



Social Construction and Ecological Adaptation as a Response to the Existence of the Arfak Mountains Nature Reserve

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ABSTRACT

The people of the Arfak Mountains since the time of their ancestors have depended heavily on nature/forests for their livelihoods. On the other hand, the Government feels the need to take preventive action to prevent uncontrolled exploitation which causes natural damage, including clearing land for infrastructure development and also building access roads. connecting Manokwari district, South Manokwari district. Therefore, communities around the Arfak Mountains Nature Reserve area are adapting to the new 'reality' they face, through social and ecological construction. The aim of this research is: To determine the socio-ecological construction of the Arfak Mountains community as a social adaptation and ecological adaptation to the existence of the Arfak Mountains Nature Reserve. The research was conducted from November-December 2023. The research method was carried out by interviewing traditional tribal heads, people who hunt, and village heads. The results of this research indicate that the Arfak Tribe is currently experiencing social change or social construction. The social construction that occurs is closely related to their strategy to improve the economy and prosperity. The collaboration between the traditional institutional system and the village government in managing the management of the natural resources they own has resulted in quite a few members of the Arfak tribe also experiencing changes in their lives. Social construction which is based on changes in thinking patterns of both individuals and groups certainly leads to improvements in living standards and welfare. The existence of the Arfak Mountains Nature Reserve has indirectly provided a change in communal thinking regarding the importance of maintaining biodiversity. This change in mindset is actualized in the practice of self-managed, well-organized ecotourism management.

Keywords : Social construction, ecology, Arfak tribe, Arfak Mountains Nature Reserve

1 INTRODUCTION

The Arfak Mountains are a group of mountains in West Papua Province which is inhabited by the large Arfak tribal group. Most of the Arfak tribe's population occupies two districts, namely Manokwari district and Arfak Mountains district. Arfak Mountains Regency is a mountainous area that is administratively a division of Manokwari Regency which was formed based on Law of the Republic of Indonesia Number 24 of 2012 concerning the Establishment of Arfak Mountains Regency in West Papua Province. The area of 2,774.73 km² consists of 10 districts, namely Anggi District, Sururey, Anggi Gida, Membei, Didohu, Taigei, Catubou, Testega, Minyambou, and Testega District. Testega district has the largest area (493.34 km²) and Membey district has the smallest area (57.45 km²). The number of villages in the Arfak Mountains district is 166 villages, with the Menyambouw district having the most villages, while the Membey district has the fewest villages, respectively 37 villages and 6 villages. The population in 2021 is 38,491 people. The population density for each square kilometer (km²) is

25 people/km² [1, 2].

The large Arfak tribe is actually a combination of several sub-tribes or sub-tribes. Without ignoring other sub-tribes in the large Arfak tribal group, the dominant sub-tribes in this group are the Hatam sub-tribe, Moile sub-tribe, Meyakh sub-tribe, and Sougb sub-tribe. Arfak tribe residents from various sub-tribes occupy urban areas to rural areas which occupy the largest portion [3]. The Arfak tribe people who live in rural areas generally still apply traditional lifestyles both in agricultural systems and other livelihoods[2,3].

The rapid development of technology and information is currently able to reach the interior areas where the Arfak tribe lives, so that they can easily obtain information and innovation in their living systems [4]. The innovations received by the Arfak tribe occur in various sectors including agriculture, medical systems, education, consumption patterns and lifestyle in general. Along with the changes that occur as a result of this innovation, lifestyle changes become something that we can easily observe in their daily lives. This research will try to look at the reciprocal relationship that occurs between society and the ecology of flora and fauna regarding several issues that must be sought and answered. The aim of this research is to determine the socio-ecological construction of the Arfak Mountains community as a social adaptation and ecological adaptation to the presence of CA. Arfak Mountains[2,5].

2. Research methods

This research lasted for 4 months, starting from September to December 2023 in the Hatam tribe residential area. Some of the villages that were research locations include: Minyambouw village, Hink village, Syoubri village, Mokwam village, Amber village, Kwau village, Watariri village, Mirowi village, and Warkapi village.

The research was conducted using interviews, FGD and documentation methods. These respondents also included village heads and religious leaders, as well as community leaders from the Hatam tribe. Apart from these respondents, interviews were also conducted with staff of the West Papua BKSDA (Natural Resources Conservation Agency) as the institution responsible for managing the Arfak Mountains Nature Reserve where this research was conducted. At each location, key respondents were initially determined, namely village heads, customary land owners and community leaders [6]. After that, a search was carried out using the Snowball sampling technique to obtain further respondents. The use of the snowball sampling technique was carried out with the assumption that knowledge about biological natural resources around the Nature Reserve area was only understood by certain people. Information regarding the use of resources around the Nature Reserve, including socio-cultural aspects, was also obtained through open discussions with the community involving women, youth and community leaders from the Arfak tribe. Data analysis was carried out by describing the results of the interviews in the form of narratives and pictures.

