PAPUA BIOREGION

The Forest & Its People

Forest Watch Indonesia
2019

Papua Bioregion:
The Forest and Its People

"The Result of Baseline Study About Forest and People

in Papua Bioregion"

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We hope that this publication can help and be a reference for various parties in carrying out various activities related to sustainability and justice in the natural resource management in Indonesia, particularly in the Papua Bioregion.

Writer team

FOREWORD

Starting from a shared awareness to do "mutual repentance", we conducted this research. Socioeconomic and agrarian perspectives have their limits, so do spatial and investigative perspectives, although both have their respective advantages. Then, Forest Watch Indonesia (FWI) activists invited Sajogyo Institute to collaborate on a joint action, ‘gang up’ to do real things for the people of Papua (native Papuans) and the nature. The argument is simple yet basic, the last natural forest in the Indonesian archipelago is in the land of Papua. Large capital expansion in the plantation (oil palm), mining, forestry, fisheries and marine sectors simultaneously shifted from Kalimantan and Sumatra to Papua. It is creating a variety of acute and massive social-ecological crisis in a multidimensional way for the life of the native Papuans. Followed by increased rates of deforestation, criminalization, exclusion, marginalization, human rights violations, and a variety of ecological damage that is increasingly prominent from the land of Papua.

In the next discussions, there is another limit that has been realized, which is the difficulty to limit the scope of the study only in Papua and West Papua. It is because the destructive power that reaches the Papua islands includes land, sea, mountains, valleys, hills, savannahs, and so on. Then, the term of “Bioregion of Papua” for the development of space appears. The Aru Islands with all their social-ecological diversity are part of the study area. It is not only the awareness of the extent destructive power of the expansion of capital and extractive industries that are considered to choose Papua Bioregion, but also the methodological awareness that the administrative based way of looking at social-ecological crisis in the region is increasingly insufficient. The landscape that is the "living space" of native Papuans is also an administrative 'cross border' space between villages, districts, regencies, and even provinces. The reason is the "political boundaries of the state administration" are present later, while the traditional spatial layout has been around for a long time. It cannot be turned upside down.

The time has come to determine what the farthest targets that might be achieved with all the potential 'resources' owned. Furthermore, what should be the priority target in the first year of this five-year program plan of FWI in Papua? There are three considerations why "Baseline Studies" were chosen in the initial year. First: the lack of up-to-date data and information about the socioeconomic conditions of the Papuan people and the ecological conditions of the forests, particularly with the bioregion and 'transdisciplinary' approaches. Second, there are many failures to place programs in Papua bioregion, due to the absence of a good baseline about the nature and the people of Papua. Third; as an invitation to a joint movement

with the civil society movement in Papua, a comprehensive baseline data is needed. Because, there is an initial conclusion that the root of the problem in the Papua Bioregion is the result of the information 'asymmetry', both those that came out "from" and "entered" the territory of the Papua bioregion. The results of the initial assessment studies and 'hospitality' in almost all civil society organizations in Jayapura, Sorong and Manokwari, for approximately three weeks show that each organization needs the same "ammunition", a kind of a shared "data and information center" about condition of forests and people in Papua that is authoritative, and can be a dynamic collective reference or as a living document. This was even stronger when recalling the historical footprint of FWI in Papua where there was “Papua Knot of FWI”.

The next process is the strict stages of a package of managing Baseline Studies with the crossing of the research tradition; socioeconomic and spatial. So, we began with a study by the Spatial Team that showed the 'big picture' of the Papua bioregion completed with the gradations of forest conditions, deforestation, and analysis behind various social-ecological damage in the periodization from the era of President Soeharto to President Joko Widodo. This spatial data introduction becomes a strategic foothold in the preparation of the overall research design.

Now, all the processes have been carried out. However, there are still many holes and weaknesses. At least as the future learning, there are three points that should be reflected: (1) a combination of socioeconomic and spatial perspectives, needs to increase ‘sufficient knowledge base’ from each perspective for a more mature blend to occur in the field and in report writing; (2) the choice of study locations needs to be broadened to be able to represent a very diverse and complex representation of Papua bioregion; (3) baseline with the intention as a living document requires an advanced stage to analyze the common thread and general and specific patterns of problems and challenges faced in the future. The position of this baseline study is clear, to defend basic human rights of the people in the Papua Bioregion for their forest resources and living space. Our way is by inviting social movements to move together on the basis of a "politics of knowledge" in order to enrich the types of legal advocacy and mass organizing. Hopefully this main message can get through the description of the discussion in this report. Amen.

Executive Director of FWI

Soelthon Gussetya Nanggara

Background

1.1 Preface

Indigenous peoples of the Papua region have been experiencing a lot of injustice for a long time. This is including injustice to access of truthful information, especially about the condition of the forests, land, and development programs. This injustice of information brings indigenous peoples into situations where they suffer losses and caught in a weak position in the conflicts of natural resource management.

Besides balancing the strengths, strong and up to date data and basic information are important for planning and implementing good forest management in the Papua region. "Portrait of the Forest and the People of Papua Bioregion" is expected to be accessible to everyone, the community, the government, and the private sector so that they have the same view in seeing the reality and facts of forest conditions and their changes. And the most important is the indigenous peoples and their territories.

Until 2013, the area of natural forests in the Papua Bioregion (Papua, West Papua and Aru Islands) reached 30 million hectares or 85% of the land area. The existence of these natural forests continues to experience pressures. In 2013, 31% or 11.2 million hectares of natural forests were in licensing concessions, which are the License to Commercially Utilize Timber in Natural Forest or IUPHHKA-HA or HPH, License to Run Business of Industrial Plantation or IUPHHK-HTI or HTI, plantations, and mining. The largest natural forest is in the concession area of 4.7 million hectares, followed by mining area of 3.6 million hectares, plantation area of 448 thousand hectares, HTI area of 299 thousand hectares, and the rest in overlapping of licensing areas of 1.9 million hectares. In 2009 to 2013, the loss of natural forest in Papua was 612,997 hectares, or with the rate of 153,249 hectares per year, or equivalent to more than twice the area of Jakarta. The largest deforestation occurred in Papua Province, covering an area of 490 thousand hectares (80%), followed by West Papua Province with the deforested area of 102 thousand hectares (17%), and the Aru Islands with 20 thousand hectares (3%).

The government is making efforts to protect natural forests in Indonesia through a moratorium scheme on the utilization of forest areas in natural forests and peatlands. In 2013, in Papua alone, there were around 20.8 million hectares of forest area inside the moratorium area, of which 18.8 million hectares were still natural forests. However, in the moratorium area, deforestation still occurred more than 227 thousand hectares or with the rate 57 thousand hectares per year. The high rate of deforestation in the moratorium area is caused by the large number of illegal activities in utilizing forest resources in Papua. For example, the conversion of natural forests into plantations, illegal logging, illegal company activities, forest fires, and infrastructure development.

Efforts to protect forests and to recognize indigenous peoples must ultimately be a consequence of affirmative policies that support those who most vulnerable to forest degradation and forest loss. In the context of Papua, the most vulnerable objects are native and local people of Papua, and also the forest ecosystem itself. Moreover, the most vulnerable communities are women and children of indigenous communities. Women have traditionally been responsible for basic family needs, food, water, health.

The data above shows the condition of forests in the Papua Bioregion until 2013. The large amount of natural forest within the permit concession area was a sign that these areas will be deforested and degraded in the following years. The word "development" will be a powerful weapon to legalize all forms of forest exploitation. So far, there has not been found a positive correlation between development and the economic conditions of the people in the Papua Bioregion. Conversely, with the loss of natural forests, there are indications of injustice. Deforestation is the first step of the forest resource exploitation, which are only enjoyed by a handful of people.

Responding to the various problems above, in collaboration with various parties, this publication can be published. It is expected to be used as a reference for various stakeholders in creating information justice about natural resource management, sustainability of forest management, and in encouraging recognition and protection of rights and the territory of indigenous peoples in Papua.

1.2 Methodology and Study Framework

Various kinds of problems that have been mentioned above, have caused many negative impacts both in terms of environmental and social impacts. In fact, in several other regions in Indonesia, it has been shown that the positive impacts of developments that are not environmentally friendly are not proportional to the negative impacts received in the region. These negative impacts are in the form of natural disasters, global warming, and include social impacts that often lead to conflict, culture losses, and the fading of the social moral values of indigenous peoples.

The impacts do not recognize administrative boundaries. These impacts can occur across villages, districts, regencies, provinces, even across countries. Based on these considerations, the bioregion approach is the right choice to see a variety of problems and to offer solutions that are more targeted and holistic.

The problems that arise as a result of the diminished forest area, glide like a "snowball", continues to grow bigger. To overcome these problems, an interdisciplinary approach is needed. To answer the various problems, it is no longer enough to use only forestry and environmental science. Approaches from

interdiciplinary science, such as sociology, anthropology, health, marine, economics, and so on are needed.

To meet the above needs, FWI together with the stakeholders try to start by applying approaches using interdisciplinary sciences to answer various environmental problems, particularly in Papua. One of the results of the publication is recommendations that can be used by stakeholders in promoting sustainable and equitable development

In its implementation, not all approaches with a variety of knowledge can be accommodated, this research can be seen as one of the new ways to address various problems in the Papua due to deforestation and forest degradation. For the record, this publication is still open to be developed in accordance with scientific developments and issues that are also increasingly widespread. It is hoped that multi-disciplinary approaches as adopted in this publication can continue and can be developed with the aim of finding a comprehensive answer to the problems above.

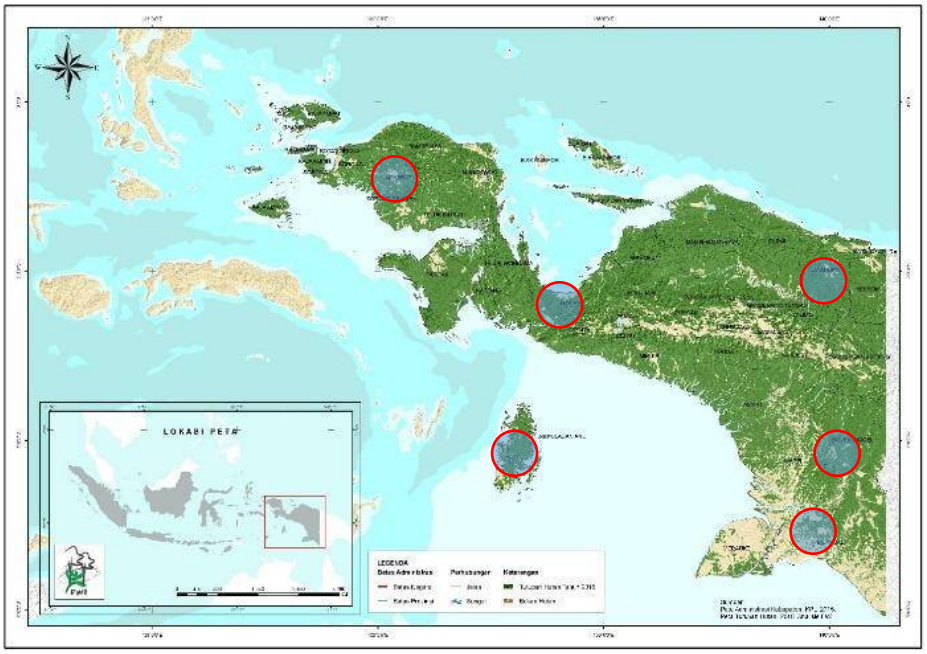

Figure 1 Map of the Field Data Collection

1.3 Location Selection

Bioregion in Indonesia is divided based on the bio-geography of flora and fauna implied by the existence of the Wallace line (Wallace 1860 and 1910), the Weber line (Weber 1904), and the Lydekker line (1896). Initially, the Wallace line separated the geographic regions of the fauna (Zoogeography) of the Asia or Sundanese Exposure and the fauna of Australia. Alfred Russell Wallace realized the differences between faunas of Borneo and Sulawesi and between Bali and Lombok. Later, this line was confirmed by Antonio Pigafetta's theory, so that the Wallace line was shifted eastward to the Weber line (Weber 1902). The Lydekker line is a biogeographic line drawn at the Sahul Exposure (Papua-Australia) boundary located in the eastern part of Indonesia (Hugh 1992). This division of bioregion is reinforced by the results of recent research (Berg and D 1977; Duffels 1990; Maryanto and Higashi 2011 in BAPPENAS, 2016).

Based on the results of the research above, biogeographically, Indonesia is determined to be seven bioregions, namely: (1) Sumatra, (2) Java and Bali, (3) Kalimantan (Borneo), (4) Sulawesi, (5) Lesser Sunda Islands , (6) Maluku, and (7) Papua. Papua bioregion has a vast landscape and a high diversity of biodiversity and also endemism that affects the ecosystem function (BAPPENAS, 2016).

Figure 2 Biogeoraphic line in Indonesia

As explained above, in the implementation of this study, we selected 3 locations that were photographed in depth, and 4 locations that were photographed briefly. The three regions for the deep portraits are Sorong, Jayapura, and the Aru Islands. The various considerations for selecting these locations include, as follows.

1. Sorong

There are initiatives from various CSOs, both local and national CSOs, to encourage recognition of indigenous territories in Sorong district. The process of mapping indigenous territories has been already underway especially in the districts of Klaso and Klaili. There are two indigenous territories which have different conditions of the forest. One area has been converted to oil palm plantations and the other is still natural forests that are threatened to be converted into oil palm plantations. In addition, in these two locations, there are also many cases of illegal logging that scapegoat the community as the main perpetrator.

2. Jayapura

There is a local initiative to reforest indigenous territories in Jayapura district. In fact, there has been a regulation on the recognition of indigenous territories issued in 2018. These locally based initiatives are important to be appointed as material for inspiration and learning for other communities in Papua. Even though there is a regulation on the recognition of indigenous territories, areas that have been reforested by communities are still under pressure, which threatens the existence of natural forests, such as the cases of illegal logging that continue to occur and the development plans of oil palm plantations.

3. Aru Islands

The Aru Islands consist of many small islands which make the region has unique characteristics to be to be deeply studied, which are the ecological, social, or cultural aspects of the local community. The natural forests in the Aru Islands was once threatened by the expansion plan of sugar cane plantations. However, the strong movement of indigenous peoples and the high local initiatives to protect existing natural forests made the plan failed. The stories of the struggles of indigenous peoples in the Aru Islands should be raised and disseminated as learning material and become an inspiration for other communities in Indonesia, particularly in Papua. Now the threat to the natural forests is coming back. The threat arises through plans to develop cattle ranches and sugar cane plantations in the Islands. Although Aru Islands is administratively a district of the Maluku Province, FWI considers that ecologically and culturally its characteristics tend to be closer to Papua. Thus, the Aru Islands is considered to be part of the Papua Bioregion.

In addition to the three regions above, there are three other regions that are quickly photograped. Those regions are Nabire, Merauke, and Boven Digoel. The various considerations for selecting the locations are as follows.

1. Sorong Selatan

The district of Sorong Selatan is the location to identify the illegal logging modes in the area. In addition, a ground check of the forest condition is also done in the region.

2. Nabire

In recent years, the Nabire region has been heavily discussed due to the expansion of oil palm plantations. Moreover, there are also many illegal mining activities in the region. Incessant infrastructure development in the region is also a separate note. The existence of natural forests is threatened by the continued impact of infrastructure development in the region.

3. Merauke and Boven Digoel

Merauke and Boven Digoel are areas where the deforestation is obvious. For example, the development of the Merauke Integrated Food and Energy Estate (MIFEE) and other extractive industry expansions in the region. The struggle of indigenous peoples to defend their territories is a separate record as a learning material to re-strengthen indigenous peoples in the area in maintaining their natural forests and living space.

1.4 Research Organization

This baseline study about the forest and the people of Papua was carried out by several research teams. The teams are the team of indepth research at several locations (Jayapura, Aru, and Sorong) and the team of investigation research at Boven Digoel, Merauke, and Nabire. It takes approximately 10-12 months in 2018 to conduct the research from the preparation of research design to the final report. The research teams consist of interdisciplinary researchers from Social Sciences (sociology-anthropology), Economic, Forestry, Biology, Marine and Coastal Sciences. With the approach, it is hoped that the results of this baseline study can get a more complete portrait of the condition of forests and people in the Papua Bioregion.

The analysis of field data is to integrate spatial and social perspectives at the same time. It is hoped that the research results will be able to zoom in and out of various conditions at the research sites. With this model approach, this research seeks to be a pioneer of a study model that recognizes the importance of a scientific interdisciplinary approach. It is because, if the end of science is to "find a solution",


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Papua is an eastern part of Indonesia which has very high biodiversity. In fact, it is also a habitat for typical Australian fauna species such as marsupial mammals and several species of birds (Wallacea AR, 1869). In 2012, the Papua mainland was dominated by natural forests reaching around 86% of the land area (Margono BA et. al, 2014). Meanwhile, the results of the FWI analysis in 2014 shows that natural forests in the Papua Bioregion reached 83% of the land. Until 2018, there was a reduction in forest area of 200 hectares per year between 2013 to 2018. Practically, until 2018, the area of natural forest in Papua was around 33 million hectares or 81% of the land.

Forest becomes part of the life of Papuan people who are very dependent on natural forests. The local wisdom of the community in utilizing forests has become a special value for them in managing the forest. These practices are clear examples of sustainable forest management. The forest utilization is based on the needs and is carried out in accordance with applicable customary rules. The regulation is based on empirical experience since the beginning of their ancestors.

