. The reduced travel time has encouraged more traders to come to the village to buy farmers' produce. The purchasing price offered to farmers is increasingly varied, providing farmers with the opportunity to get the best-selling price which is especially beneficial for the poor and very poor farmers.

On the other hand, increased competition has also caused a decline in the income of several business actors. In Bulukumba, rice traders experienced a decrease in income due to competitive prices and not having enough capital to compete with traders from outside the village. Meanwhile, in the transportation sector in both *kabupaten*, the emergence of many transportation alternatives that was not accompanied by an increase in the number of passengers has caused a decrease in the income of transportation providers.

c) Sociocultural Factors

In both locations, sociocultural factors also play an important role in the economic development. Matters related to land usage in Nagekeo have been identified to impede the flow of private investments. Outsiders are having difficulty to establish businesses in

the region since the land is still managed communally. Therefore, acquiring land in the region, especially in the study village, proves to be difficult for outsiders. Consumption patterns in relation to traditional ceremony is the other sociocultural factor impeding the economic development at the household level. The villagers' limited financial resources are instead allocated for traditional ceremonial purposes such as purchase of animals for the ceremony. Therefore, no resources are available for economically productive activities.

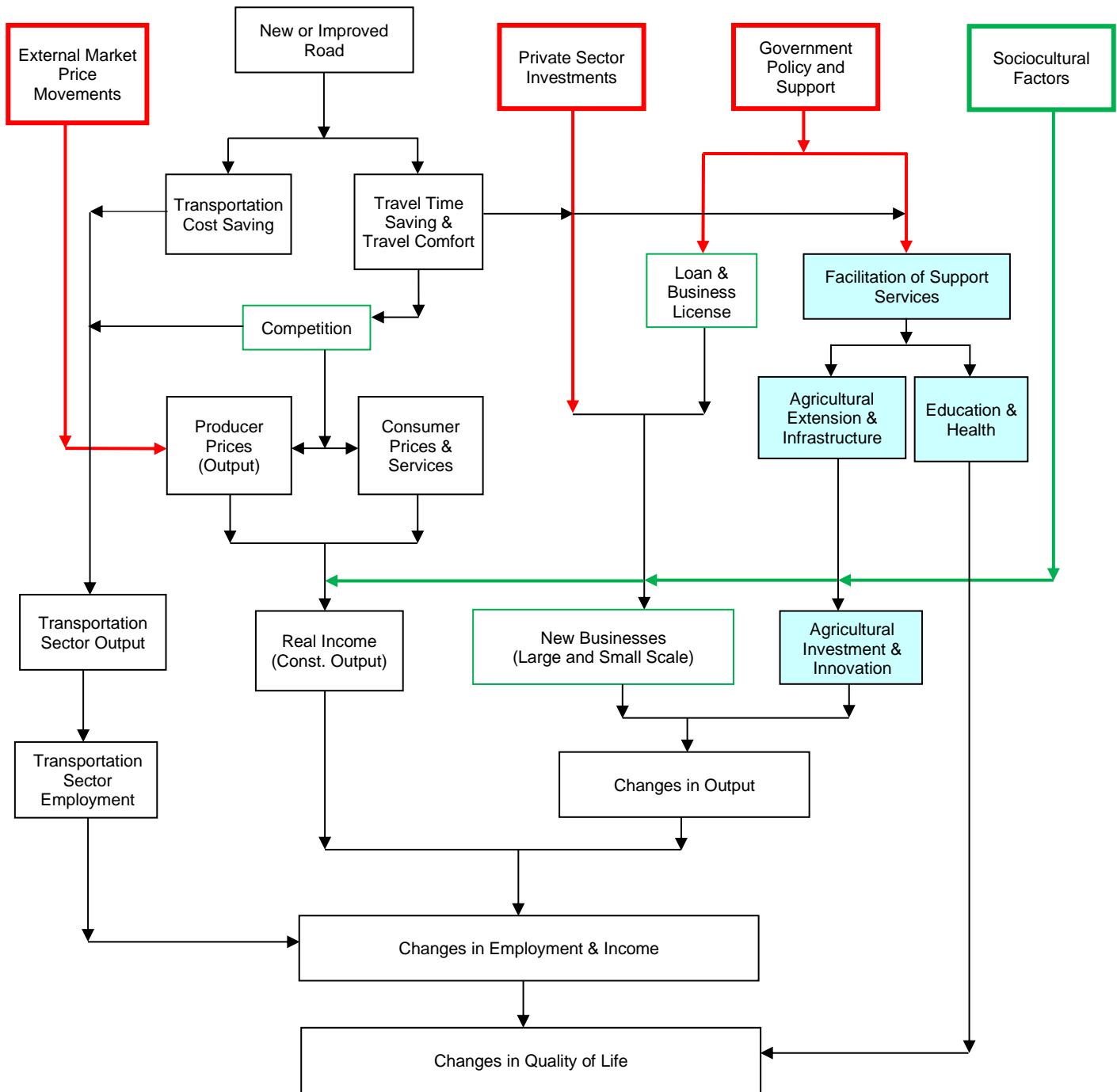
Different condition was found in Bulukumba. The land in Bulukumba is privately owned, therefore acquiring them is a lot easier, thus enabling the flow of investment into the region. Adherence toward tradition is fading, therefore available resources are allocated more toward economically productive activities such as opening stalls.