3. Results and Discussion

Relationship between the Arfak Tribe and the Environment around the CAPA area

The Arfak tribe's ability to control the surrounding environment is reflected in the knowledge they have in interacting and utilizing surrounding resources to fulfill their needs for generations. In this research, forms of interaction and impacts resulting from the interaction of the Arfak tribe with the surrounding environment were identified (Figure 1).

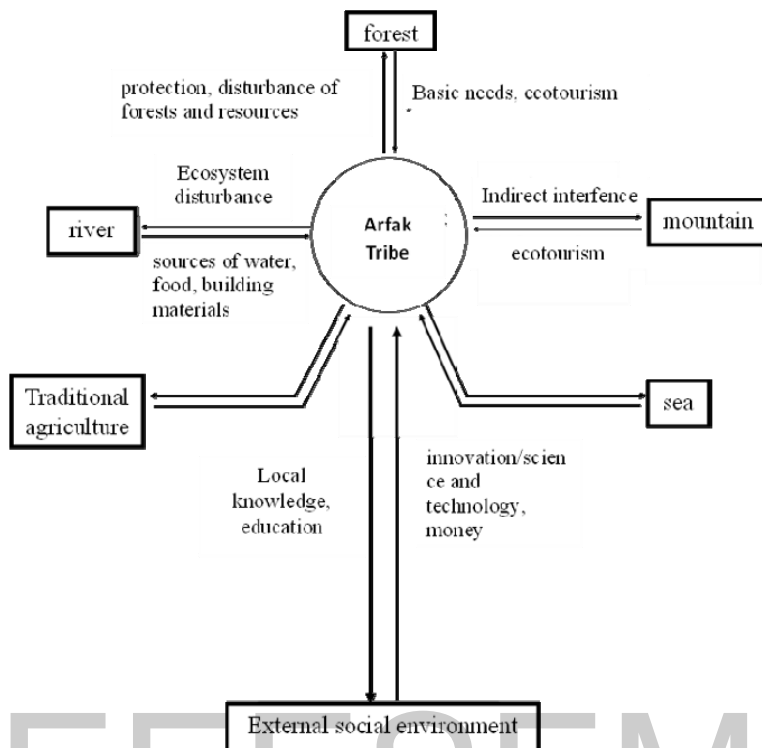


Figure 1. Relationship tree between the Arfak tribe and the environment

Good knowledge of natural resources and the environment has brought them to the current situation amidst advances in technology and information. For a long time, the Arfak tribe has built interactions with the surrounding environment, and of course this interaction has had an impact on both parties, both positive and negative[7].

Forest

Forests play a fairly central role in the life of the Arfak tribe. Several publications even explicitly state that the Arfak tribe treats the forest like a mother who gives life to her children. Thus, the presence of forests in the life of the Arfak tribe, which until the time the research was carried out, still placed forests in an equally important position. In the concept of knowledge about forests, there are actually three types of forest that are known, namely primary forest (bahamti (H)), secondary forest (nemahamti (H)), and prohibited forest [2, 8].

Bahamti is a forest that is guarded by the Arfak tribe, so its condition is still intact. In forest classification, Bahamti can be categorized as a natural primary forest because there is minimal human activity in it. For the Arfak tribe, Bahamti is a place where many of their needs are stored, and must be maintained to be used as needed. It is recognized that many types of important medicinal plants are stored in Bahamti, and quite a few only grow in the Bahamti area. Apart from the ecological function, the function of storing reserves of traditional medicine is a reason that often came up during interviews regarding the benefits of the existence of bahamti [3].

Nemahamti for the Arfak tribe is no less important than bahamti or other environments. Nemahamti is actually a secondary forest that originates from former plantation land that was abandoned over a certain period of time. In the Mokwam area and its surroundings, nemahamti is overgrown with *Macaranga* spp., giant banana (*Musa ingens*), *Arwob* (*Dodonaea viscosa*), and *Ficus* spp. Pole fern (*Cyathea con-*

taminans), . Observation results show that the trees in this area have a minimum diameter of 5-10 cm with a fairly thick layer of bushes. Nemahanti is an area set aside to be used as a garden (especially in the practice of shifting cultivation). Apart from gardening activities, the existence of this secondary forest also provides other benefits, especially as a source of energy (firewood) by utilizing the arwob plant species that grow widely in this area.