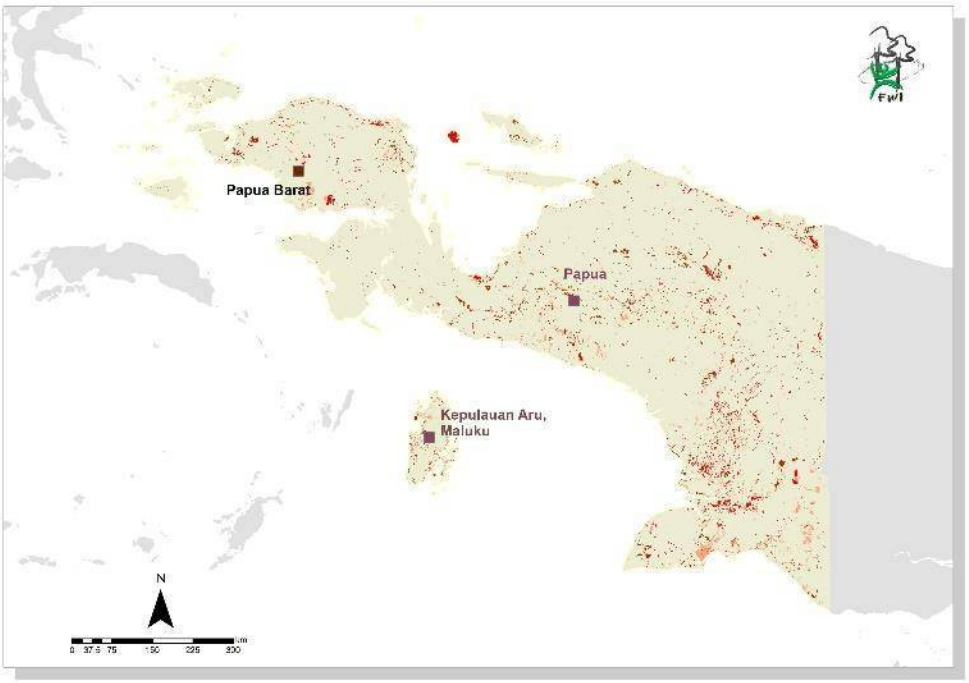


Figure 3 Deforestation in Papua Bioregion in the year 2000 to 2018. Source: FWI, 2019

Nevertheless, the glorious natural forests in Papua has never been separated from the threat of deforestation and degradation. Massive and systematic land-based

extractive industries continue to convert natural forests and eliminate the sources of community life and habitat of endemic animals.

In fact, generally, the lives of many people in Papua Bioregion still depend on the nature. Damage to the ecosystems such as mountains, valleys, savannahs, hills, rivers, lakes, marshes, coast and sea, and so on, will have a side effect in the form of damage at the base of the joints of life and the civilization. The special characteristic of the traditional life of the people in West Papua is the layered human relationship with the nature and the land, whether social, economic, ecological, cultural, magical religions, etc. Daily manifestations can be seen from the type of utilization of natural resources around them, which are generally still oriented towards subsistence objectives. The goal is to fulfill basic daily needs and not to serve commercial or large markets. The tools and technology that are used also pay attention to the limits of tolerance that can threaten the ecosystem. They make sure that their way of life is in harmony with their survival needs in the landscape of their ecosystem, in the highlands, middle, low-coastal marine, and small islands. However, the inclusion of development policies from outside, along with the ‘immigrant’ culture, more or less influenced the overall way, behavior, ideas and attitudes of Papuans. It is a logical fact that cannot be denied. Therefore, understanding the community life in the land of Papua now, must be able to 'go beyond' the perspective of 'romantic anthropology' which sees Papuans as given, static, and immune to the touch of acculturation and dynamic social-cultural changes. Thus, the way to understand the people in Papua needs to be done by discovering the "inner nature" and "inner world" emically and ethically. Simultaneously, it has to emphasize the dynamics of changes that occur in every aspect of socioeconomic, ecological, cultural, spiritual, etc. In this way, the people in Papua must be seated in a range of understanding based on emic attitudes and rational analysis (the results of social construction) together so that the portrait that is obtained can be understood in a whole and human way.

2.1 Land Cover Change Over Government Periods

Land cover change analysis is carried out using a confusion matrix, so that the level of cover change category is resulted based on a certain period. In this case, detailed changes in land cover are reviewed based on the period of presidential leadership in Indonesia, namely the New Order period, the Early Reformation period, Susilo Bambang Yudhoyono period, and during the Joko Widodo period.

Within 27 years, there have been six changes in the leadership of the Indonesia President. Namely President Soeharto, BJ Habibie, Abdurrahman Wahid, Megawati Soekarno Putri, Susilo Bambang Yudhoyono, and Joko Widodo. Based on Figure 4, there was a change in land cover in dryland forests at a rate of 43,200 hectares per

year, and wetland forests at 27,500 hectares per year. Most of the changes in forest cover turned into shrubs with an increase in the rate of 43,000 hectares per year and 20,000 hectares per year in agriculture.

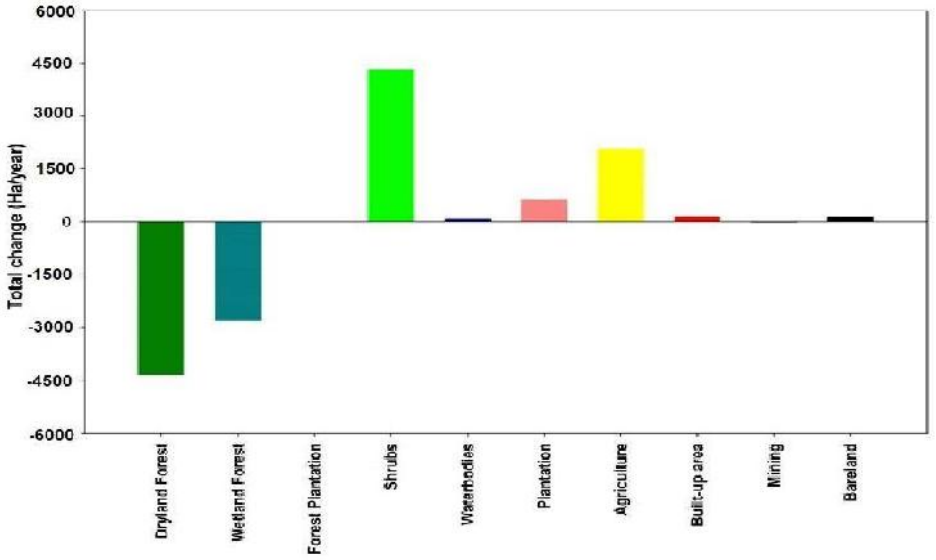


Figure 4 Chart of Land Cover Change in Indonesia. (Source: Digital data analysis of land cover of MoEF in the year 1990 to 2017)

The results of Ministry of Environmental and Forestry (MoEF) land cover data analysis in the 1990 to 2017[1] period showed the policy direction of each leadership towards the dynamics of forest cover change in the Papua Bioregion. Figure 4 shows that currently there is natural forest in Papua that has been replaced by shrubs which are then converted into agricultural land, plantation, and built-up land. Figure 4 also shows that the rampant conversion of land to oil palm plantations and illegal logging that occurred can not be separated from previous policies. Like the massive logging by HPH during the New Order period and the transmigration program at the time. In addition, policies that directly eliminate natural forests are also visible. An example is the 70 Ministerial Decrees regarding forest area releases for plantations covering an area of 721,000 hectares under the administration of President Susilo Bambang Yudhoyono. When referring to data on land cover changes of MoEF, the policy in that period had a direct impact on the loss of around 400,000 hectares of forests in Papua.

[1] Data of land cover of MoEF year 1990, 1996, 2003, 2014, 2017. The change of the new order period to reformation period occurred in 1998. However, there was no data available so that it refers to the 1996 data.

2.1.1 New Order Era (1990 to 1996)

Since the presence of Law Number 5 of 1967 concerning Forestry, the HPH licensing system began. Both state companies, namely State-Owned Enterprises (BUMN) and private companies are competing to have HPH concessions. These ruling elites then established cooperation with traders to exploit the forests. While the involvement of forestry scientists or those who understand how to exploit forests with minimal impact, was very limited. The effect is that, in 1995, there were around 586 HPH concessions with a total area of 63 million hectares or more than half of Indonesia's permanent forest area, were exploited by private and state-owned companies (Nababan A, 2004).

During President Soeharto era, in Papua, there was a loss of dryland forests at a rate of 43 hectares per year, and wetland forests at 35 hectares per year. During this period, an increase in the area of shrubs was 35 hectares per year (Figure 5). The change from forest to shrub indicated logging activities during this period. In addition, there were also 10 Forest Area Release Permits with an area of 72,521.65 hectares issued for plantation development (Table 2). This was the beginning of the expansion of oil palm plantations in Papua.

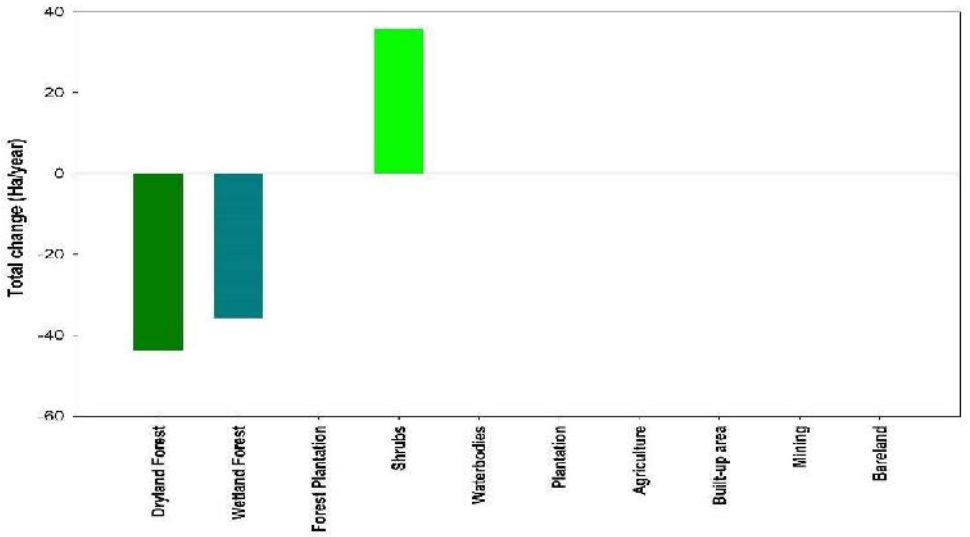


Figure 5 Chart of Land Cover Change in New Order Era. (Source: Digital data analysis of land cover of MoEF in the year 1990 to 1996)

During the Soeharto era, in addition to forest exploitation by extractive industries, the transmigration program also had a large share in relation to forest destruction and social inequality. During this period, there were 30 ministerial decrees concerning forest area release with an area of 90,378 hectares intended for transmigration (Table 1).

There were many cases of ownership changes from settlements of indigenous communities in Papua to migrants. This is the impact of the transmigration program promoted by the New Order Government. According to Austrian anthropologist Christian Warta, Suharto's ideology of "resettlement" was based on assumptions about the superiority of immigrants. Suharto saw migrants as modernity agents to remote areas of Papua. On the other hand, the people of Papua were seen as disadvantaged communities that must be changed to be cultured and civilized. As a result, many Papuans felt marginalized by the increasing number of migrants[2].

Table 1 Number of decrees of forest release for transmigration.

Government regime	Number of Decrees	Area
Soeharto	**30**	**90,378.91**
1991	13	57,866.37
1996	17	32,512.54
SBY	**1**	**31.28**
2014	1	31.28
Joko Widodo	**1**	**195.71**
2017	1	195.71
Grand Total	**32**	**90,605.90**

Source: Data of forest area release of MoEF up to the year 2017

2.1.2 Early Reformation Era (Habibie, Gusdur, Megawati)

In the midst of the shadow of the 'ideology' of exploitative development during the eras of Soeharto-Habibie-Abdurrahman Wahid until Megawati Sukarnoputri, the reorganization of the Unitary State of the Republic of Indonesia (NKRI) through regional autonomy became a debate in almost all strata of society. The regional autonomy policy was marked by the issuance of the Law Number 22 Year 1999 and the Law Number 25 Year 1999. In fact, for Papua itself, there is Law Number 21 Year 2001 which regulates special autonomy of the Papua Province. At the level of implementation, the policy has not yet touched on fundamental issues concerning the people's relationship with the government. During the New Order, this was problem faced by indigenous and local communities, which were lack of clarity, decisiveness, and freedom for the people to enter the arena of determining policies that were of common interest (the public).

The impact of the regional autonomy policy was that the district heads were competing to attract as much original regional income (PAD) from the forest resources. Such as the granting of small-scale HPH permits, Timber Utilization Permits (IPK) and so on, without careful calculation of the availability of forest resources. Increasing the authority in the hands of the regents and the regional parliaments (DPRD) does not mean by itself reducing the authority of the central

[2] https://historia.id/modern/articles/papua-di-tangan-soeharto-DpwQV. Akses tanggal 21 Desember 2018.

government in the districts over natural resources. The Ministry of Forestry (MoF) is now the Ministry of Environment and Forestry (MoEF) as a technical agency of the central government still using the Law Number 41 Year 1999 to retain absolute authority over the forest areas, including the authority to grant and revoke HPH, HTI permits, and release of forest areas. Practical forest destruction at that time was increasingly massive with legal forms of forest looting and more varied than ever before.

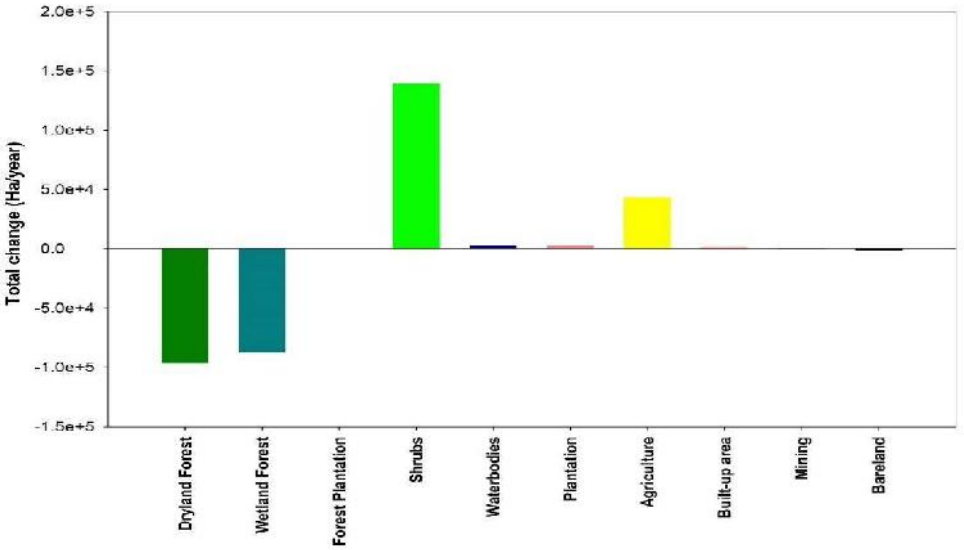


Figure 6 Chart of Land Cover Change in the early reformation era. (Source: Digital data analysis of land cover of MoEF for the year 1996-2003)

Increasingly chaotic forest damage was also seen in Papua. During this period, there was a very significant change in land cover. There was a loss of upland forest of 96,000 hectares per year and wetland forest of 87,000 hectares per year. The impacts on land cover change were an increase of shrubs of 138,000 hectares per year, agricultural land of 42,000 hectares per year, and mining area of 73 hectares per year (Figure 6). In addition, there were also four Forest Area Release Permits for plantations covering an area of 94,332.69 hectares (Table 2).

The increasing authority of the Regional Government in granting licenses for forest utilization was not accompanied by the government's capacity in controlling forest exploitation. This had resulted in increasing massive practices of illegal logging. This form of forest looting was generally carried out by timber capitalists who did not have logging licenses, but control logging operations and timber trade. They generally had an official wood processing industry, but did not have a permit for logging concessions. These logging operations were mobile and well-organized.

On the other hand, "reformation" had encouraged the dynamics of local politics and provided a space for political participation in the community through both formal and informal political mechanisms. Various natural resource conflicts that were previously hidden became open and became a necessity to overcome the causes and impacts. At that time, there were signs for the natural forest conversion to agricultural and plantation land in the Papua landscape, in the next administration.

2.1.3 The Era of Susilo Bambang Yudhoyono

During the period of Susilo Bambang Yudhoyono, land-based investment in Papua was increasingly massive. The conversion of natural forests into plantations continued and left injustice in the Land of Papua. At this time, dry land forests were lost in an area of 32.9 thousand hectares per year and wetland forests amounted to 8,757 hectares per year. The impact was that forest areas had turned into agricultural areas at a rate of 21.8 thousand hectares per year, plantations of 6,245 hectares per year, shrubs of 11.8 thousand hectares per year, open land of 4,499.9 hectares per year and mining of 174 hectares per year (Figure 7).

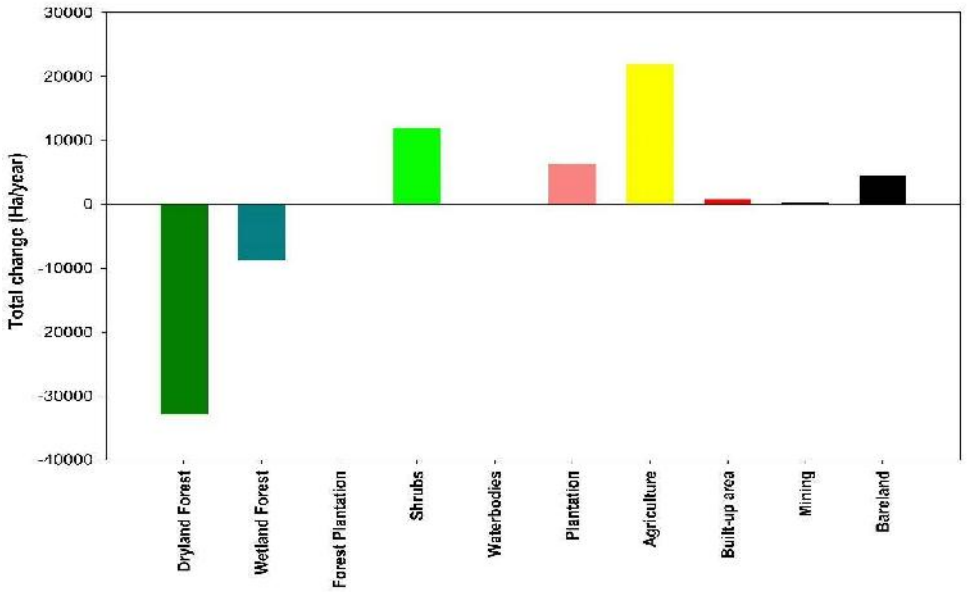


Figure 7 Chart of Land Cover Change in the Era of President Susilo Bambang Yudhoyono. (Source: Digital data analysis of land cover of MoEF for the year 2003 to 2014)

During President Susilo Bambang Yudhoyono's leadership, the highest change in land cover as a result of deforestation was agricultural land, continuing what had happened in the previous administration. One of the highlights of many circles was the large-scale agricultural development program in Merauke. Eight years after President Soeharto stepped down, the government through the power of

President Susilo Bambang Yudhoyono issued a policy to address the food problem. MIRE (Merauke Integrated Rice Estate) was a land clearing program of more than one million hectares in Merauke, Papua.