Another important aspect is the heterogeneity of the community. There are few migrants in Nagekeo, making the community more homogenous. In comparison, there are more migrants in Bulukumba from various regions. Heterogeneity in one area to a certain extent influences the community's economic development. Heterogeneity allows for knowledge transfer, which will then upgrade the skills and boost the competitiveness of the community. The community will be encouraged to be more creative in order to maintain and develop their businesses, thus making room for more diversified businesses. Meanwhile in Nagekeo, the lack of diversity in skills and knowledge of the people resulted in the community's continued dependence on traditional economic activity, namely farming.

6.4 Revised Model of Change

Figure 23 illustrates the adjusted model of change on how road improvements may influence economic activities in the areas the road serves. It is modified in accordance with the current social research findings. The model also includes the missing key elements, which are competition, travel comfort, loan and business license, and sociocultural factors. It also adjusted two key elements. First, there are industrial investments and development of new businesses encompassing large- and small-scale businesses. Secondly, the agricultural extension now includes infrastructure as well. In addition, this model omits the element of transportation prices.

Figure 23. Revised Model of Change–Road Improvements and Economic Activities



6.5 Overall Conclusion

In both locations, national road improvements by EINRIP have been shown to contribute positively to the enhancement of the economic activities, which then leads to increased income and welfare of the community. The increased accessibility and flow of transportation in the region have increased people's mobility to carry out economic activities. Thus, they enjoy better access to production inputs to increase the quantity and quality of production, as well as a broader market reach to sell their commodities. Heavier transportation flows have also allowed for more businesses to be established, thus increasing job opportunities.

However, the national road improvement was not the sole factor behind the increased economic activities in both locations. Other factors identified are also important although it is difficult to see how much each factor contributes because they are interconnected. In some instances, the road improvement mediates the presence of other factors. In both *kabupaten*, the contributing factors were very different.

In Bulukumba, increases in commodity prices have had a direct influence on increasing farmers' income, especially clove farmers'. Meanwhile, private sector investments on a small scale, such as the emergence of shops and kiosks along national roads, as well as large- and medium-scale businesses, such as clove refining and minimarket businesses, have introduced new income sources. Furthermore, the government support in the agricultural sector has boosted production through improvements in farming and livestock methods.

In Nagekeo, changes in commodity prices have had little effect on increasing income, given the subsistence farming system and the tendency for prices of local commodities such as candlenuts and cashews to not increase significantly. On the other hand, private-sector investments are only limited to the emergence of small-scale kiosks along the national road. Local governments only provided limited extension services. Combined with the continued traditional agricultural patterns, increasing production of agricultural produce proves to be difficult.

Thus, the model of change that has been developed can be said to have been mostly confirmed. Nevertheless, there are still a number of elements which need adjustments. Elements related to transportation prices that are affected by the increased competition for transportation providers are not confirmed. In the context of the regulated market on transportation, there is no reliable evidence that national road improvements have had an impact on the decreasing transportation fare. In contrast, government policies on fuel subsidies play a significant role in determining fare levels.

In terms of government policies and services, factors related to infrastructure provision have also contributed positively. Local infrastructure, such as roads and irrigation, supports agricultural production activities and marketing, especially in Bulukumba. Also, the loan and credit services provided by the governments, such as the People's Business Credit (KUR) microcredit program provided by Bank Rakyat Indonesia (BRI) in Bulukumba and Koperasi Anggur Merah in Nagekeo, have increased community opportunities to start a business.

The inclusion of sociocultural factors in the model is found to be crucial as it is identified as the differentiating factor between Bulukumba and Nagekeo. The sociocultural condition forms the basis for the community behavior and mindset, therefore significantly influencing the economic activities, community income, and welfare of each region. In the end, the sociocultural condition in each location influences how the communities utilize the national road improvement in regard to their economy and welfare condition.

Therefore, it can be concluded that the government and related stakeholders need to provide supporting interventions that can increase the chances of communities benefiting from the EINRIP road improvements. Interventions also need to be done to reduce the existing sociocultural barriers. In their implementation, the interventions must as much as possible target the most marginal groups of the community, such as the poor and women so that they can have the same opportunities with others. Interventions must be suitable for the economic potential and character of the community's livelihoods and their relevance to increased accessibility and transportation flows. In the context of regulated transportation prices, the government needs to be firm in controlling the emergence of illegal transportation services to avoid unequal competition and loss for those who comply with the regulations.

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