For the Hatam people, the forbidden forest is important because it has high cultural value. This cultural value can be related to history (it is a place where ancestors lived/was a former ancestral village), where spirits live, or where there are graves of parents, siblings or relatives). The existence of the sacred forbidden forest is respected among the Hatam tribe, and there are unwritten consequences for anyone who violates the rules or norms that apply in the forbidden forest. A person is prohibited from entering a prohibited area and cutting down trees in it is an example of a prohibition that applies in a prohibited forest, and anyone who violates this will experience misfortune or even illness that can result in death.

The existence of forests around the Arfak Mountains Nature Reserve area apart from providing benefits for meeting needs for food, construction and traditional medicinal materials, forests also offer ecotourism services that can be developed [3, 9]. The Kwau, Mokwam and surrounding areas are areas that have utilized forests as potential ecotourism targets. It is known that the forests around the Arfak Mountains Nature Reserve are the natural habitat of several types of animals, especially exotic birds such as the bowerbird (smart bird), and the bird of paradise. The existence of this type of animal is one of the attractions for tourists, both domestic and foreign (Fig.2).

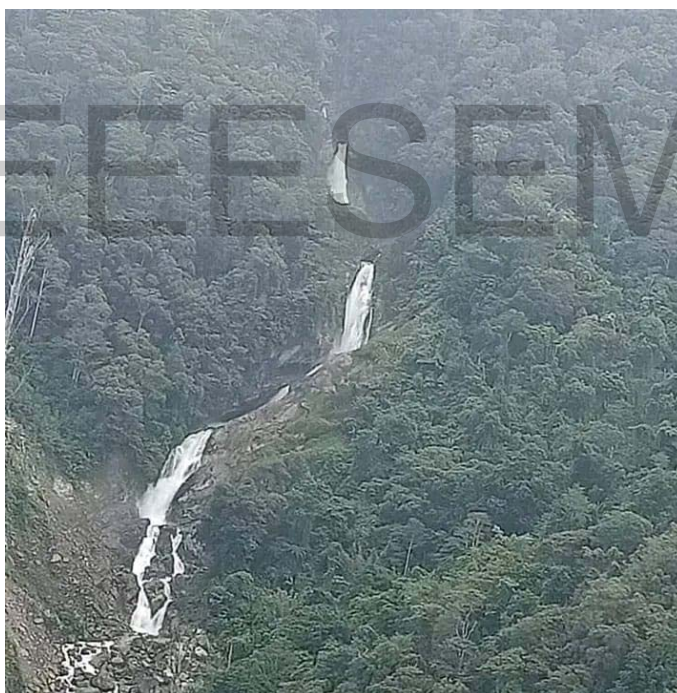


Figure 2. Primary forest in the Arfak Mountains

Garden

When talking about food security and availability, gardens are an important element in the life of the Arfak tribe. Currently there are two types of gardening techniques applied by the Arfak tribe, namely the settled system and the shifting cultivation system. The shifting cultivation system is the oldest system and is applied by most traditional societies, and still exists today. The settled agricultural system,

especially for the Arfak tribe, is a form of adaptation strategy carried out to overcome the problem of land availability, apart from being proof of the adaptability of their agricultural system. [15] even stated that gardens for the Hatam tribe are a very important natural kitchen. Like the function of the kitchen in a household, the existence of a garden for the Arfak tribe greatly determines the level of security and food for an Arfak tribe family (Fig.3).



Figure 3. Traditional garden of the Arfak tribe

The traditional agricultural system implemented by the Arfak tribe, apart from contributing to food availability, also has other impacts on the ecosystem. Changes in the landscape resulting from land clearing by slash-and-burn have more or less contributed to the destruction of the habitat of certain species. Although there has been no more detailed study regarding the effects of land clearing on the presence of species in a location, changes in land cover always contribute to changes in microclimate which have an impact on the existence of certain organisms in the area [10].