In 2008, MIRE changed to MIFEE (Merauke Integrated Food and Energy Estate). In 2010 a ceremonial pilot project of Medco was conducted in Serapu, Merauke. Through Government Regulation Number 26 Year 2008, Presidential Regulation Number 5 Year 2008, and Government Regulation Number 18 Year 2010, it was planned an area around 1.23 million hectares to be developed[3]. Even to expedite this project, the Ministry of Forestry, during the leadership of Susilo Bambang Yudhoyono, issued 70 licenses to release forest areas for plantations with an area of 721,391 hectares (table 2).

Table 2 Number of decrees of forest release for plantations

Government regime	Number of decrees	Area
Soeharto	10	72,521.65
Reformation	4	94,332.69
Susilo Bambang Yudhoyono	70	721,391.16
Joko Widodo	4	36,244.59
Grand Total	88	924,490.09

Source: Data of forest area release of MoEF up to year 2017

In addition, to support the greedy space development program in Papua, the government also issued Presidential Regulation Number 65 of 2011 concerning the accelerated development of the provinces of Papua and West Papua and Presidential Regulation Number 40 of 2013 concerning road construction in the context of accelerating the development of the provinces of Papua and West Papua. Even with those regulations, the president directly instructed the Indonesian National Army (TNI) as the executor in accelerating road construction in Papua. These large-scale exploitation plans in Papua had all been summarized in the Master Plan for the Acceleration and Expansion of Indonesia's Economic Development (MP3EI) year 2011 to 2025.

2.1.4 Current Condition (The Era of Joko Widodo)

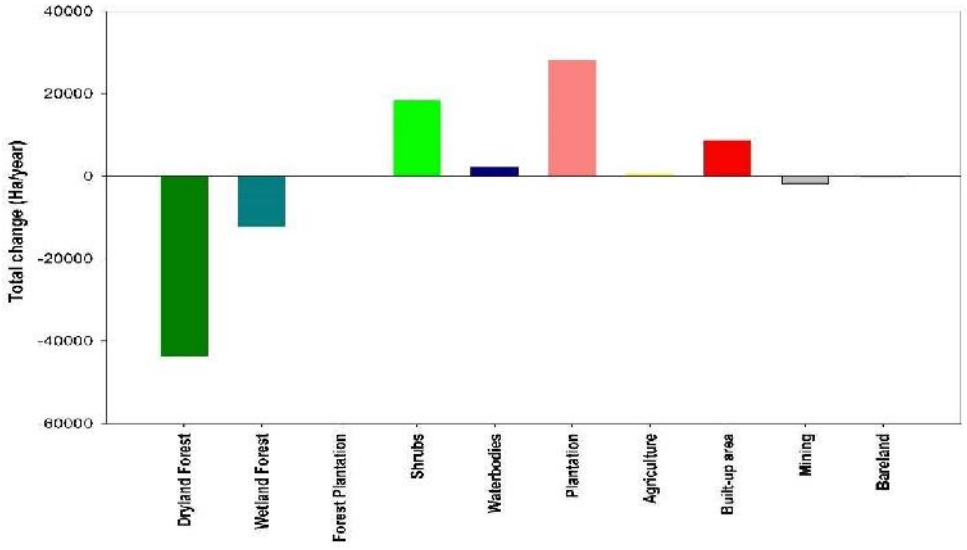
During President Joko Widodo's administration in 2014 - 2017, there was a loss of dry land forests of 43 thousand hectares per year, and wetland forests of 12 thousand hectares per year. The loss of natural forest in this period was also followed by an increase in land cover for plantations at a rate of 28 thousand hectares per year and shrubs 18 thousand hectares per year (Figure 8).

At this time, the dominance of plantation expansion, particularly oil palm, was the highest gain in which in the previous period, plantation expansion was classified as

[3] http://kedaulatanpangan.net/2015/07/mifee-dan-mimpi-swasembada-pangan/

emergence. It also cannot be separated from the large number of forest area releases for plantations that were issued during the previous administration. The data also show that the emergence of a land cover at a certain time will become gain in the next leadership period. This is what makes forestry-related issues even more complex, because what happens during a period of governance has to do with policies that were down during the previous administration.

Practically, land-based development policies that carried out during the leadership of Susilo Bambang Yudhoyono continued during the leadership of Joko Widodo. Although with different "clothes" in the name of development, the fact is that the exploitation of natural forests continued. Even up to 2017 there had been 4 licenses for releasing forest areas for plantations with an area of 36,244 hectares issued by the Minister of Environment and Forestry during Joko Widodo (Table 2).



Gambar 8 Chart of Land Cover Change in the Era of President Joko Widodo. (Source: Digital data analysis of land cover of MoEF for the year 2014 to 2017)

During the four years of Joko Widodo's administration, there was a rate of increase in the built-up land of 8,638 hectares per year. With the massive development of infrastructure in the current administration, it can be predicted that in the future the amount of built-up land in Papua will be increased sharply, following the addition of plantation and agricultural land which will also increase. In this condition, natural forests in Papua will become victim. Likewise, the life systems of indigenous peoples that are highly dependent on forests.

The condition of forests in Papua Bioregion was also analyzed based on Forest Watch Indonesia's forest cover data in 2000, 2009, 2013, and 2018. In 2018, the remaining natural forest in Papua Bioregion was 35.5 million hectares or around

81% of the total land area. Although the presentation of natural forests is still high in this region, the vulnerability of forest destruction in Indonesia has moved towards eastern Indonesia due to the exhaustion of potential areas in western and central Indonesia.

The movement of forest destruction in Indonesia that is shifting rapidly to the east is also strengthened by deforestation data analyzed over the years. The FWI periodically collects deforestation data in the Papua Bioregion that was analyzed from forest cover data in 2000, 2009, 2013 and 2018. The rate of deforestation in the 2000 to 2009 time period in the Papua Bioregion is 64 thousand hectares per year. The rate has almost doubled in the period 2009 to 2013 to 178 thousand hectares per year, and increased again in the period 2013 to 2018 to 184 thousand hectares per year.

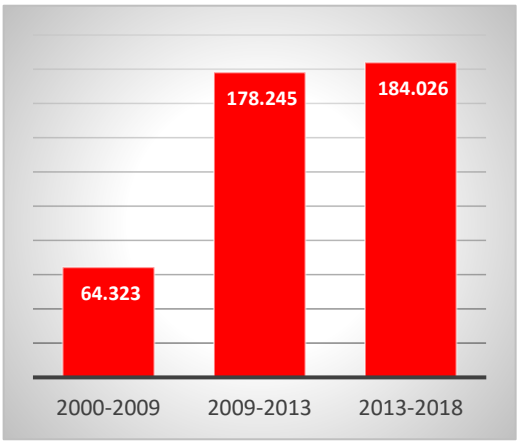


Figure 9 Deforestation rate per year in each period year in Papua Bioregion

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Practically, with the rate of deforestation that continues to increase in each period of the year, in the period of 2000 to 2018, the Papua Bioregion has lost 2.2 million hectares of its natural forest or about 122 thousand hectares per year. Seeing the trend, the rate of deforestation in Papua Bioregion can be categorized into a moderate rate of deforestation and will continue to increase to a certain point. Like the forests in Sumatra and Kalimantan in earlier periods.

2.2 The Remaining Forest and The Deforestation in Each Ecoregion

The increasing rate of deforestation in Papua Bioregion region shows that pressure on natural forests will continue to happen, due to the abundant resources of natural forest that still exist in Papua land. Various kinds of greedy investment are predicted to keep coming, along with the increasingly limited forests and land in other regions in Indonesia. Practically, Papua's forest is the only choice for a handful of people who want to reap the maximum benefits from the forest wealth of Indonesia.

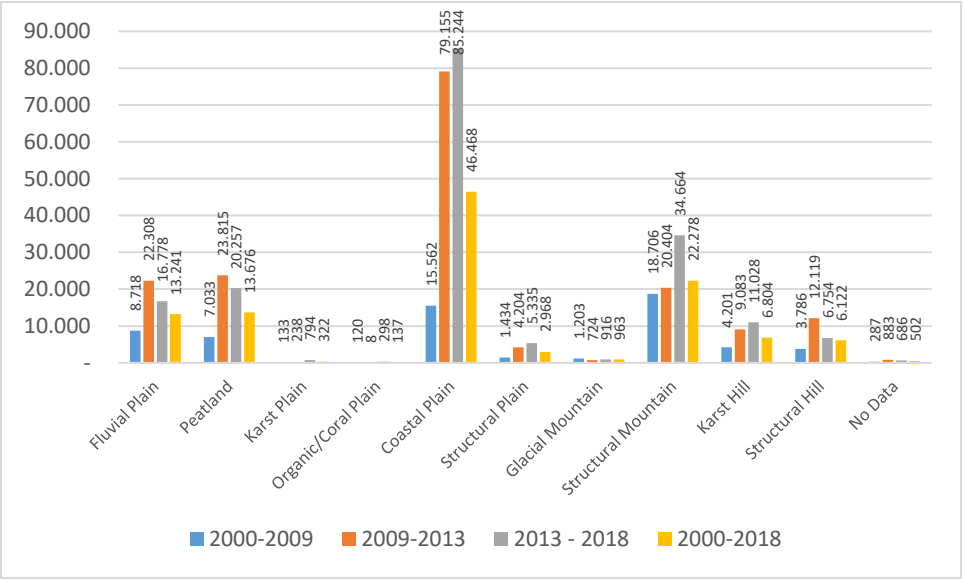


Figure 10 Comparison of deforestation rate in each periode year of each ecoregion.
Source: FWI, 2019

The deforestation pattern in Papua Bioregion continues to move from the coastal area toward the center of the islands. This is supported by the results of deforestation analysis in each ecoregion[4]. From 2000 to 2018, coastal plain ecoregion was the area with the highest rate of deforestation among others. Not only that, an increasing rate of deforestation is also seen in structural mountain and karst hill ecoregions. This shows that not only coastal plain of Papua, but also other ecoregions that are threatened by the high intensity of forest clearing.

The figure above shows that an increasing rate of deforestation has occurred in almost every ecoregion. The highest rate of deforestation is in the period 2000 to 2018 which occurred in the coastal plain area with an average rate of 49 thousand hectares per year. It can be interpreted that the coastal plain area has lost 882 thousand hectares of the natural forest for 18 years. This is the biggest contributor, approximately 4%, of total deforestation that occurred in the Papua Bioregion. Easy access to natural forests and the vast land of coastal plains is allegedly a strong reason why the high rate of deforestation in this ecoregion is very different with other ecoregions. This is also the considerations why various types of land-based investment happened in this ecoregion. Moreover, focused urban development in coastal areas is also an indirect cause of high deforestation in coastal plains ecoregion.

[4] Ecoregion is a geographical area that shares the characteristics of native climate, soil, water, flora and fauna as well as patterns of human interaction with nature that illustrate the integrity of natural systems and the environment

Table 3 Forest cover and deforestation in each ecoregion (2000, 2009, 2013, 2018)

Ecoregion	Land Area	Area of Forest (hectare)				Deforestation 2000-2018 (Hectare)
		2000	2009	2013	2018	
Fluvial Plain	3,637,230	3,185,892	3,107,432	3,018,202	2,934,311	251,580
Peatland	3,529,294	3,042,196	2,978,897	2,883,638	2,782,351	259,844
Karst Plain	38,289	33,696	32,496	31,546	27,574	6,122
Organic/Coral Plain	19,571	16,171	15,092	15,059	13,567	2,604
Coastal Plain	12,024,002	9,069,554	8,929,500	8,612,880	8,186,660	882,894
Structural Plain	1,345,646	1,153,769	1,140,865	1,124,048	1,097,372	56,397
Glacial Mountain	330,348	57,752	46,921	44,027	39,499	18,252
Structural Mountain	12,107,127	11,017,891	10,849,534	10,767,919	10,594,601	423,289
Karst Hill	3,619,341	3,338,753	3,300,948	3,264,615	3,209,473	129,280
Structural Hill	5,099,480	4,902,340	4,868,262	4,819,787	4,786,018	116,322
No Data	351,678	23,144	20,561	17,028	13,598	9,545
Total	**42,102,006**	**35,841,156**	**35,290,507**	**34,598,748**	**33,685,026**	**2,156,130**

Source : FWI, 2019

In addition to the coastal plain, structural mountain ecoregion is also an area that has high deforestation rates of 23 thousand hectares per year. The rate of forest loss higher more than period 2000 to 2009, which was 18 thousand hectares per year. Although the deforestation rate is not as large as the coastal plain ecoregion, a large area of ecoregion over 12 million hectares with extensive forest cover (10.6 million hectares) shows that the rate of deforestation in this ecoregion will continue to increase each year, with the assumption that forest exploitation will still continue in the following years.

In addition to the two types of ecoregions above, the existence of natural forest on peatlands also has high level of deforestation threat. With an area of 3.5 million hectares of peatlands, this ecoregion still holds 2.7 million hectares or 79% of natural forest in 2018. It has a reduction of 259 thousand hectares or 14.4 thousand hectares per year compared to 2000 which was 3 million hectares. If we look at the comparison of the deforestation rate, there has been a decline in the rate of deforestation from 23,8 thousand hectares per year in the period of 2009-2013 to 20 thousand hectares per year for the period of 2013 to 2018. The declined rate of deforestation in the period can be said as part of the impact of the licensing moratorium policy on primary forests and peatlands which was initiated in 2011. However, the declined rate is not proportional to the increased rate of deforestation that occurred in the period 2000 to 2009 until the period of the year

2009 to 2013 which was 7 thousand hectares per year to 23.8 thousand hectares per year. Thus, deforestation rate that is still high in the peatland ecoregion is still a real threat in this ecoregion.

The same thing also occurred in fluvial plain and structural hill ecoregions. There was a decrease in the rate of deforestation in the period 2009 to 2013 until the period 2013 to 2018. Fluvial landforms are all processes that occur in nature, both physical and chemical that result in changes in the shape of the earth's surface, which is caused by the action of surface water, whether the water that flows in an integrated manner (rivers), or water that is not concentrated (sheet water). The fluvial process will produce a unique landscape as a result of the behavior of water flows on the surface. The formed landscape can be occurred due to the erosion or due to the sedimentation processes carried out by the surface water[5].

Based on the formation process, fluvial plain is area that is very vulnerable to landscape changes. The changes of fluvial plain generally are occurred due to natural events like flood, landslide, earthquake, and so forth. Thus, forest exploitation in the area does not become a high potential activity that causes environmental damage. Whereas the structural hill areas in the Papua Bioregion are concentrated in the regions of Waropen, Nabire, Wondama Bay, Jayapura, Membramo Raya, and Sarmi. The remaining natural forests in the area are natural forest with difficult access. This also has an impact on reducing the rate of deforestation in the ecoregion. In addition, the area of the structural hill landscape is also smaller when compared to the structural mountain ecoregion. So that the potential for the existence of natural forest is higher in the structural mountain ecoregion.

2.3 The Remaining Forest and Deforestation Inside Forest Area

Papua Bioregion has the largest forest area in Indonesia. With a land area of more than 40 million hectares, around 94% of the area is a "Forest Area"[6] with various functions. These functions are Production, Protection, and Conservation Functions. Of the approximately 38.6 million hectares of the forest area, 53% is allocated as Production Forest, which are generally only limited to timber utilization. Utilization of forest resources can be limited utilization, and also can be converted forest for other commodities and need to be released from the forest area. Limited Production Forest (HPT) has the largest production area of 7.7 million hectares, followed by Permanent Production Forest of 7.1 million hectares, and the Conversion Production Forest (HPK) of 5.6 million hectares.

[5] https://www.academia.edu/23982401/Bentuk_Lahan_Asal_Struktural?email_work_card=view-paper

[6] UU 41 tahun 1999: Kawasan hutan adalah wilayah tertentu yang ditunjuk dan atau ditetapkan oleh pemerintah untuk dipertahankan keberadaannya sebagai hutan tetap

In the Papua Bioregion, there are also forest areas designated as protected and conservation areas. These two functions are equal to 47% of the total forest area in the region. The Conservation Forest is 8.5 million hectares, while the Protection Forest is 9.4 million hectares.

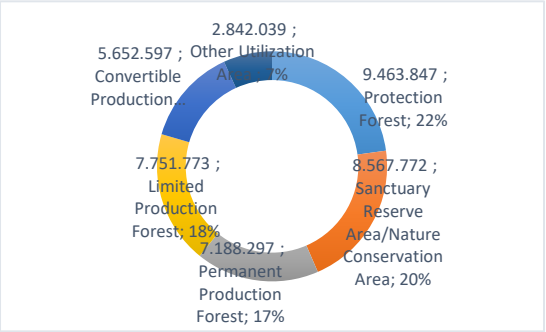


Figure11 The Comparison of forest area functions in Papua Bioregion. Source: FWI,2019

The extent of the forest area does not necessarily mean the extent of the existing natural forest in the Papua Bioregion. In fact, not all existing forest areas have land cover in the form of natural forests. Many areas within the forest area have been deforested. Moreover, there is also natural land cover which is not natural forest. But it is a native ecosystem that is there such as savannah and highland ecosystems. The results of the FWI analysis up to 2018, of the 38.6 million hectares of the forest area, there are around 6.7 million hectares of land cover is not natural forest. Likewise, with the existence of natural forests, not allnatural forests in Papua Bioregion are within the forest area. Of the total 33.6 million hectares of natural forest that exists, 95% are in the forest area. The remaining 1.6 million hectares (5%) of natural forest are in the Other Utilization Area (APL).

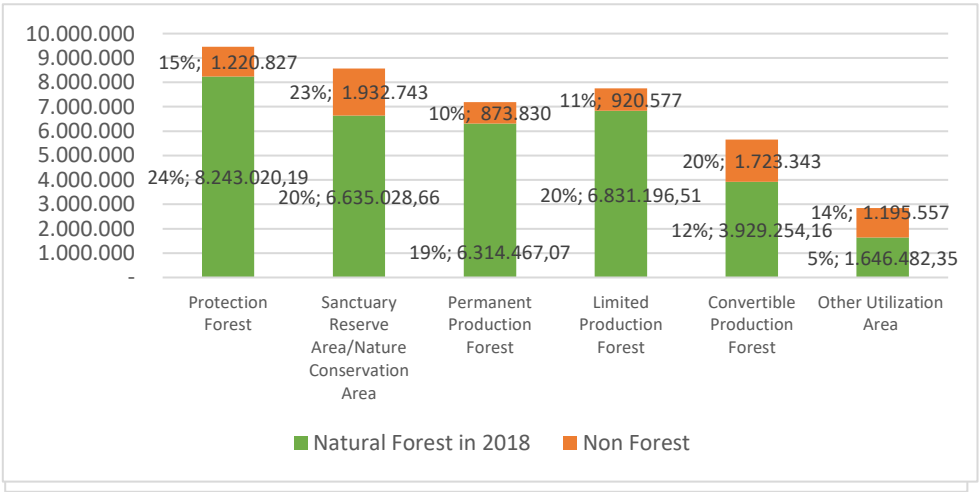


Figure 12 The condition of natural forest inside the forest area and Other Utilization Area (APL) in 2018

The picture above shows that not all Forest Areas in the Papua Bioregion have land cover in the form of natural forests. The area with the most different condition is seen in forest areas with the function of the Conversion Production Forest (HPK).

With a total area of 3.9 million hectares, there are around 1.7 million hectares (20%) which are not natural forests. This indicates the existence of massive natural forest conversion activities within the forest area without the process of releasing the forest areas. Likewise, in Production Forest (HP) and Limited Production Forest (HPT) areas, forest exploitation in these areas should not cause loss of natural forest. With the exception of the IUPHHK-HT / HTI permit, there is the principle of selective logging which should not clear down existing natural forests. So that it will only have an impact on the decline in the quality of natural forests, and not eliminate all the natural forests.

Another unequal situation happened in the forest areas with Protection and Conservation functions (KSA-KPA). Of the total 18 million hectares, there are around 3.1 million hectares of land cover which is not natural forest. Apart from the original ecosystem, which is not natural forest, the deforestation in the both forest areas also show the absence of control management which leads to deforestation.

The forest loss in the forest area is also strengthened by the calculation of deforestation that occurred in the Papua Bioregion in the period 2013 to 2018. During the 5 year period, 876.6 thousand hectares of natural forest were lost, of which 659 thousand hectares (75%) occurred within the forest area. The extent of natural forest lost in the Forest Zone is spread over various functions of forest. The largest area of deforestation occurred in the function of the Conversion Production Forest (HPK) with a value of 200 thousand hectares. While the remaining 152 thousand hectares in the Protected Forest, 110 thousand hectares in the Production Forest, 105 thousand hectares in the Conservation Area, and 91 thousand hectares (14%) in the Limited Production Forest.

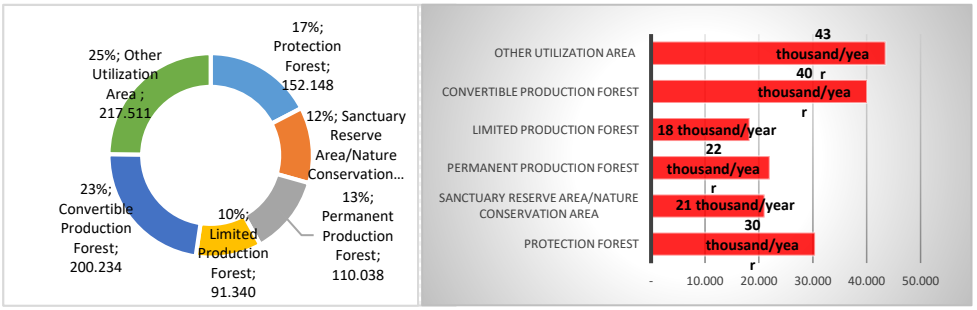


Figure 13 The comparison of deforestation area in the year 2013 to 2018 within Forest Area based on its functions (left), Deforestation rate in each forest area function per year (right). Source: FWI,2019

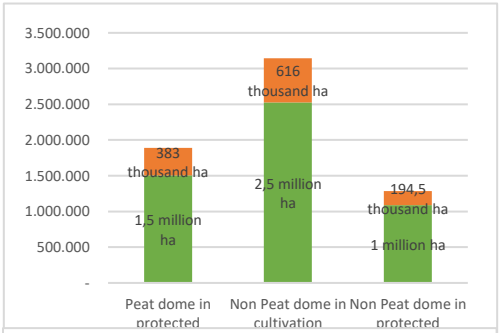
During the period 2013 to 2018, natural forest in Papua Bioregion was deforested, on average, at a rate of 175 thousand hectares per year. The highest deforestation

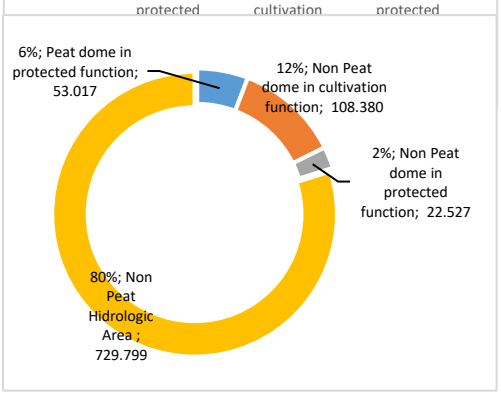
is the Other Utilization Area (APL) with a deforestation rate of 43 thousand hectares per year. This indicates the massive forest clearance in the area that has been released from the forest area for other land uses, such as plantation, agriculture land, mining, infrastructure, and so forth. While in the forest area, the highest rate of deforestation is located in the Convertion Production Forest (HPK) with a rate of 40 thousand hectares per year. This further indicates massive forest clearing without legal process of releasing the forest area. The illegal practices also happen in the other types of forest area, such as conservation area and protected forest. The deforestation rate in those areas is 51 thousand hectares per year.

The distribution of deforested areas within the forest area indicates that the functional status of a land does not guarantee the natural forest sustainability. It has not been able to control the management and utilization of the forest. Thus, in order to control the deforestation rate in Papua Bioregion, it should not only about the change of the land function status, but also should ensure the presence of the state in controlling the forest management and utilization. This also includes the implementation of FPIC (Free, Prior and Informed Consent)[7] in every process of determination of the status of forest areas and the granting of forest use permits.

2.4 Forests and Deforestation in Peat Hidrologic Area (PHA)

In the previous sub-chapter, it is mentioned that the area of peatland ecoregion in Papua Bioregion is 3.5 million hectares. On the other hand, the government has also issued an indicative area of Peat Hidrologic Area (PHA) which covers 6.5 million hectares. The area consists of the PHA of protection function area of 3.2 million hectares and PHA of the cultivation function of 3.2 million hectares. Based on the peat characteristic, the PHA is divided into the peat dome and the non peat dome. The peat dome area is around 2 million hectares and the non peat dome is around 4.6 million hectares. The PHA area in the Papua Bioregion is widely distributed in the lowlands





[7] Free, Prior and Informed Consent (FPIC) is a specific right that pertains to indigenous peoples to say "yes, and how" or "no" to development that affects their resources and territories. This right is recognized by international law and national laws in several countries.

such as Mappi, Asmat, Bintuni Bay, Mimika, and Boven Digoel districts. While the highland PHA is in Membramo Raya district. As a note, not all PHAs in Papua Bioregion have land cover in the form of natural forests. In fact, deforestation also occurs within the PHA, both in the protection areas, agriculture areas, peat dome, or non peat dome areas.

Figure 14 shows that of the total 6.5 million hectares of PHA in Papua Bioregion, approximately 79% or 5.1 million hectares are still natural forests. The natural forest is evenly distributed in both area functions, with each area around 2.5 million hectares. The PHA with non natural forest cover is caused by the deforestation occurred in the area. In the period 2013 to 2018, the deforestation in the PHA was around 183,923 hectares or 22% of the total deforestation. The deforested areas are spread over an area of 75,543 hectares of the protection function area and an area of 108,380 hectares of cultivation protection area.

The deforestation in PHA has also occurred in the concession areas. Of the 182 thousand hectares of natural forest lost in the PHA, 30% or around 54 thousand hectares occurred within the area that has been encumbered with licences. The highest rate of deforestation in PHA has also occurred in concession area which is oil palm plantation with the deforested area around 27 thousand hectares. On the other side, within PHA, there are around 1.18 million hectares, both forest and land that have been encumbered by extractive industry permits. Oil palm plantations cover an area of 462 thousand hectares, while HPH covers 369 thousand hectares, mining 265 thousand hectares, HTI 49 thousand hectares, and the rest in the form of overlapping permits covering an area of 36 thousand hectares.

2.5 The Remaining Forests and the Deforestation in Consession Area

With a land area of more than 40 million hectares, the Papua Bioegion which is rich in natural resources is a special attraction for those who are proficient to reap profits. In particular, voracious spatial investments in the forest and land sector. Until 2018, it was recorded that 19.8 million hectares or 48% of the land in Papua Bioregion had been burdened by these investment permits. This licensed area does

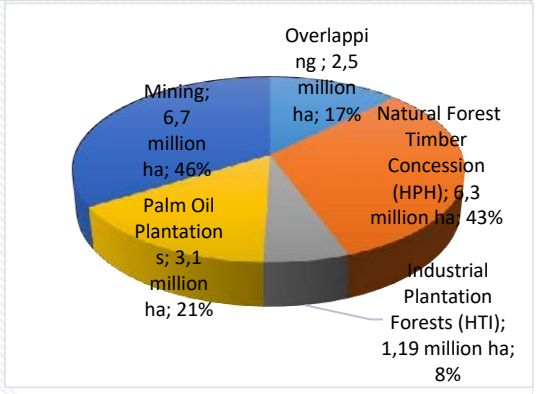


Figure 14 Comparison of licensed area in each sector. Source: FWI,2019

not include other licenses outside mining, HPH, HTI, and oil palm plantations.

The biggest license is mining license with an area of 6.7 million hectares, followed by HPH with an area of 6.3 million hectares, then 3.1 million hectares of oil palm plantation, 1.19 thousand hectares of HTI, and the remaining overlapping license area of 2.5 million hectares. In addition to the high potential of minerals, the vast natural forests become the magnet for timber and plantation business. This has led to increasingly massive licenses granted in the Papua Bioregion.

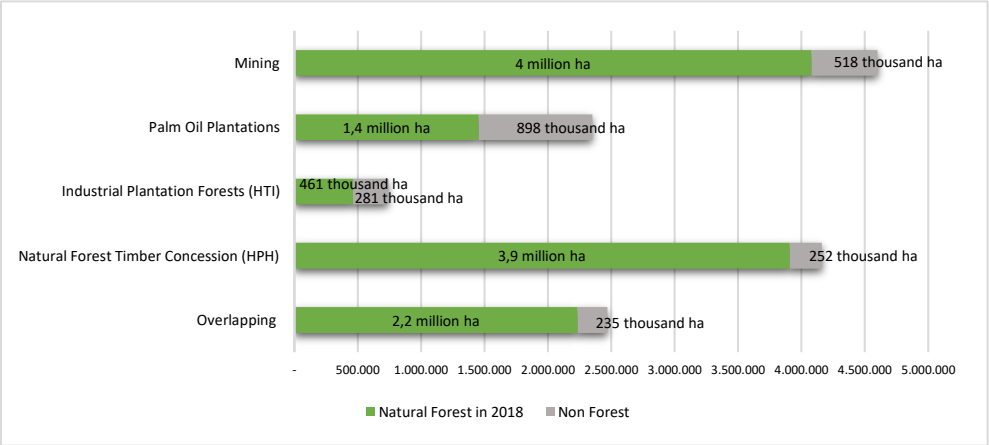


Figure 15 Comparison of forest condition in each concession area

This voracious space land and forest licenses become both direct and indirect threats to the existence of natural forests. Until the year 2018, 83% or 12.1 million hectares of the 14.6 million hectares of licensed area was in the form of natural forests. Meanwhile, there were 2.2 million hectares that conditions are no longer forested. It is predicted that those non forested areas will increase. It is noted that for the period 2013 to 2018 there have been around 369.3 thousand hectares of natural forest loss within the permit concession area.

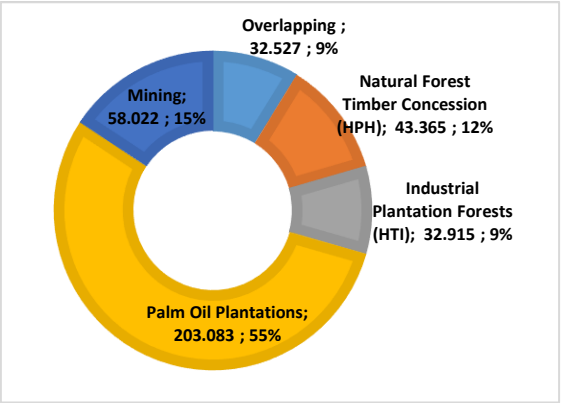


Figure 16 Deforestation within the concession area. Source: FWI,2019

Figure 17 shows that of the 369.9 thousand hectares of natural forest loss in the licensing concessions, 55% or around 203 thousand hectares are in oil palm plantation concessions. While the rest sequentially occurred in mining concessions covering 57 thousand hectares, 42 hectares of HPH, 32 hectares of HTI, and 32 thousand hectares of the

overlapping area. The high rate of forest loss in the oil palm plantation is partly due to the forest clearing activities as a part of the land preparation. The converted forest the replaced by the oil palm commodities. With this condition, it is predicted that forest clearing for oil palm plantation will still to continue. This is in line with the issued licenses which the condition is still in the form of natural forest cover. Moreover, the massive development of infrastructure which is expected to further increase the access to the natural resources which is more profitable for those who wish to exploit forest in the Papua Bioregion.

2.6 The Threat of Climate Change

Climate change in the world is closely related to the amount of carbon emissions (CO_2) released into space. In Indonesia alone, the carbon emissions are from deforestation, both forests on peatlands and on mineral soils. The more carbon emissions released, the more it affected temperature changes.

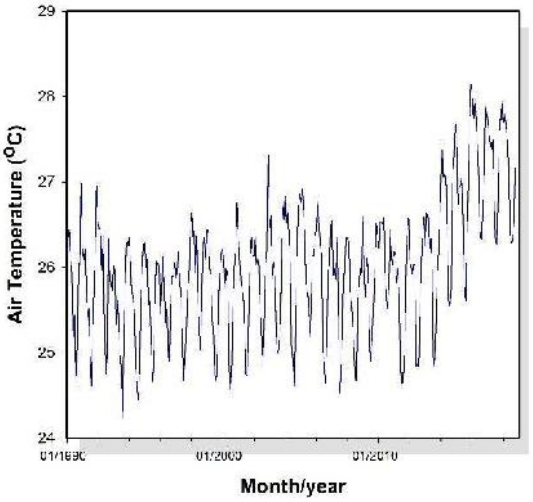


Figure 17 Chart of temperature in Papua year 1990 to 2010

It is undeniable that climate change is no longer a mere researchers' speculation. Some amplification of natural disasters that occur in various parts of the world is a result of climate change. In addition, interactions between the environment and climate also have reciprocal connectivity so that the various activities we do will result in changes in climate variations.

Figure 18 shows the historical air temperature of the Papua bioregion. The data used is the spatial temperature data of the Global Historical Climate Network, which is the assimilation data of the NCEP model from NOAA with observations of global climatology stations. On a monthly basis, air temperatures show fluctuations due to variations of the seasonal differences (i.e. rainy and dry) so that it affects the temperature of the surrounding air.

In the period 2013 to 2014, there was a significant increase in average monthly air temperature. Anthropogenic activities, i.e. infrastructure development, industry, transportation, and deforestation, have been trusted as contributors to the rise of the air temperature. This can reduce the level of comfort, increase the intensity

and distribution of diseases (i.e. vector-borne disease), as well as other negative impacts.

2.7 Understanding Papuan People

To understand the majority of Papuan people (Papuan) who have a close relationship with the nature, it is important to find out the following bases. First, the human relationship with the land and natural resources is complex and layered (social, cultural, economic, ecological, and spiritual). Thus, it cannot be simplified to just one dimension. Continuous separation of complexity and layers of relations will shake the social, economic, political, and ecological sustainability. Papuan people also still have a variety of local knowledge as the result of long relationships with their land, water, forests, mountains, sea, rivers, lakes and so on, which, of course, there are dynamics and processes that continually change in harmony with the problems and challenge they face.

In general, almost all ethnic groups of Papua inland believe that the inland, highlands and the mountains are sacred storages of various foods, possessions, and an abundant wealth, to be enjoyed by the people for life. Some indigenous peoples of Papua say that the mountains around the Moni tribe, for example, contain treasures. Indigenous Papuan tribes in inland area still believe that only migrants know how to reach the treasures and that they will not tell the natives because they want to own it alone. In the Papuan people's view of nature, God and spirit are a single entity that encompasses human life, and is a manifestation of the teaching of monism which has a positive meaning in efforts to preserve nature. Humans are part of nature, so destroying nature means damaging themselves.

Native peoples identify nature with their parents, so the land is considered a mother, a mama. Thus, it is clear that the Papuan peoples have a special spiritual relationship with the land. For most indigenous Papuans, land is a place where life goes from generation to generation. In Melanesian Eco-Cultural tradition and culture, there is no environmental area in Papua that is included in the "no man’s land" category. Each piece of land has cultural relations with the surrounding indigenous communities. In short, for Papuan people, the meaning of the concept of land encompasses all areas used by the people, including the sea, rivers, mountains and the resources within them.

Second, the land, water, nature and agrarian resources are not entirely commodity or things for sale. So the management must not be left entirely to the market mechanism. The mandate and principles of land and agrarian in the Agrarian Law Number 5 Year 1960 can be a basic reference for this view. This is the basis for how the Papuan people view their nature and living space. So that the entire system of governance over their nature is not entirely solely for commercial and market interests. If there is damage and social-ecological crisis of the living space of the

Papuans, it can be examined further, to what extent has this view changed or persisted?

Cosmologically, the general accepted cultural value of the Papuan peoples who view land as a mother shows that Papua's cosmological insight is more "inward looking philosophy" which contains the concepts, principles, and views that maintain and guarantee the environmental sustainability. This means that the relationship between Papuans and their nature is a religious-magical relationship that is not merely a religion (because many Papuans are not religious), but a dignified view of life towards the nature. It consists of two kinds of views: (a) belief, that some things and plants have souls (b) belief, that objects or plants have a magical force (dynamism). The "religio-magical" culture applies in a variety of customary laws, including the abstinence tradition, that regulates environmental preservation in the fields of forestry and agriculture, economics, history and customary rights in Papua.