Environmental and ecosystem changes due to land use to fulfill human needs are of course unavoidable, including changes in the natural landscape due to traditional land clearing activities by the Arfak tribe. Land clearing gives rise to open spots which are easily observed when observing the forest around the Arfak tribe settlement. Observation results show that the land clearing carried out is still on a small scale, so it does not have a broad impact on the forest ecosystem around the Nature Reserve. Shifting cultivation activities can still be easily found in areas such as Mokwam and its surroundings, Minyambouw and its surroundings, Mupi, Warkapi and even mainland Ransiki. Meanwhile, in the Hink, Anggi and surrounding areas, the Arfak tribe community has implemented a permanent agricultural system. As far as observations have been made, shifting cultivation activities are carried out in areas known as nemahamti (secondary forests), so that they do not have an impact on the wider forest ecosystem, or in other words, traditional agricultural activities do not disturb the natural forest ecosystem (bahamti) [11].

River

Rivers (Fig.4) or menyil in Hatam language have a significant role in fulfilling their daily needs. Apart from being the main source of water for the Hatam people (Arfak tribe), the existence of rivers is also recognized as a source of livelihood for other creatures such as various types of animals and plants. "A dry river means that your life will be difficult, it will be difficult for you to garden and find food," was a phrase that came out during the interview [11].

In its development, the existence of rivers has not only been a source of water, but has also been used as a source of building materials,

especially sand and stone. As far as observations have been made, sand and stone extraction is carried out by the community on a small scale for the construction of residential buildings, and by infrastructure development companies for the construction of roads and bridges. Utilization of materials sourced from rivers is a demand from developments in technology, transportation and communication which of course results in a decrease in environmental quality, especially river watersheds [11].



Figure 4. One of the rivers in the Arfak Mountains Nature Reserve

Mountain

The Arfak Mountains (Fig. 5) are a mountainous region consisting of many mountains, which are interconnected with each other. Apart from being a boundary for customary ownership, mountains also have their own charm and are often used as tourist attractions. Puncak Indon is one of the locations that is often a climbing destination in the Arfak Mountains. In different places, Kobrey Peak is also known, which is a quite popular tourist destination which offers very interesting views [8, 11].



Figure 5. One of the mountain in the Arfak Mountains Nature Reserve

Sea

The marine environment is one part of the ecosystem that plays a role for the Arfak tribe, especially those who live in coastal areas. The existence of the sea provides its own benefits, especially as a source of animal protein in the form of fish that is consumed. The Arfak tribe in the Tanah Rubuh district and its surroundings have extensive access to the sea, and there are even indications of using the coastal area as a tourist area. The Arfak tribe who live in areas near the coast usually fish only for their own (family's) needs or consumption, and not for sale [10].

The outer social environment of the Arfak Society

The people of the Arfak tribe have long had values, norms and attitudes which, to this day, most of them are still strongly practiced and maintained. Social norms can be interpreted as rules equipped with sanctions which are guidelines for behavior that encourage and regulate certain individuals or groups of society. Social norms are usually formed on the basis of agreement between community members and are created due to interactions within community groups. Violations of norms are usually given sanctions that have been agreed upon in society, where sanctions can take the form of material or social actions [12]. On the other hand, norms are a detailed explanation of values in the form of rules or codes of conduct that function to regulate behavior patterns.

Berger and Luckman say that there is a dialectic between individuals creating society and society creating individuals. This dialectical process occurs through externalization, objectivation, and internalization. Objectivity, internalization, and externalization are three processes of social construction that run continuously. With the existence of an objective social world that shapes individuals, in the sense that humans are products of society.

Externalization

Externalization is an anthropological imperative. Humans, according to empirical knowledge, cannot be separated from the desire to actualize themselves in a more real form. Human selfhood cannot just stay silent and settle within itself, within a limited scope it can even be closed. The human self will always want to move outward to express itself in the world around it. Human selfhood is essentially externalized, and this has certainly been present since the beginning.

In the externalization process, the beginning is to carry out a number of actions or actions. If these actions are deemed capable of solving the problem at that time, then these actions will be repeated continuously. After these actions experience consistent repetition, human logical consciousness will automatically begin to formulate and conclude that their actions are a fact that occurs because of the governing rules. Externalization is defined as an attitude of continuously pouring out human selfhood into the world, both in the form of physical activity and in the form of mental activity [8]. This means that every human being wants to do things that can be used as a means to actualize his or her self.

In the context of this research, it can be seen that the externalization process is seen in the actions or roles carried out by the Arfak community in managing and preserving the environment around them. These management and conservation actions have been carried out continuously and repeatedly, including prohibitions or taboos, which over time have become a habit in the Arfak community. A habit can protect humans from uncertainty, if for humans the action that they have become accustomed to gives them comfort, of course they do not have to take other actions to find a solution to their problem. Basically, for humans, choosing again or trying new things is a scary action, while routine provides psychological comfort for humans. What are the social and ecological constructions of externalization in the Arfak tribal community in the local wisdom 'Igya ser hanjop' and 'igya hon hanjop' which are carried out repeatedly and continuously and ultimately settle down and become habits in society, especially in preserving the natural environment of the Mountainous CA Artifact.