Third, problems of agrarian dimension are historical. Tenure and agrarian issues present in Papuan society today are, in part or in a whole, accumulation of the long problems of national political-economic policy, in line with the history of the Unitary State of the Republic of Indonesia. Thus, explaining tenure and agrarian issues in Papuan society must be viewed from a historical critical perspective.

Papuans understand the history of human culture as episodes or certain phases that continually change. Events and actors from one phase are replaced by actors from another phase, which sometimes are not related to each other. Giay (2000: 9-10) sharply expresses:

> *... by following the flow of thinking of the philosophical episode, Papuan peoples said that the history of Papua follows the episodes. There is an episode where Papuan peoples rule their own land, then the next episode is where they are replaced by the western missionaries. Then, followed by next episode is the arrival of the Dutch, the Japanese, and the arrival of Indonesian. The next episode is the Papuan independence and the last episode is the arrival of the Christ (an episode interpreted from a Christian perspective). From this understanding, Papuans view that being part of the Republic of Indonesia is only a temporary transit, not the final destination[8].*

Understanding these phases and periods helps us to further understand how the cosmology of the Papuans, especially the will to be independent from the Unitary State of the Republic of Indonesia.

The majority of indigenous Papuans take and manage natural products directly for their subsistence needs. The reason is the very heavy geographic terrain conditions. Many mountains that reach 5000 meters above sea level, including lots

[8] Look further, I Ngurah Suryawan, Kosmologi Papua Merdeka, https://indoprogress.com/2018/12/kosmologi-papua-merdeka/

of forests and rich natural resources that are still pristine with a limited accessibility. Due to such natural environmental conditions, indigenous Papuans put their lives excessively or in full on natural resources according to kinship and knowledge of environmental wisdom that is very strong and fundamental.

The main livelihoods of indigenous Papuans are generally as hunters, gatherers, shifting cultivators, sedentary farmers, fishermen, and fishermen-farmers. For example, hunter and cultivator gatherer-type communities are the Asmat tribe in the southern part of Papua. The type of shifting cultivation community is the Dani tribe in Papua inland. Sedentary farming communities are the Biak and Sentani tribes in North Papua, while the fishermen and farmer-type communities are tribes on the island of Yapen (Serui) on the northern coast of Papua.

In general, there are several factors that influence the traditional wisdom values of the Indigenous Papuans: (1) The process of the environmental adaptation that enables Papuans to recognize and understand the surrounding nature. Based on this experience, Papuans develop equipment to connect their physical limitations, choosing the right ways to respond to the challenges they face. In addition, Papuans began to try to place themselves in the web of life. (2) The development of Papuan's culture is a symbolic thinking. Symbols are developed and given a meaning that are sometimes detached of their original meaning. With those symbols, Papuans try to understand their environment and overcome the problems that arise because of their attitudes and behavior. For an example is the Nabire earthquake in 2004. The earthquake encouraged the people of Papua to act in a many ways to deal with the same symptons.

Because of the two factors above, Papuans can accommodate their experiences in the knowledge system that controls how they think and behave. The response from the outside was manifested in the success of Papuans in sustaining life and developing generations by developing equipments and ways to control them. While inward responses are reflected in the knowledge system as a frame of reference that embodies the attitudes and behavior patterns of the indigenous Papuans. Both of these adaptation processes are the basis of environmental wisdom as a frame of reference for maintaining the stability of the cosmic balance. With the above perspective, some local wisdom born from the people of Papua, including: (1) The value of moral unity with the nature. The unity between morals and nature was revealed in their statement "... The occurrence of a number of conflicts over land use in Papua is the concern over the use of sacred customary territories that can bring various natural disasters such as floods, droughts, pests, crop failures, absence of sea catches, etc. Because of errors in their attitudes and behavior towards nature" (2) The cultural value of the land as a mother. Which

shows that there is a harmonious relationship with the land and nature into their living space[9].

However, there are pitfalls that must be avoided in defining and understanding indigenous peoples, including Papuans. There are at least three things; (1) Romantic Attitudes. One attitude which presupposes the "all-past" of the indigenous people is certainly better and certainly suitable in all ages. It means seeing one particular social phenomenon as "given". It Often ignores the dynamics and changes that accompany every reality of the times, including indigenous peoples as social entities that live within a certain time and space. (2) Glorification Attitude. An attitude that views all indigenous peoples are "holy" and free from wrongdoings. The specificity and uniqueness of indigenous peoples are different characteristic and may be an advantage over other social communities. However, sociologically and anthropologically, indigenous peoples are human communities that live in the "profane and non-profane" world at the same time, as do other social humans. (3) "Monoface" attitude. An attitude that, sociologically, sees indigenous peoples as "single-faced" entities. In reality, indigenous peoples have diverse social structures, layers and "classes". Both based on genealogy, kinship, ethnicity, economics, politics, etc. When mentioning indigenous women, for example, will be confronted with a variety of layers and social realities that there are indigenous women, customary wives, landless customary women, “blue blood” indigenous women, indigenous women farmers and cultivators, poor indigenous women, indigenous women widows (chief family), etc. With this kind of background, it will guide how to see indigenous people with a more critical perspective without losing respect for the variety of advantages that indigenous people have that other social communities do not have[10].

[9] Look further, https://bangazul.com/masyarakat-tradisional-papua-2/

[10] Look further, Cahyono, Eko, “*Masyarakat Adat dan Ruang Hidupnya: Menegaskan Agenda Paska Penetapan Hutan Adat*”, Newsletter Monitor, Ed 11, JPIK, 2018.

3 Condition of Forest, The People & Dynamical Changes In The Three Research Sites

The variety of national and global development policies that have entered Papua so far has at least contained innate defects and have not fundamentally changed in these three problems at once; (1) Paradigmatic problems. The character of 'developmentalism' is based on economic growth that is exploitative and extractive toward nature, from agrarian resources and other natural resources. Natural resources are seated merely as economic assets and commodity goods to serve the global market. The result is, the creation of inequality and structural poverty that continues to be inherited, (2) The problem of 'politic of ignorance'. The choice of type and form of development that is still dominant top down and ignores all dimensions of locality. Because all policies are arranged "unilaterally" by the designers and policy makers at government desks, both central and regional, who have not really given space to the "needs and votes from below", (3) Problems of violation of human rights and the principle of ecological sustainability. The lack of community involvement as the subject of development in Papua, makes the Papuans as objects and spectators of all development policy objectives, in global, national and local levels. As a result, the various records of human rights violations are still high. Along with that, the land of Papua with all the wealth, forests, seas, valleys, marshes, lakes, peat, savanna, and its nature continues to massively suffer damage and pollution that threatens the sustainability of natural services for future generations.

In the context as explained above, it is easy to explain the relationship between the process of land grabbing, deforestation and humanitarian violence as well. Even more tragic is that this condition also occurs in indigenous groups in almost all the land of Papua. Specifically related to various forest and land investment policies.

In this chapter, this report is intended to describe the condition of forests, communities and the dynamics of change in the three districts where in-depth studies were conducted. Basically, FWI is aware that these three districs have not been able to represent the overall picture of conditions in the Papua Bioregion. However, at least the explanation in this chapter can represent regions that have similar conditions, both in terms of forest conditions and the social culture of the community. The initial findings of this study also serve as an initial igniter for the purposes of further and broader studies.

3.1 Sorong District

Sorong is a district in the province of West Papua, Indonesia. The capital is located in Aimas. Sorong district has an area of 18,170 square kilometres. The administrative boundaries of Sorong district are as follows. The north boundary is Pacific Ocean and Dampir Strait, the east boundary is Tambrauw and South Sorong districts, the south boundary is Seram Sea, and the west boundary is Sorong City, Raja Ampat district, and Seram Sea.

Historically, the name of Sorong was taken from the name of a Dutch company which at that time was given the authority to manage and exploit oil in the area, namely Seismic Ondersub Oil Niew Guines or abbreviated as SORONG. The traditional government in Sorong was originally formed by the Sultan of Tidore in order to expand his empire by appointing four kings called *Kalano Muraha* or Raja Ampat. The four kings were appointed according to the four large islands that scattered from a group of islands with the territories as follows:

- King Fan Gering became the King of Waigeo island
- King Fan Malaba became the King of Salawati island
- King Mastarai became the King of Waigama island
- King Fan Malanso became the King of Lilinta Misool island

Sorong joined Indonesia after the surrender of West Irian to the United Nations Temporary Executive (UNTEA) on 1st October 1962 to 1st May 1963 by the Dutch[11]. This piece of history is only one perspective, and there may be a variety of other historical perspectives, including folklore of the indigenous peoples in Sorong.

Malailis and Siwis Villages

Administratively, Malalilis Village is located in the Klayili sub-district, while Siwis Village is in the Klaso sub-district. Both villages are in Sorong district, West Papua Province. Whereas in terms of customary ownership, Malalilis village is in the customary land belonging to the Gilik Klasafet sub-clan, and Siwis village is in the customary land owned by the Malak Gitili sub-clan. As a tribal group, the native inhabitants living in Malalilis and Siwis villages are included in the Moi Tribe, which belongs to the Moi Kelim sub-tribe.

3.1.1 History and Demography of the Villages

Malalilis Village

The people of Malalilis were originally from Kalagisik. They migrated to Sayosa and Klayili villages in Makbon sub-district. In 1979, the Malalilis area was still a sago hamlet or a place with many sago groves, called Kalabakarke. In the sago hamlet, there are usually non-permanent houses for temporary stays for several days. Gradually, the landowners felt that they were too far away to bring the sago and forest products from Kalabakarke to their place of settlement in Klayili.

In 2004, Lukas Gilik and Bernadus Gilik proposed the establishment of a new village to PT Henrison Inti Persada (HIP), which had opened an oil palm plantation in the Gisim clan area. Furthermore, PT HIP forwarded the village proposal to the sub-district government. After obtaining approval at the sub-district level, Lukas and

[11] https://id.wikipedia.org/wiki/Kabupaten_Sorong

Bernadus began to build houses and church service posts. At first, the new village was named Lilimussemen which later changed to Malalilis.

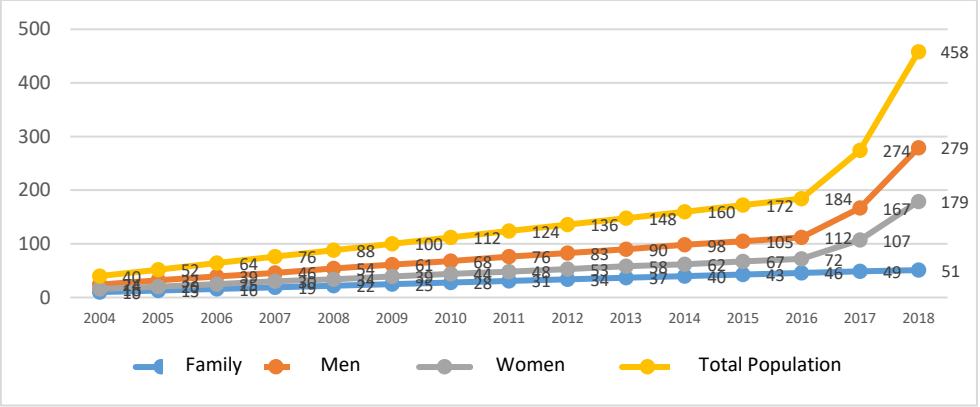


Figure 18 Projection on Demography of Malilis Village year 2004 to 2018

Along with the expansion of the Makbon sub-district through the Regional Regulation Number 4 Year 2009, Malalilis Village was definitely a part of the newly formed sub-district which is Klayili. The issuance of the Decree of Malalilis Village was then followed by many migrations from other clan members, namely: Klasibin, Gilik, Ulimene, Malak, Doo, and Su. Because the submission procedure for Malalilis Village was submitted through PT HIP, the village status is the company assisted village.

Based on the results of interviews with Bernadus Gilik, when the village was first established in 2004, the population was 10 households. In 2009, it increased to 25 households, and in 2018 it increased again to 51 households with a population of 458 inhabitants. Meanwhile in 2016, Central Bureau of Statistic (BPS) of Sorong recorded that the population in Malalilis was 184 people with 112 men and 72 women (BPS, 2017). From these data, it is possible to project the demographics of Malalilis from 2004 to 2018 (Figure 19).

The Malalilis Village Chief who served for two periods from 2009 to 2017 was Bernadus Gilik. The second village chief who has been serving from 2017 until now is Elia Gilik.

Siwis Village

In 1935, inhabitants of Siwis (Kalaben) village lived in the old village of Sbaga which then migrated to Siwis Tua village on the coast. After World War II around the 1950s, they migrated to the village of Dela in Moraid sub-district which had become the definitive village. In 1993, there were 7 clans which are Malak, Ulimpa, Ulimene, Sapisa, Siwolo, Kalasuat, Ulala, and Bisulu that agreed to establish a village in Kalaben. Then in 1993, a decree issued for the Siwis Village as the village

of the Moraid sub-district. In 2007 when district expantion happened, the Siwis village became part of the Klaso sub-district.

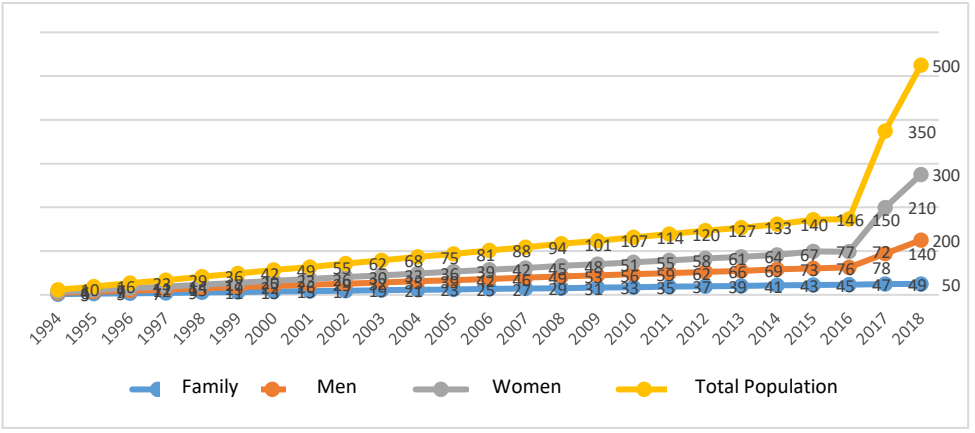


Figure 19 Demography of Siwis Village year 1994 to 2018

Based on an interview with David Ulimpa, when the initial establishment of the village in 1994, the village population was three households. In 2018 it has increased to 50 households with 500 people consisting of 200 men and 300 women. Meanwhile, in 2016, BPS of Sorong recorded a population of 150 people in Siwis Village with 78 men and 72 women (2017: 18). The data can be used to project that the demographic of Siwis village from 1994 to 2018 (Figure 20). The first village chief in Siwis is Matthew Matus. Then, the second village chief is David Ulimpa.

3.1.2 Socioeconomic Condition

Malalilis Village

Malalilis village is located ± 52 kilometers to the southeast of the Sorong City. The topography is lowlands consisting of valleys and watersheds. The settlement pattern of the population is grouped to the west of the village road called Malabulu road. Whereas on the east side of Malabulu road, there are only a few houses and not as crowded as the west side of the road. The Klasafat river lies not far to the west of the village.

The livelihoods of Malalilis villagers who depend on natural resources are hunting, gathering sago, and gardening. The livelihood intensity is more focused on garden products such as bananas, banana blossoms, taro, water spinach, papaya flowers, papaya, cassava leaves, sweet potato leaves and *gedi* (edible hibiscus) leaves. All products are sold to the market in Sorong City. As for other livelihoods beside utilizing natural resources are village officials and merchants.

The characteristics of houses in Malalilis can be grouped based on the wall material, namely: (1) wooden planks, (2) semi-cement walls and (3) cement walls. Meanwhile, the roofing uses zinc materials. Types of wooden planks and semi-cement walls have been around since the pioneering of village construction in 2004. In 2012 a government program from the Ministry of Disadvantaged Villages was to build new homes and provide solar cells in each house in the village. The new type of the house wall was built since the Village Fund Budget program began in 2015.

Figure 21 Settlement Patterns in Malalilis Village (top left), Malabulu Road (top right), Settlement of Malalilis Kampung Residents in the West of Malabulu Road (bottom left), Settlement of Malalilis Residents in East of Malabulu Road (bottom right)

Figure 20 Wooden Plank House in Malalilis Village (top left), Semi-cement walled House in Malalilis Village (upper middle), Cement Walled House in Malalilis Village (bottom left), YPK Bethel Elementary School in Malalilis Village (bottom middle)

The construction of a church in Malalilis village had been pioneered since 2004. The church is now called the Gereja Kristen Injili (GKI) of Bethel. There are two elementary schools in YPK Bethel. One elementary school building was built by PT HIP, and the other one was built by the government.

Malalilis village as the assisted village of PT HIP actually presents a very alarming situation. PT HIP's contribution to the Malalilis community was only an elementary school building, and two houses for the Gilik and Klasibin families who also customary landowners who had released their lands for oil palm plantations. Some fundamental aspects that are very concerning are (1) availability of clean water, (2) availability of electricity, and (3) road conditions.

Klasafet River has been polluted by chemical spray from oil palm plantations so that it can no longer be used as a source of clean water. Klasafet river also becomes turbid during the rainy season. Well water condition also looks turbid and it requires filtering through a filter barrel. Well water is usually used for washing clothes and bathing. The existing well was built without a security fence. There have been casualties when children played around the well and then fell into it.

For drinking water, villagers collect rainwater into water reservoir with a volume of 800 liters. For electricity needs, they use gasoline engine power generator. Gasoline purchases are made by villagers in a collective fund. The retail price of gasoline in the village is IDR 30 thousand per liter. The road condition is uneven because it is a pile of compacted soil and rock.

Figure 22 Klasafet river (top left), A well in Malalilis village (bottom left), Well water filter (top right), Rain water tank (bottom right)

Malalilis village as the assisted village of PT HIP should be able to meet the infrastructure development that at least meeting the basic needs of the community. Submission of facilities and infrastructure procurement to PT HIP must go through a complicated procedure. The public cannot directly submit the proposal to the company, and must be with a letter of introduction from the government. Even though the procedure has been followed, the company has never realized the proposal. For example, the community has proposed a vehicle to transport garden products to the market in Sorong City, and various other submissions, so far this has never been realized. PT HIP as the supervisory company for Malalilis Village actually neglects the welfare of the community.

Siwis Village

Siwis village is located ± 75 kilometers to the northeast of Sorong City. The topography is a lowland consisting of valleys and watersheds. The pattern of settlement of the inhabitants is facing each other in the north and south of the village road called Wariek road. Malalilis village is flanked to the north and south by the Kalaben Lebe and Kalaben Igik rivers.

The livelihoods of the villagers who depend on natural resources are hunting, gathering sago, and gardening. The livelihood intensity is more focused on hunting wild animals, such as boar, deer, land kangaroo, and cork fish. Then they sell the

hunted animals on the trans-Papua road on the Sorong-Tambrauw route. As for other livelihoods beside utilizing natural resources are village officials and merchants.

Figure 23 Settlement pattern of Siwis village (left), the settlement in the north and south of the Wariek road (right)

In 1994 when the village pioneering began, there were still three houses that made of natural materials. The walls were made of bark and the roof was made of sago leaves. Of the three houses, one house functioned as a church. Since 1994, village development has been using Village Assistance funds (*Bandes*). The road to Siwis Village was constructed in 2012.

Similar to Malalilis Village, there are three types of houses in Siwis Village based on the wall materials, which are wooden planks, semi-cement walls and cement walls. There is one Public Elementary School 19 and an GKI church of Ebenhezer. Kalaben Igik and Kalaben Lebe rivers provide clean water for drinking, bathing and washing. River water is drawn using a water pumping machine to then be stored in a "profile tank" located in each public bathroom. For electricity needs, villagers use a gasoline engine generator

3.1.3 The Social-Cultural Condition of Moi Kelim Community

The Nomenclature of Moi Tribe

The nomenclature [12] of the Moi tribe community aims to help understanding of the dozens of clans in it. This was done because in reality the name of the clan also indicated the location of their customary ownership.

[12] The term "nomenclature" is borrowing a term from biology to identify living organisms on earth that aim to simpifly its categorization. The nomenclature of the Moi tribe people is generally accepted. It does not accommodate other names that are specific. For example, in an interview with Dance Ulimpa who mentioned that there are still more divisions, for example Kelim Kalasa, Kelim Makbat, Kalim Mayya, Abun Taat and Abun Jii. But his statement did not mention the division of other sub-tribes as a whole.

Figure 24 Wooden plank house in Siwis village (top left), semi-cement walled house in Siwis (top right), cement walled house in Siwis (bottom left), elementary school 19 in Siwis village (bottom right)

Table 4 The Nomenclature of Moi Tribe

Category	Example
Tribe	Moi
Sub-tribe[13]	Kelim
Clan[14]	Malak
Sub-clan	Gitili

Further explanation of Table 4 can be seen through an example. In Siwis village, there is the name of Simon Malak. The name is indeed listed on the National Identity Card (KTP) but is not followed by the name of the sub-clan. While Simon Malak has the sub-clan name of Gitili[15]. Malak Gitili is the one who has customary rights in Siwis village. Whereas in other places, for example, in Malalilis village, there is also the name Herman Malak, but their customary place is not in one location even though the surname is the same. Malak Gitili also does not know the name of the Malak sub-clan in Malalilis, so the name of the sub-clan was actually only known in the village community. The name of the sub-clan also indicates the

[13] In an interview with Wa Ode Likewati and Dance Ulimpa, they call the term of sub-ethnic, which means the same thing as sub-tribal terminology. The term sub-tribe is also used in "Sorong Regional Regulation Number 10 Year 2017 Regarding the Recognition and Protection of the Moi Customary Community in Sorong Regency" to mention the names of Kelim, Sigin, Abun Taat, Abun Jii, Klabra, Salkhma, Lemas, and Maya

[14] In the daily conversation of the Moi people, the term clan is also often called *fam*. In appendix II of "Sorong Regional Regulation Number 10 Year 2017", the term clan is also called Gelet or Gelek.

[15] The name of Gitili is quoted from appendix II of “Sorong District Regulation Number 10 Year 2017”, whereas in the daily life of people in Siwis, the name of Gitili is better known by the name Kalabalam.

location of the customary lands of each clan, which marked by the naming of the rivers, mountains or other natural formation names[16]. There are maximum of 5 families in one sub-clan.

Even though in a clan with the location of the customary land and the settlement are far apart, but they can get to know each other by having a large clan meeting once a year on a religious holiday. Even if someone does not know each other, they often do *sabasafan* to measure whether there is a clan relationship or not. It is in this *sabasafan* that they tell each other family tree by tracing it starting from the oldest.

The habit of getting to know the surname of a clan also occurs in children at the elementary school. When introducing friends at school, they introduce their full names along with their surname. Even in Malalilis village, they also knew the names of the clans living in the same village. Moreover, Moi's children also know that they have customary rights as well as the boundaries. That is because they have been invited by their parents into the forest, all the boundaries of their land are also shown. However, knowledge about the customs does not reach the historical details. They understand that the subject of customary land and its boundaries is confidential. The children remember when there was a participatory mapping, and the activity had to start with the certain rituals.

Cultural Element of Moi Kelim Community

The cultural element is a universal phenomenon found in ethnic communities. The changes of forest conditions are relevant to changes in society, the purpose of describing these cultural elements is as a basis for analysis to find out holistically these changes. Most of the descriptions of the Moi tribe's cultural elements are based on ethnographic works that have been pioneered by Stephanus Malak and Wa Ode Likewati [17] (2011), and some others are based on findings from field data and literatures. The cultural elements of the Moi Kelim community described here include religion, education and knowledge, livelihoods, life equipment, social and kinship organizations, languages and arts.

[16] For example in the name "Kalabalam", "Kala" in the Moi language means water or river, but for "Balam" it is unknown what it means. That is because the customary elders in the sub-clan are still believe that their customary origins are confidential and cannot be told to just anyone.

[17] Researchers had the opportunity to interview Wa Ode Likewati. She compiled the book based on field research. She even was appointed as a child of customs. She also reminded that the Moi tribe in Sorong is different from the Moi tribe in the village of Kandate in Jayapura. The difference lies in the language and culture. For example, the predecessors of the Moi Tribe in Sorong did not use koteka, while the Moi Tribe in Kandate used koteka.

Religion

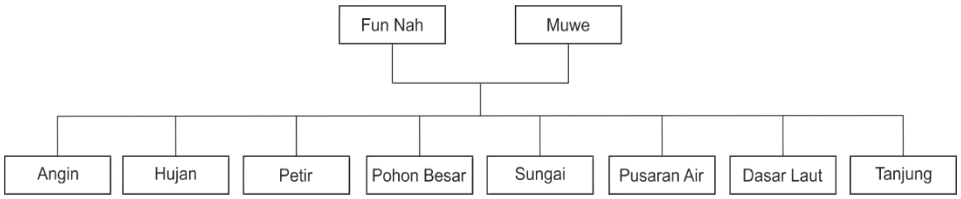


Figure 25 System of Moi's Cultural Religion Belief

The original belief or cultural religion of the Moi ancestors was basically based on nature. They believe that natural objects in certain places such as caves, trees and rocks have souls that must be respected for they do not disturb human life. Respect is also a spiritual guide in carrying out of daily activities. The Moi cultural religion believes in the existence of the highest Gods who are *Fun Nah* and *Muwe*, who rule over other Gods.

Fun Nah and *Muwe* manifest themselves into natural objects that are considered sacred. Sacred objects have a spiritual function to protect a certain area. Magical creatures that reside in natural objects are believed to have power that fully controls human life. The supernatural creature is feared and respected by the people. The people give offerings in the traditional rituals.

The existence of supernatural beings who occupy sacred objects, also became the cosmology of the Moi tribe's life. People who have died are not solely apart from real life. Ancestral spirits are believed to still be alive by inhabiting natural objects that are considered sacred. Thus, the cultural religion of the Moi tribe is different from other tribes in Papua. For example, the Biak tribe that worship the Karwar statue, and also the Meybrat tribe whose ritual procession is carried out with a skull payment.

An informant named Simon Malak once got a story from his parents about the burial of his ancestors. They are not buried in the ground, but were left attached to the tree until the body disappeared by itself. The practice of burial is an implementation of a belief system that makes natural objects the orientation of worship.

An important understanding needs to be explained here related to the relevance of Moi cultural religion to the condition of the forest. The Moi cultural religion that was formerly embraced by the ancestors turned out to be able to maintain the sustainability of the natural forests. The existence of sacred natural objects that become worship orientation, is a spiritual barrier to over-exploiting forest products. This will later become an important starting point for analyzing changes in forest conditions along with changes in the Moi community itself.

The development of the Moi cultural religion follows the history of trade contacts[18] with the non-Papuans. If traced in chronology, the Islam traces its footsteps in Papua about two centuries earlier than Protestant Christianity (Malak and Likewati, 2011: 154). The process of Islam's arrival in Papua had been going on since 1606. At that time, Muslim traders from Maluku conducted trading activities in Papua while spreading the religion. But the development of Islam in Papua run a little slower than the Protestant Christianity which came two centuries later.

On August 24th, 1828, the Dutch government announced that the authority of the Tidore Sultanate in the Papua region was in its possession (Nitihaminoto, 1980: 4). Three decades later, on February 5th, 1855, the priest Ottow and priest Geissler landed on the island of Mansinam (Manokwari) to carry out their missionary duties. The rapid development of Protestant Christianity in Papua was also supported by the Dutch colonial government, which made their formed as the center for christianity preaching. Five villages were formed on April 1st, 1925, including villages of Klademak, Matilimisin (Klagili), Manoi, Nooi (Malawei), and Malanu. The five villages were the embryos of growth until they reached their form of being the current City of Sorong. In addition to carry out the task of spreading the religion, missionaries also taught the community knowledge about farming, carpentry, and medicine.

The interview with Dance Ulimpa shows how the initial missionary strategy spread Christianity in Papua. At first, the Papuans were afraid and thought of the missionaries as ghosts because of their white skin color. Thanks to the struggle and hard work of the missionaries, slowly they were able to approach the community leaders and the elders. The strategy was apparently not able to attract the interest of other communities. If there was no change in approach, then God's Words would not be spread to the wider community. The missionaries observed that many Papuans gathered during the traditional wedding ceremony and the traditional ritual of opening a garden. In every traditional activity there was always a meal together. From there, the missionaries changed their strategy. Before carrying out the teaching of the gospel, the missionaries held a meal together as well as a traditional program. This strategy showed the success seen in the increasing number of Christians.

The missionaries not only made a strategic approach to the community, but also syncretism with the existing cultural religions. Syncretism is a process of combining several beliefs which then generate new beliefs, without eliminating all previous elements of faith (Rohman, 2015: 6).

[18] Archaeological and historical study conducted by Mahmud (2014: 185) shows that the Papuan commodity was recognized by the Srivijaya kingdom around the 8th century, by giving parrots and bird of paradise to the Chinese emperor. Then it can be concluded that, indications of trade contacts in Papua, at least began to take place starting around the 8th century.

The syncretism strategy appears in the story told by Dance Ulimpa when explaining the history of the creation of Moi humans on this earth. God created this earth in a state that was still dark. Then God said, then the light came. In the bright earth, there were still no humans. Then God descended slowly to create man and his traditional life. From there, human life continued to develop in a state that was still not settled or a nomadic life. Although their life patterns were still nomadic, their movements were believed to have followed the customary lands that have been determined by God.

Until one day, humans had lived settled on the land that had been given by God. The Moi cultural religion believes that worship of God was done long ago by their ancestors with the practice of worshiping natural objects such as rivers, rocks and trees. Religious practice is based on faith that believes that God created the natural object, and God is the one who resides in it.

That phase continued until the next phase in which God revealed his son, Jesus Christ. The child of God is known in the Moi language as Mukmili. Whereas God who created the Moi people and their customs, called Nabalyu. The arrival of Mukmili was to complement the Moi worship practices. Mukmili has actually existed since long ago by teaching Moi culture to the ancestors. Mukmili also showed where the location of the shrine was, and taught medicine that came from nature. With the existence of Mukmili, it was considered unnecessary to seek Jesus Christ to Israel, because He was here in the land of Moi.

Figure 27 shows a syncretism which aligns the existence of *Fun Nah* and *Muwe* with *Nabalyu*. Spiritually, Christianity does not eliminate the worship orientation towards natural objects. The difference only lies in the practice of worship, but the religious meaning remains the same. *Nabalyu's* presence remained in place, both in traditional rituals and Sunday morning prayer in the church.

Figure 26 Syncretism of religious system between cultural religion and Christian

The inclusion of Christianity in the life of the Moi is more than just a transformation of a traditional belief system. In other ways of life, the development of church institutions slowly eliminates customary practices, such as ritual worship to natural objects, tribal war, *honge* or traditional sanctions, and other traditional practices. The church also becomes an institution that baptizes one's surname. The baptismal

name is then recorded in the church registration book (Isman et. al., 2012: 69). The baptized clan is a customary owner who also receives collective recognition in the Moi community.

Education and Knowledge

The Moi people are familiar with a traditional education system called the *kambik*. The minimum length of education lasts for six months and the maximum can be up to 18 months. Graduates of the *kambik* will later have certain social positions in the community, such as becoming the village customary head or occupying a certain position in the customary structure. Pupils from *kambik* are only men (*nedla*). While women (*nelagi*) only get a traditional education limited in the family environment. However, women who have special knowledge and expertise also gain social status called *fulus*. Men who have not participated in the *kambik*, according to customary status, they are still seen as *nelagi* and have not yet reached the level of true *nedla*.

Students of *kambik* are not like enrolling students in formal education, where everyone can attend the education. The customary rules that apply are that there must be at least one child in one clan join the *kambik*. The child will later become a customary elder within the scope of the clan. The chosen child who will participate in the *kambik* is also determined by the elders because he is the one who has the magical ability to see whether the child has met the requirements or not to get the education. There were times when the child who had been chosen was then kidnapped and put into a traditional house. The child's parents could not see their son while in the *kambik*. In the traditional house as a place to visit the *kambik* there has been a boundary area. If there are other people or the child's parents who enter the border, then he is subject to customary sanctions (*honge*) of death penalty.

It is unknown when exactly the *kambik* system began in the Moi tribe. It is only known that the *kambik* existed when the Sultanate of Tidore ruled the Papua region of the bird's head of the island around the 16th to the 17th century[19]. Furthermore, in 1969, *kambik* was no longer held due to the influence of the Dutch colonialism, Christianity, and the Indonesian Government.

[19] Malak and Likewati (2011) do not mention when the power of the Tidore sultanate entered Papua. Information about the arrival of Tidore's authority in Papua around the 16th to 17th century was obtained from the writings of Handoko and Mansyur (2018) entitled Kesultanan Tidore: Bukti Arkeologi sebagai Pusat Kekuasaan Islam dan Pengaruhnya di Wilayah Periferi (Sultanate of Tidore: Evidence of Archeology as the Center of Islamic Power and Its Influence in the Peripheral Region)".

Table 5 Levels, Titles, and Competencies in the Kambik System

Level	Graduate Title	Competency
Basic (*Ulibi*)	*Unsula* *Unsmas* *Tulukma*	Basic
The Highest (*Untlan* and *Kmaben*)	Great Master (*Wariek* or *Sukmin*)	Master of medication Master of healing Master of fortunetelling Master of Customary law Master of Leadership Master of withcraft Master of agriculture Master of Social Community Master of History

Everything about *kambik* is a very confidential matter[20]. When the researchers tried to dig up this information, the elders did not dare to convey too much because if he was found out, then the consequence was a customary sanction (*honge*) of the death penalty. Discussions on this subject should only be carried out between the customary elders who also graduates of *kambik* (*ofulah*). Based on the results of interviews with the *ofulah* in Malalilis village, it shows that the issues in the *kambik* are also related to the history of the Moi customary land. The following is Stephen Su's answer when researchers ask him about the *kambik*,

> *"I can't talk about that topic. If I talk, I will be killed. That's a heavy item, this land is a customary land from the ancestors of Moi, my parents. It's a customary land. If you look for it, people killed because of this land, kitong (we people) cannot talk about that, why is this land called customary land, because it was born as customary, this land arose with the customs, all kinds of customs. All tribes, here, in Java, everywhere, indigenous peoples are the same. If we talk about that, so we talk about the kambik, right from this land, each tribe has a custom, Moi people have customs, finally the kambik come anyway, so we don't want to talk about it"*

Very confidential information about *kambik*, also makes it difficult for researchers to know what titles of the graduates according to their respective expertise. Table 5 is the result of processing the information contained in the book "Ethnographic of Moi Tribe" (Malak and Likewati, 2011: 134). The book also does not write about the title of expertise for graduates of the *kambik*.

Silas Kalami, the head of the Indigenous Peoples Organization of Malamoi, in an interview also mentioned a bit about *kambik*, although he did not specify what title

[20] The confidentiality of the *kambik* is also known collectively in the life of the Moi people, and it should only be discussed by elders who have passed the *kambik*. Even when researchers unintentionally mentioned that when interviewing Andonia Su, the response from a Moi woman stated that *kambik* was forbidden to talk about.

of expertise of the graduates of the *kambik.* He Just mentioned that there was the term *fidoi* and *kilimangae*, but he did not mention the details. Silas Kalami also shared some of the expertise practices of the *kambik'*s graduates. For example, the healing master, he recites certain incantations before healing a sick person. One example case, a person who are sick from gun shot can be recovered soon and the bullet that pierced the body could wither by the master's power. In the field of magic, when a war is about to start, the master could lock enemies in the air so they cannot run away when the attack happened. Even weapon like gun cannot be used. The occult is also used for hunting activities, by changing the person's form into the shape of animal prey. When he gathers with the prey's group, he changes form into human again and hunts the animals. He can get a lot of animals. The Elders who have graduated from *kambik* can communicate with telepathy by staring into the animal's eyes to find out whether the animals are *kambik'*s graduates or not.

In *kambik* education, values of local wisdom towards nature are also taught. Natural events are always associate with the balance of supernatural and real world. For example, a natural phenomenon like flood occurs because of an imbalance of the two worlds. It turns out that natural resource utilization behavior is too excessive, for example the massive logging of timbers. It has caused the anger of ancestral spirits. In that case, the culprit must be subject to customary sanctions (*honge*) and curses to re-balance the nature. People who enter the sacred place (*kofok*) are also subject to customary sanctions (*honge*) in the form of death.

Kambik education gradually disappeared due to the influence of Dutch power in 1828, the arrival of Christians in 1855, and also the integration of Papua into the Indonesian state in 1969 (Suryawan, 2012: 42). Dutch colonial rule forced Papuans who were originally scattered into the interior of the forest to then live in coastal villages. The strengthening of Christian influence, then ordered his congregation to abandon customary practices which were considered pagan, heretical, demonic and primitive path. Meanwhile, during the Indonesian government, activities in the forest were suspected as separatist activities of the Free Papua Organization (OPM).