Objectification

Objectivation is the result that has been achieved both mentally and physically from human externalization activities. The ability of human self-expression is capable of objectivation, meaning that humans manifest themselves in the products of human activity that are available, both to their producers and to other people as elements of a shared world. Objectivations are more or less long-lasting signals from the subjective processes of their producers, thus enabling them to be used beyond face-to-face situations where they can be understood directly.

The process of objectifying the Arfak community regarding the management and preservation of the Arfak Mountains CA runs through the learning process and their understanding of the management and preservation of the environment around them. The learning and understanding of the Arfak community can differ from one another, both within groups (villages) and between groups or villages. These differences in learning and understanding result in different behavior in environmental management and conservation. The educational background of the Arfak community, especially the Hatam tribe, will reveal the objectification process carried out in the social reconstruction process [11].

Internalisation

Berger and Luckmann (1990) stated, in internalization, individuals identify themselves with various social institutions or social organizations of which the individual is a member. Internalization occurs through socialization mechanisms. Humans live in institutions that regulate their position. Human behavior and actions in the midst of their social context show their role. Therefore, human behavior in its social context is always symbolic, referring to a message or meaning. A human being who is not familiar with the rules or order of an institution can learn them through the actions or behavior of other egos which are symbolic in nature [12].

The process of internalization of the Arfak community in terms of management and conservation of Arfak mountains is quite diverse. Their perception in society and their awareness are influenced by their social, economic and cultural conditions. People's perceptions about the management and preservation of the Arfak Mountains CA, those with higher levels of education, are of course different from people who have no education and have never received information about the Arfak Mountains CA. This happens because the internalization process through socialization or other activities is different from one another [13].

Social Construction and Ecological Adaptation

Technological developments as an impact of development in all sectors certainly have a direct and indirect impact on aspects of the life of the Arfak tribe. These changes in the aspect of life are also the impact of changes in the social environment around them. This condition is of course in accordance with the basic assumption of Berger and Luckman's social construction theory that human thinking and life are continuously constructed as a response to the social world around them [8].

Social construction is also visible in the decision-making system in the current life of the Arfak tribe. The role of tribal chiefs, village heads, andigpoy and pejointi is not very clear in most of the locations used as research targets. In coastal areas (Mubrani, Warkapi, up to the Ransiki mainland) there is no visible role for pejointi as part of decision making. The resolution of conflicts and other social problems is predominantly resolved by the village head. Meanwhile, management and utilization of forest areas is absolutely the authority of customary owners [14].

Environmental changes that occur in the Arfak Mountains area require every member of the Arfak tribe to be able to adapt, including ecologically, to deal with the changes that occur. The research results show several forms of ecological adaptation carried out related to the management of conservation areas in this area, including: *Pengelolaan ekowisata secara swadaya*.

1. The social system related to conservation area management that is quite prominent is the management system carried out by the Hatam community in the Kwau area. The management system which was initially individual (based on the ownership of customary land owners) is now more collaborative, involving all elements in Kwau village. This system change certainly has many positive impacts on local residents. The creation of employment opportunities, equal distribution of functions and roles in management, as well as an increase in income which is felt directly by Kwau residents are some of the positive aspects that can be felt with this collaborative management system. It is awareness of the importance of community support that makes social construction in the management of this area occur [10].
2. Another social aspect found is the openness of information. If previously many regions closed themselves off from information and changes that were believed to bring harm to them, now many regions are actually opening themselves up to interact more widely with the outside world. Changes in the surrounding area (other areas) that are seen to provide benefits to the community are considered important to be brought into their socio-cultural system so that they can also experience these beneficial changes. Currently, many regions want to develop their natural potential and promote them as tourist areas. Amber Village in the Mokwam area, and several villages in the Tanah Rubuh District are areas that the community feels have ecotourism potential, but have not yet been optimized. The slow development of ecotourism potential in this area is due to a lack of promotion, apart from individual-based management so that other communities feel they do not benefit [16].
3. Restore land ownership rights for joint use.