The climax point of stopping the *kambik* was in 1969 with the holding of the traditional Moi peace ceremony (*sakmesan*) in Makbon. The *sakmesan* ceremony was attended by graduates of the *kambik* who resulted a consensus decision to remove *honge*. The implication of removing *honge* is the cessation of *kambik* education. The chain effect of this event and the elimination of honge, would also change to the condition of the forest.

Livelihood and Life Equipments

The livelihoods of the Moi people from their predecessors to the present are still exist, such as hunting, gathering, fishing, farmers and traders. The descriptions of the livelihoods also include some changes in the community.

Hunting. The ancestors of the Moi tribe were familiar with hunting activities to make ends meet. Moreover, the Moi ancestors also obtained ownership of their land based on the extent to which they went hunting. Before leaving for hunting, they chanted mantras to get protection from ancestral spirits, and to obtain abundant hunted animals. Animals that are targeted for hunting are pigs (*baek*), land kangaroos or lau-lau (*mawok*), cassowaries (*kelembele*), tree kangaroos / cuscus bear (*soung*) and deer.[21] Previously, the equipments used for hunting were stones, bamboo spears, pig bones and arrows. Along with the entry of migrants from the Biak tribe and others, hunting equipments underwent a change, namely the appearance of spearheads (*sawiyek*) and machetes (*singelek*).

Hunting activities are carried out by men, both individually and in groups. The most important thing in hunting is a hunting dog (*ofun*). The type of dog used for hunting is different from ordinary dogs. Dogs that have been designed for hunting must be cared for since pups, then gradually has to be trained often in the forest. This training aims to train adherence of the dogs to their masters and increase the dogs' hunting ability. To speed up the ability, the new dogs usually join in the hunting activities in the forest with other trained dogs.

In Siwis Village, researchers had the opportunity to meet with a youth named Simon Malak who were doing hunting activity. Simon Malak named his dog Rambo. That dog is known among other youths as a hunting dog. If Simon is not in the village, then the other youth do not hunt because Rambo is only obedient to Simon. It would be useless to hunt in the woods without Rambo because Rambo is the only dog who is the most adept at hunting.

While in Malalilis village, the researchers had the opportunity in the forest to observe the movement of a hunting dog named Moyo which is owned by Joni Klasibin. Wherever Joni goes, Moyo is always not far ahead of Joni. Moyo seems to give protection to Joni whenever there are things that endanger the master. Even though sometimes Moyo is not seen, but when Joni calls "Moyo! Moyo!", the dog immediately appeared and came to his master. Researcher had asked Joni, why he does not use more sophisticated tools such as air guns when hunting. It turned out that the use of *sawiyek* is still more effective because of large prey animals, air rifle bullets do not work and the animal can still run far away. Joni is also able to spear

[21] There is no Moi's local term for deer. That is because deer is not an endemic animal but an exotic animal.

hunted animals that are seen within a radius of 25 meters by throwing his spear into the air.

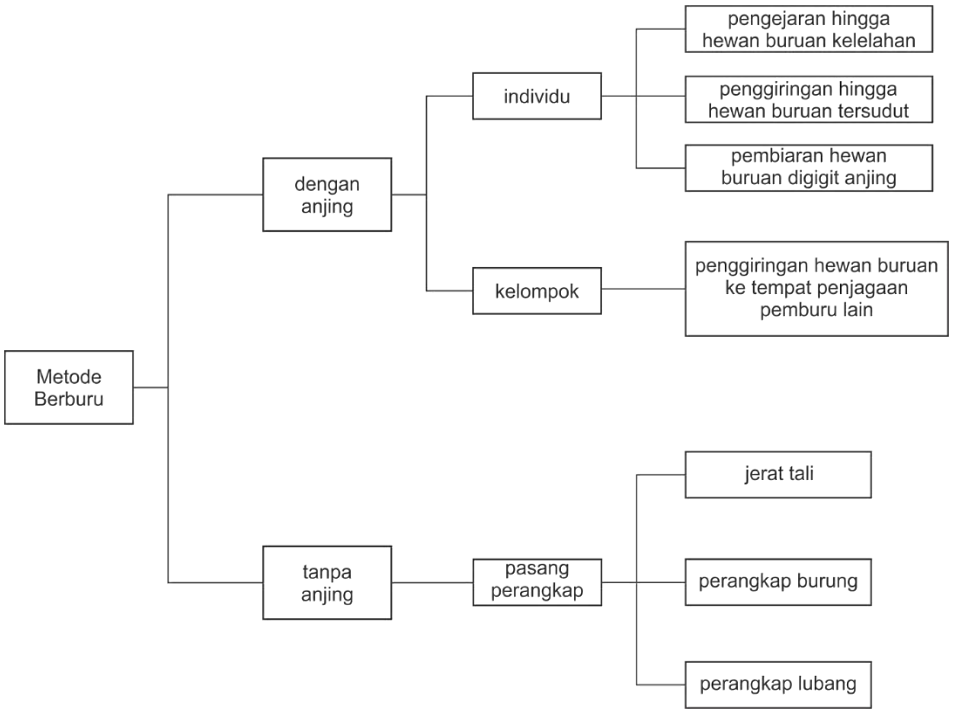


Figure 27 Hunting methods by Moi Kelim Community

There is a similarity between the hunting methods of Moi's ancestors and the current generation that still exists in hunting. They all keep following where the hunting dogs go. When the dog barks at hunted animals and then runs after them. The hunters also followed the hunted animals until the animals were exhausted. This makes it easy for hunters to kill by throwing a *sawiyek*. It could also be when the hunting dog is able to keep pace with the speed of the hunting animal, then the dog bites it so it makes it easier to kill. As for other hunting methods that require collective cooperation, by diverting the direction of the running dog which then leads the hunted animal to a place where there are hunters who are ready to shoot or spear the animals. It could also be herded animals to the place where the animals were cornered and could not run, then the hunters arch or spear them. The dead animals then cut into pieces with *singelek* so they can be put into the nokens (*kuwok*).

There are still other hunting methods without using dogs which are using the animal traps in the form of rope snares, bird traps, and pit traps. The animals from

the forest is then brought home to be distributed to the closest relatives and neighbors in the village, while the rest is used for family needs at home.

Along with the weakening of the exchange system of goods (barter), and the rapid growth of the city, gradually there was a change in orientation and utilization of the hunting products. Hunting orientation, which was previously used entirely to meet the daily needs or for subsistence needs, then turned into economic goods that have a sale value. Hunting activities are strived as much as possible so that hunted animals remain alive because they have a higher sale value than when the died animals. The hunted animal is also no longer shared with the social collective environment. The change in orientation is what then makes the hunted animals as merchandise. For villages that are still close to the city, hunted animals are usually sold in Aimas and Sorong (Isman et. Al., 2012: 41). The case that occurred around the sub-district of Klaso is the use of hundreds of rope snares to capture the animals, such as deer, pigs and lau-lau. The hunted animals are then sold on the Trans-Papua Sorong-Tambrauw road. The use of the snares is carried out by people who come from the outside the Klaso sub-district.

Gathering. The staple food for people in the lowlands of West Papua is sago (*li*). Plains with heights of up to 400 meters above the sea level are where the most productive sago (*iwa*) palms grow (Kanro et. Al, 2003: 117). Sago palms that will be gathered are those that are 8 to 12 years old. This can be seen by looking at the branches of the palms that have been bearing fruit and seeds. The activity of gathering sago in the Moi Tribe is done in groups both by men and women. The results of gathering sago can be dried sago, sago starch and papeda.

After the gathering process, the remaining tree can be utilized. For example, the leaves are for traditional house roofs, fronds for traditional house roof bones, the rest of the trunk is for bridges, and the dregs of the sago to feed deer. The change in the sago gathering equipment is in the tool to extract sago (*lemek*) which is now changing into a shredder. There are also many parts of the sago that are not used because many permanent houses are now using tin roof.

The current reality also shows that consumption of rice as a staple food is actually more intensive than sago. This change can be traced from the government policy. More than that, this also has a relation with the transmigration policy for the agricultural development. In Sorong district, in 1977, there had been land changes due to these two policies, including the release of the 10,000-hectare of Moi tribal customary land in Klasaman. Then continued in 1979, land clearing in Aimas, Segun, and Salawati covering an area of 240,000 hectares. In 1982, the land was opened again in Salawati, and 1985 in Klamono.

Table 6 The Activities of Gathering Sago Tree

Activities	Tools
Tree cutting	Axe (*labosa*)
Debarking sago palm	Machete (*singelek*)
Extracting (*tokok*) sago pith	Extracting tool (*lemek*)
Distributing sago pulp to kneading place	Bag (*noken*)
Kneading the sago	Sago fronds (*ifiok*) and filter (*funuk*)
Harvesting the starcth sediment	Bag (*noken*)

Agriculture. Agriculture practice known by the people of the Moi is a shifting cultivation or garden. The ancestors had implemented a shifting cultivation system that was limited to growing vegetables and fruits. The cultivation equipment used at that time was only stone hoes and bamboo to dig and pierce the ground. There was no standard for how long the cultivation and utilization of the field will take place. If the results are not good enough, it means the soil is not fertile and it's time to move to open new fields. Generally, cultivation and utilization of fields last for one or two years. Before the infertile fields are abandoned, breadfruit and mango trees are planted as a sign of ownership because a few years later they will return to open the former fields.

The first step is to clear the bushes and the big trees and then burn them. Then the cleared land is abandoned for a couple days to let the soil fertilized. After that, the land is cleared again. The work of clearing the fields is done by men, while women looking for seeds, planting, and taking care of the plants. The harvesting is done by both men and women.

The development of these agricultural crops slowly changed when in 1930 the Dutch colonial government introduced plantations that had commodity values, including cocoa, rubber, banana, onion, peanuts, green beans and coconut. In 1970, the Indonesian government merely continued and expanded the plantation that had been pioneered by the Dutch. The most obvious change during the Indonesian government to date is the increasingly widespread oil palm plantations and paddy fields.

Fisherman. The Moi people who live on the coast area make fishing activities one of the livelihoods. However, being a fisherman in the sea is not an intensive activity when compared to hunting, gathering and gardening. The equipment used is also not a tool that is able to catch fish in large numbers. Only bark and spears for stabbing, and nylon thread for fishing. They also use boats, but their ability is not to fish until the offshore. There are two types of boats used, namely raft boat (*kibhi*) and roof boat (*kama*). The raft boat is made from a series of bamboo sticks which are more often used to find fish in the river and as a transportation vehicle to the villages in the inland area. Whereas to look for fish in the sea, it is more often

to use a roof boat that has a buffer beside the boat and has a roof made of leaves and fronds of sago.

The fishing activity is even more intense for those who live near the river or swamp. The equipment used to catch the fish are spear, nylon, net, and poison from plant roots (*bore*). Catches from river and swamp include cork fish, white catfish, tilapia fish, and eels. In Klaso sub-district, the abundant potential of the catch often invites the Sorong people to spread chemical poisons (*potas*) in river and swamp.

Merchant. Traces of historical writings show that native Papuan products were known around the 8th century when the King of Sriwijaya kingdom presented the Bird of Paradise to the Emperor of China. Even in the 9th century, Papua was known to be a supplier of *Abnus* wood or charcoal commodities to the international ports in India and Sri Lanka (Mahmud, 2014: 185). It's just that the excavation of artifacts in Papua has not yet found archaeological findings that can show the reciprocal flow of increased trade until the 13th century. In the 14th century, West Papua Bioregion was called the Onim Peninsula, and when the Dutch entered Papua in the 19th century it was called Vogelkop. Information on commodities in the 14th to 20th centuries AD can be found in Appendix 6.

The high intensity of trade caused the bird of paradise hunting to increase. In the 1920s, the Dutch colonial government issued a ban on the trade of the bird of paradise. However, smuggling still occurred. Chinese traders who were then distributors, still received bird of paradise supplies which then sold them to other large traders (Mene, 2010: 47).

Exchange of goods with the outside world caused changes in the object of exchange in the system of tribal communities in Papua, especially in the bird's head of the island where there was a sister exchange system. Such a system made it difficult for a man to get married when he no longer had a sister. In such a situation, men who wanted to get married had to abduct women, which then triggered fights and killings. Then around 16th century, the culture of "east cloth"[22] developed as a system of exchange, both within the internal tribe itself and exchanging with other tribes. The east cloth exchange was apparently able to bring peace because it enabled the replacement of women's exchange with the dowry system (Mene, 2010: 45).

[22] The term "east cloth" can be in the form of physical forms such as block cloth/ *cita*, thick cloth and kafala cloth. However, other reference sources also mention "east cloth" can also be valuable items or heirlooms, such as snail skin bracelets, crocodile canines, pig curved teeth, necklaces and beads decorated with belts, knives that have decorations, and birds of paradise (Boelaars, 1986: 132). Malak and Likewati (2011: 72) also write that goods that cannot be produced by themselves also become items that are considered valuable, even cigarettes (*sbak*) are also included as valuable items that are used for the customary wedding procession.

Barter trade had begun to develop in Papua since the 14th century, especially in the southwest region of the bird's head in Fak-Fak and the Bomberai Peninsula. At first, Javanese traders came to Papua to look for Masoi bark. Barter trade at that time was more encouraged because of the desire to increase the sense of solidarity between the barter actors and the desire to raise the prestige between the two parties. Meanwhile, east cloth products began to develop from the 16th century, when trade contacts with people from the Maluku Islands began. East cloth products began to circulate through the trade routes from Sunda Kecil, Java, Maluku to New Guinea. Traders from the Kingdoms of Ternate and Tidore at that time already had a trading base in Papua, in the southern part of the bird's head. Judging from the woven motifs, the east cloth that circulates in Papua had the same motif with the Timorese cloth in East Nusa Tenggara. There is a story that emerged that actually weaving skills in West Papua began to enter around the end of the 17th century because it was introduced by missionaries and teachers who came from East Nusa Tenggara (Mene, 2010: 42 and 45).

Table 7 The utilization of "East Cloths" or treasures before money exchange system

Function	Usage
Tool for barter	• Barter with other goods that cannot be produces by themselves
Tool for social relationship ties	• Presents for families or friends to tie relationship
Tool for family treasure	• Goods to show magical powers, and cannot be bartered with anything
Tool for customary ownhership evidence	• Proof of customary ownership which is only shown when land boundary issues occur with other clans that require customary settlement, which has magical powers, and are stored in a sacred place.
Tool for dowry in traditional wedding ceremony	• The presents of proposal • The dowry of marriage • The presents of wedding ceremony • The presents after wedding ceremony
Tool for payment of customary sanction	• Payment when the custom violation happened
Payment when the customary violation happened	• If the wife is dead, the husband gets the customary payment • If the husband is dead, the wife gets the customary payment • If the children area dead, the wife gets the customary payment
Tool for offering in a customary ritual	• Offering to the ancestors when opening the fields, and also other traditional rituals

* This table is compiled based on analysis of data from: Mene (2010), Malak and Likewati (2011), and Kalami (2010). Regarding the object, it cannot be identified with certainty or there is no clear benchmark, such as for example to determine which items are heirlooms and which are not, or to determine the level of the value of goods with one another.

From the story told by Dance Ulimpa and David Ulimpa, we knew about the trade contacts between Moi people and outsiders in Papua in the past. In Sorong, there was an area called Rovei as a location for exchanging goods during the Tidore sultanate. At that location there is a kind of storage warehouse called *boswesen*. It was there that the Moi people exchanged white resin (agathis) to get a 'block cloth'. Until the Dutch colonial period, the Chinese became collectors who collected natural products from the Moi people who then exchanged them for cloth and iron tools. In *boswesen*, there is also a piece of cloth that has been prepared to barter with Moi people. The cloth obtained from the exchange was what would be used as a dowry. As far as the informants know, the agathis resin were used by the Chinese for factory needs. In the village of Mega, which is about 25 kilometers from Siwis village, there is also a round *boswesen*.

Figure 28 White dammar resin (Agathis)

The policy of the Dutch colonial government which banned the bird of paradise trade in the 1920s made the circulation of "east cloth" into decline. Along with that, currency began to be used as a means of payment. Even so, when researchers were in Malalilis, the cloth of *cita* was still used as a traditional payment when someone died. Beads are still used when carrying out traditional rituals. While in Siwis, cigarettes (*sbak*) are still used in the procession of traditional marriages. In the case of problem resolution of inter-clan customary ownership rights, customary rules also require to show sacred items as proof of ownership of customary rights.

If we look at Table 7, it seems that the same sales product still appears. Local people in Malalilis and Siwis still sell natural resources to get money, such as selling garden products, hunting products and forest products. The change that is clearly visible can be seen from the different types of livelihoods that are not from forest products, namely private employees, civil servants, village officials, and construction workers.

Social Organization and Kinship

Social relations of the Moi tribe community include relationships of brotherhood, friendship, marriage, mutual support, care for children from other families, exchange of east cloth, and inherited relations. Of the various relationships, it can be categorized into two, namely relationships between clan groups and kinship

relations through marriage. From these two categories, the social relationships are then developed.

Table 8 Social relationship and kinship

Between clans	Kinship through marriage
• Relation between clans	• Between close clans and distant clans
• Individual relation	• Agreement to look for livelihoods together in a certain customary land
• Frienship relation	• Ownership of collective or non collective customary land which have same social function
• Working relation	• Barter of east cloth

The marriage system in the Moi community was formed based on the *omaha* system, which is the prohibition of marriage after several descendants to affirm the separation of kinship and descent. The *omaha* system does not adhere to an ideal marriage from the male or female line. Whereas the naming line of the descendant is based on the line from father or male. Although they do not have ideal marriage rules, they have a term called "*baku sobat*" bond. If there has been a "*baku sobat*" bond from the predecessor between clans, then the clans that have that relationship cannot get married. If the rules are violated, they believe strongly in the karmic law of the ancestors. It is not possible for the researcher to make an inventory of the "*baku sobat*" relationship because the number of clans in the Moi tribe reaches around 106 clans (Kalami, 2010).