Exploration in the Hink area revealed the fact that the people of Arfak no longer believe in "conservation". For them, conservation is nothing more than a promise that is not accompanied by the reality of meeting their daily needs. The understanding of conservation provided is limited to a prohibition on hunting protected animals, a prohibition on destroying forests, and an invitation to protect forests and the envi-

ronment. On the other hand, the community feels that the area claimed as a conservation area is an area that has been used by the community for hunting and gardening for generations. For this reason, a statement emerged from a community leader and customary owner who said that "I have taken back the land we own to be used for gardening and hunting by my residents." Since the beginning of the delimitation of conservation areas, the community has been involved in making area markers, but after that there have been no more activities involving the community as customary owners. Communities that initially adhered to what was understood as "conservation" by not encroaching on conservation forests, either individually or communally, slowly experienced changes due to pressures of demand and population [10].

The Arfak tribe, including the Hatam sub-tribe, is an ethnic group that is currently experiencing a transition between traditional life and modern life. The characteristics of a transitional society as stated by [15] which are found in the Arfak tribe include:

1. Community life has undergone changes from previously traditional situations. Even though many people call it a traditional society, in reality the Arfak tribe does not fully follow a traditional lifestyle. Mastery of technology appears to be easily observed when conducting this dissertation study. In the agricultural system (Fig.6), some communities in the lowlands (Tanah Rubuh to Oransbari, and Ransiki, and Warmare districts) are familiar with and use technology in their agricultural systems such as the use of superior seeds for corn, carrots and cabbage, and other food crop commodities, including coffee cultivation.



Figure 6. Examples of agricultural commodities from the Arfak tribe. A. coffee; b. Cabbage

2. Already familiar with development. The development of facilities to support community life in rural areas continues to be promoted by the central and regional governments to improve the welfare of the Arfak tribal community. The impacts of infrastructure development felt by the Arfak tribe in the village include the ease of obtaining information and technology so that they can accept and experience various innovations in all aspects [13].

If in the past the information obtained was very limited because it had to cost a lot of money and effort to get it, but this is not the case now with telecommunications networks that reach remote areas and are easily accessed by all groups (Figure 7a). Apart from information, various needs can easily be obtained either through the nearest market or from traders who come directly to the Arfak tribe village (Figure 7b).



Figure 7. Activities for utilizing development results. a. residents of the Arfak tribe are communicating using cellular networks; b. interaction of the Arfak tribe with traders.

3. Culture is undergoing renewal and has a mindset that leads to prosperity. Awareness of the importance of protecting nature and the environment in the context of ecotourism carried out in several locations (Kwau, Mokwam, Syoubri and surrounding areas) shows a change in mindset for the better. The use of technology in agricultural systems, both the use of seeds and plant pest control systems, is a change in terms of mastery of technology which is actually an important part of an ethnic culture system.

4. There is a change in social structure. The traditional institutional system of the Arfak tribe can still be found today and has a fairly central role in the life of this tribe. The social system that collaborates traditional institutions and village/village government is a combination that has undergone changes from the previous one which only featured traditional institutional systems to regulate all social and cultural aspects. Changes in social structure in the institutional system are one of the social complexities that exist in the Arfak tribe [15]. Changes in mindset based on improving the economy and prosperity are the basis for current social change/construction.

5. Access to trade and transportation is adequate (faster and better than before). Roads are one of the vital organs in boosting the economy of the Arfak tribe towards prosperity or a better life [15]. Currently, people can easily sell their agricultural products to the market, although both distance and quality still need to be improved.



Figure 8. One of the buying and selling facilities (market) in the Arfak Mountains

6. In meeting your daily needs, you don't rely on technology and old-fashioned methods. Innovation in various fields is currently being felt and experienced by the Arfak tribe. Gathering and hunting are no longer the main livelihoods of the Arfak tribal community around Arfak Mountains like the traditional tribal life that we generally know. The opening of road access and means of communication and technology offers a number of jobs that can be easily done by the Arfak tribe in the villages, thus reducing gathering and hunting activities which have been their livelihoods since ancient times [16].



Figure 9. Road facilities in Hink village

4 CONCLUSION

The Arfak tribe is currently experiencing social change or social construction. The social construction that occurs is closely related to their strategy to improve the economy and prosperity. The collaboration between the traditional institutional system and the village government in managing the management of the natural resources they own has resulted in quite a few members of the Arfak tribe also experiencing changes in their lives. Social construction which is based on changes in thinking patterns of both individuals and groups cer-

tainly leads to improvements in living standards and welfare. The existence of Arfak Mountains has indirectly provided a change in communal thinking regarding the importance of preserving biodiversity. This change in mindset is actualized in the practice of self-managed, well-organized ecotourism management.

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