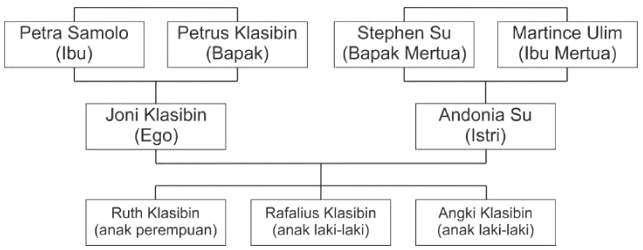


Figure 29 Family Tree of Joni Klasibin (Ego)

Based on the result of an interview with Joni Klasibin, permitted marriages are those that followed the marriage line of the previous parents, as shown in Figure 30 by making Joni Klasibin as the Ego. The explanation is, a daughter of Joni named Ruth, may marry a son of the Su family. Whereas a son of Joni named Rafalius, may marry a daughter of the Samolo clan. If they want to get married outside the previous marriage line, then they have to make sure whether there is a "*baku sobat*" bond or not between clans of men and women. Kinship in marriage becomes very important because it will be related to ownership rights and customary land tenure rights.

There have also been cases of "*anak piara*" or foster children. When there is a foster child, he will later get the baptismal name of the clan from his adopted

father, and he is entitled to the customary ownership. These foster children are often obtained from orphans (*meitakyim*) or whose fathers have died. If the "real" or biological parents want to take a fostered child, then he must pay the fine. The appointment of a foster child is only done in close clan relations, and not from distant clans. To measure the close relations between clans, one must trace the family tree of its predecessor.

Cases of foster children often occur if there are clans who cannot have children. If it occurs in a sub-clan that does not have children, then the status of customary ownership can be destroyed or lost. Such a case will later occur in the case of Luke Gilik. As far as information has been collected, adopting a child is a method without having to make payments. By adopting a foster child, one day they can maintain the status of customary ownership in the sub-clan, rather than having to remarry, which will cause a very high payment.

For the stage of marriage, the Moi community has a similarly applicable stage in general, namely: (1) marriage proposal and engagement (*kamfabe*), (2) holding a wedding ceremony (*simin*), and (3) submission of the first dowry (*kamsakwa*) and second (*libla salek*). In the Moi community, men bear a very high burden of dowry. Not only when first proposed, but continued until after marriage (Kalami, 2010). Therefore, the closed *sabalo* (traditional meeting) initiated by Dance Ulimpa, the first agenda was to discuss the adjustment of the Moi marriage system, about the tools and payment of the dowry. In the old days, the payment was using "cloth", but now we know money[23]. Not to mention the woman's family who demands higher payments for sending their children to school. Closed *Sabalo* would like to emphasize that the customary boundaries are only up to the ritual *misbak semin*, which is the ritual in the procession of traditional marriage. Regarding other payments will be taken care of after marriage, so that weddings can be easier and can be hastened.

It seems that it is too far away to draw the relevance of forest conditions to the Moi traditional marriage rules. But in reality, if the marriage process becomes difficult, many Moi generations will find it difficult to get married. If that happens, the potential for extinction of the next generation of a sub-clan is also high, and that will result in loss of ownership status. The Moi customary law indeed regulates how the transfer of customary ownership status when a clan becomes extinct, that is by dividing it to the clan of the customary owner who borders directly with the extinct clan. However, this is not easy, given the presence of the state and

[23] When researchers were in Malalilis village, researchers had the opportunity to witness the east cloth in the form of thick cloth as a treasure of Herman Malak's family. The thick cloth is ± 25 cm wide, the length is ± 40 cm with a price range of IDR 2 million, and the other is ± 1 meter long with a price range of IDR 5 to 15 million. There is no strict standard for converting the price of the cloth into rupiah. It was only the traditional elders who knew, taking into account the age of the cloth. The thick cloth that the researchers witnessed is from the Dutch era.

investment, and also the Moi people who already know the economic value of customary land in which there are Merbau trees (*Intsia sp*.), Kuku trees (*Pericopsis mooniana*), sand, and rocks.

Language

Generally, the language family in Papua can be grouped into two, namely Austronesian (Melanesian) and Non-Austronesian. The Moi language belongs to the Non-Austronesian family, specifically Papua of the bird's head in the southwest. Linguists estimate the Moi language has been a lingua franca (colloquial language) for hundreds of years. Based on the area of distribution, the Moi language can be grouped into three, namely Moi Amber, Moi Klasan and Moi Kelim. The names of clans in the Moi tribe have meanings based on leadership, work, nature, hopes, place, natural events, plants and language absorption (Suripatty, 2015).

Table 9 The name of the Clans of the Moi Tribe and the Meanings

Category	Clan Name	Meaning
Leadership	Doo	The highest title in a tribe group
Work	Malak	Master of gardening
Character	Su	Affection
	Fadimpul	Brave
Hope	Gifelem	Protected human being
Place	Anggeloli	Name of a mountain
Natural event	Kalami	Light rain, drizzle
Plant	Kamuru	From areca trees
Absorbed language	Safisa	From Biak language
	Mubalen	From Tidore language

Language is a tool to express, create, and categorize reality (Spradley, 2006: 25). Related to land, the Moi people also have language references by calling them *eges*, and landowners called *neulig*. That means they have a complex system of knowledge about their own land. By using Indonesian in the school environment and at home, Moi's children rarely communicate using their local language. They are limited in learning the language only from listening when their parents talk. There is no special education for teaching the Moi local language.

Art

The arts of the Moi people can be grouped into dance, song, musical instruments, carvings, paintings, and weaving. In dance, the basic movements of dance resemble the motion of birds, the movement of patting mosquitoes, the motion of hunting animals and catching fish. The famous dances of the Moi tribe are Aklen and Srar dances which are usually performed in traditional rituals, for example:

marriage, guest reception, entering a new home, treatment and rejecting bad luck. In ancient times, the dances were always accompanied by singing songs and incantations in honor of ancestral spirits, but now that has not been applied anymore. When the *kambik* education was still ongoing, the Aklen dance became the teaching material, and was held when the students had graduated. Today, the Aklen dance is held to welcome important guests. Meanwhile, the Srar dance is often performed to express joy and gratitude.

The art of music is in the form of songs, and is known since the era of the ancestors of the Moi tribe. The original songs of the Moi are a representation of self-image in everyday life and the creation of the universe. There are songs and prayers sung for generations that the composer is unknown, such as the song of "mosowiphe" and "aphe tamasek" which tells of the longing for the sweetheart, and "mala moi apheteges" which tells about the Moi land. Along the times, then came the contemporary Moi songs created by the group of Putum Woronai that the lyrics were created by Dance Ulimpa, such as the song titled "Phabili". The theme of contemporary songs generally invites the people of Moi to build and love their country.

Traditional music instruments of the Moi tribe that have been known since the past are: (1) *kaleng kla*, a percussion instrument similar to gong(2) *tritoun*, a wind instruments made of large shells (*oun*), (3) *bander*, a percussion instrument made of wood or bamboo (4) a round plate with bamboo which is hit on the edge of the plate, and (5) *bia*, a wind istrument made of shells.

The arts of carving, painting and weaving are indeed less well known in the tribes that inhabit the Papua region of the bird's head part. In the Moi tribe, the results of carving are only limited to carving bark used as clothing. The art of painting can only be found on decorating faces dominated by black, white and red. After the entry of immigrant tribes such as the Biak tribe and the Serui tribe, the results of the Moi tribe of arts developed, one of which was the ability to weave bag (*noken*).

In an interview with La Ode Likewati, it was explained that the purpose of writing the book "Etnografi Suku Moi" published in 2011 was to explore the original identity of the Moi tribe who now have left many of their customary lands because they were urged by migrants. The consequence is the authenticity of the Moi culture itself has been contaminated, for example, there are many Moi children who bring dances from other tribes in Papua, and also the use of musical instrument of *tifa* that is not actually native to the Moi tribe.

The original identity of the Moi tribe is increasingly eroded because of the pressure from the immigrants. The consequence is that the authenticity of the Moi culture itself has been contaminated, for example, many Moi children have performed dances from other ethnic groups in Papua, and also the use of musical instrument

of *tifa* that is not actually native to the Moi tribe. The book "Etnografi Suku Moi" which was published in 2011, according to its author, La Ode Likewati, aims to explore the original identity of the Moi tribe who are now increasingly leaving their customary lands because of being pressured by the migrants.

The History of the Tenure System of the Moi Kelim Community

The forest is located in the customary land of the Moi Kelim community. Therefore, the history of the tenure system becomes very important, to understand how they obtain collective recognition in their own customary environment. Henceforth, a deep and comprehensive understanding of history of the tenure system will be very important in efforts to save the remaining forests in the Papua Bioregion.

The predecessors of the Moi Kelim tribe did not leave written evidence regarding how they could have customary lands. When the researcher asked the informant, "If in the past the ancestors were like that, how exactly was the division of land?". Similar answers [24] that often appear are as follows,

> *"Yes, if the matter of the land division since the era of ancestors, the land was not from the ancestors. The ancestors just follow what God has outlined, God created this nature, God established this here, that there, and now that came down to the ancestor. So, it is like that " (*Interview with Alex Klasibin).

The absence of written evidence [25]makes it difficult to determine when the division of Moi Kelim customary land took place, until the present condition that is already divided into customary lands owned by sub-clans. Some information on how the Moi Kelim ancestors used to have customary land are (1) based on the extent of the location of animal hunting, (2) based on the echoing sound of trees being beaten, and (3) planting breadfruit and mango trees in abandoned fields (Malak and Likewati, 2011: 41-42 and 89).

The current generation only knows the customary boundaries through oral delivery Knowledge of customary boundaries was conveyed to Moi Kelim's children when they were invited to enter the forest with their parents. The parents show directly and visually, what are the points of their traditional boundaries. The boundaries are in the form of rivers, mountains, big rocks, big trees, mountain veins[26], and other natural boundaries. From there, they know the boundaries of their customary land, and at the same time know which sub-territories they border. In terms of customary boundary knowledge, the people of Moi Kelim can be said to have been very sophisticated. The distance between natural borders, the

[24] The research of Isman et.al. (2012: 77) in the community of Moi Klabra also shows the similar things.

[25] Although there is no written evidence, archaeological evidence shows that human habitation in West Papua Bioregion has existed since ± 26,000 years ago in the Ayamaru karst area (350 meters above sea level), which survived by hunting and gathering (Kartikasari et. Al (ed): 615-616).

[26] A flat path that makes it easy to walk on foot

maximum distance is only one kilometer. The natural boundary has never changed from its predecessors to the present generation.[27]

Furthermore, Malak and Likewati (2011: 40-41) divide the Moi tribe into 8 sub-tribes based on their respective customary land areas. However, the compiled categories have not been able to map the customary areas to the level of sub-clan. Whereas findings in the field indicate that the status of customary ownership is at the level of sub-clan and its location may be scattered. Further and in-depth research is needed to be able to map the Moi's customary land to details up to the sub-clan level.

Table 10 The division of Moi tribe based on Customary area

Sub-tribe	The customary land area
Moi Segin	Gisim, Segun, Waimon, Katapop, Katimin, Yeflio dan Kasimle
Moi Lamas	Seget, Durian Kari, Waliam, Malabam, Seilolof dan Kotlolsu
Moi Maya	Salawati, Raja Ampat, Sailolof da Julbatam
Moi Kelim	Aimas, Mariat Gunung dan Klamono
Moi Klabra	Beraur, Misbra, Buk, Wanurian, Klarion, Wungkas, Wilti, Tarsa dan Hobar
Moi Karon	Sausapor
Moi Moraid	Sayosa dan Salmak
Moi Legin	Batulubang, Makbon, Malaumkarta, Asbaken, Dela, Mega, Klayili, Maladofok dan Sayosa

Based on the results of an interview with Silas Kalami, information was obtained about customary rules governing land transfer rights (*teges te moi*). These results are then supplemented by reference from Malak and Likewati (2011: 42-43) which also wrote about the right of transfer of land in the Moi tribe.

Table 11 Customary rules of Moi tribe regarding Right of Transfer of Land (*teges te moi*)

Right of Transfer of Land (*Teges Te Moi*)	Description
Right of *eges fmun* (Father's land)	• Property right from father line that generally based on blood line • Property right based on history of the owner's presence
Right of *subey*	• Usage right granted for foster child • Land usage right that has been permitted from the customary right's owner (*neulig*)
Right of *su khban*	• Land ownership right granted for daughter if she still lives in her customary land • Land ownership right granted for foster child
Right *woti* or *eges momberi*	• The right of granting land to those who have contributed and respected when assisting in a war

[27] Dance Ulimpa (Head of the Moi Customary Council in Kalaben) emphasized that, if there is a Moi Kelim person who is concerned about his customary boundary, it means it is someone who has just arrived, because basically, the customary boundary never changes.

Right of *somala*	• Right to surrender customary land to outsiders because the area is no longer safe

Although there is no written evidence on the history of customary land ownership, as far as information can be obtained, ownership evidence can be categorized into: (1) the origin of clan migration, (2) mythological stories, (3) the existence of a sacred place (kofok), and (4) sacred heirlooms that have supernatural powers[28]. Some of these categories also exist in Malalilis (Gilik Klasafet) and Siwis (Malak Gitili)[29] villages, the explanation of which can be seen in Table 11[30]. Furthermore, the proof of ownership of the customary right must also obtain collective recognition from the clans that directly adjacent to the territory.

Table 12 The evidence of Customary right ownership of Gilik Klasafet clan and Malak Gitili clan

Clan	**Evidence of customary ownership**
Gilik Klasafet clan in Malalilis village	• The ancestor of Gilik Klasafet clan came from a place named Kalagisik Mesidi • There is a mythology about sacred plants and animals that is believed as the origin of the ancestors of the Gilik Klasafet clan
Malak Gitili clan (Kalabalam) in Siwis village	• The ancestors of Malak Gitili clan originated from Maladofok. They brought *kofok* which was a hill that they brought to Siwis (Kalaben) • The hill's name is Mamalak which lies in *kofok* Kalin Psaa owned by Malak Gitili clan • There is still a parent clan that lives in Maladofok, namely the Yempolo clan • Creation mythology is the story of "Telaga Watumolaal" where women live who have drowned in a sago grove • There is another *kofok* named Kelenwero Mala which is located between the Kalaben Lebeh river and the Kalaben Igik river

Change and Dynamics of the View of the Moi Kelim Community on Land and Natural Resources

"There is not even an inch of land in Papua that does not have an owner", that is the phrase that researchers heard on the first day in Sorong City, West Papua. An expression that emphasizes the presence of indigenous Papuans as landowners

[28] Silas Kalami also mentioned that there was a "traditional noken" that had been given to another person so that the person could no longer return to their customary land and his life would become "messy" without customary ownership. Furthermore, sacred heirlooms must also be demonstrated when there is a conflict of customary ownership which is settled by Moi custom.

[29] The data findings in Malalilis were helped by references from Anky (2017), and those in Siwis village were helped by information from the research team Kak Ema.

[30] Given that the historical story of clan ownership is a confidential matter, researchers are also limited to accessing this information further..

who have inhabited the land of Papua since centuries ago. More than that, the local expression that appears when dealing with land and natural resources is "*eges ko psata ma iteme pagam thiimk*". It means the land and everything in it is a Mama (mother) who gives life to her children.

As previously stated about the Moi tribal cultural religion in the past. The meaning of "life" given by the land is not only limited to meeting the life physical needs. The higher meaning of "life" is that the land becomes a spiritual source in the Moi tribal cultural religion. Similarly, the forest is also seen as a Mama. The phrase remains the same, but the problem now lies in how the change and the dynamics of meaning and the behaviors that follow.

From the story told by Dance Ulimpa, the starting point of change is clearly seen when development programs have entered the region. In the past when cultural religion was still strongly held, there had never been any inter-clan problems within the Moi Tribe regarding their respective traditional boundaries. When the construction of the road has entered, that's where it happens with what is called Dance Ulimpa as the history of *sirtu* (sand and stone). Sand becomes money, stone becomes money, and wood becomes money. The Moi people began to claim each other customary lands where there was road construction program. David Ulimpa added that in Klaso sub-district itself, symptoms of customary problems began around 2002.

If drawn historically, the problems that occur today in the Moi tribe are an iceberg phenomenon from a series of changes that have occurred before, such as trade contacts with the outside world, the entry of Christianity, the entry of the Dutch colonial, weakening of the barter system, the presence of the Indonesian government, and entry of investments. Even when the researchers were in Malalilis village, some customary landowners had prepared plans to process timber when there was road construction entering their customary land.

The facts on the site level indeed show a change of view of the land, especially the utilization of forest products on the road construction. The most obvious change is that land is no longer a source of spiritual life (religio-magical). The phrase "forest is Mama" is limited only to meeting the physical needs of life. However, traditional Moi practices related to land still exist, such as the ritual of opening a garden.

In terms of land sales, researchers did not find the case that occurred in Malalilis and Siwis villages. The informants only answered that the land sales took place around Sorong City. Thus, since the days of its predecessor of the Moi Tribe, indeed there was no customary system that regulates the land sales. However, there is an article by Kalami (2010) which mentions the fading of the Moi people's views on land, which is by implementing a customary system when selling land. The

customary owner must perform a customary ritual to call *muwe* (ancestral spirit) when selling his land so that the owner is not subject to curse.

In an article by Purwanto et. al. (2012: 50) also emphasized that in fact the customary rules of the Moi people were not familiar with the transfer of ownership or sale of land rights. As has been explained that the process of social-cultural changes that occur in various aspects of culture seems to re-create (reproduce) customary rules to suit the development of the demands of the times. The Moi people then became aware of a "certificate of private property rights".

There are three stages of various cases of customary land sales. First, the process of releasing customary right from the owner to the buyer. The process is also known as "*sirih-pinang* (betel nut)" which is accompanied by payment. After that, compensation is usually paid for the land value according to the price previously agreed by both parties. Secondly, the ratification of the Indigenous Peoples Institution (LMA) on the release of the customary right. And third, ratification from the National Land Agency (BPN) with the issuance of certificates of ownership to new landowners. Each stage usually costs certain payments.

Responding to changes that occur in the lives of the Moi community, a closed *sabalo* (customary meeting) was planned to be held in Kalaben. One of the agendas is to strengthen the Moi customary rules in dealing with the current changing situation. In line with the empirical events that researchers found in the field, inspired by the thinking of Wibowo (2000: xvii), it appears that in the midst of rapid ongoing changes, Papuans are trying to understand, organize and change their lives by reflective monitoring. They question their culture again, doubt it, or maybe discard it. But that does not mean that culture disappears. The reality seen is that indigenous peoples are trying to reorganize their own values, rules and customary laws (revitalization).

Social Structure of The Moi Kelim Community

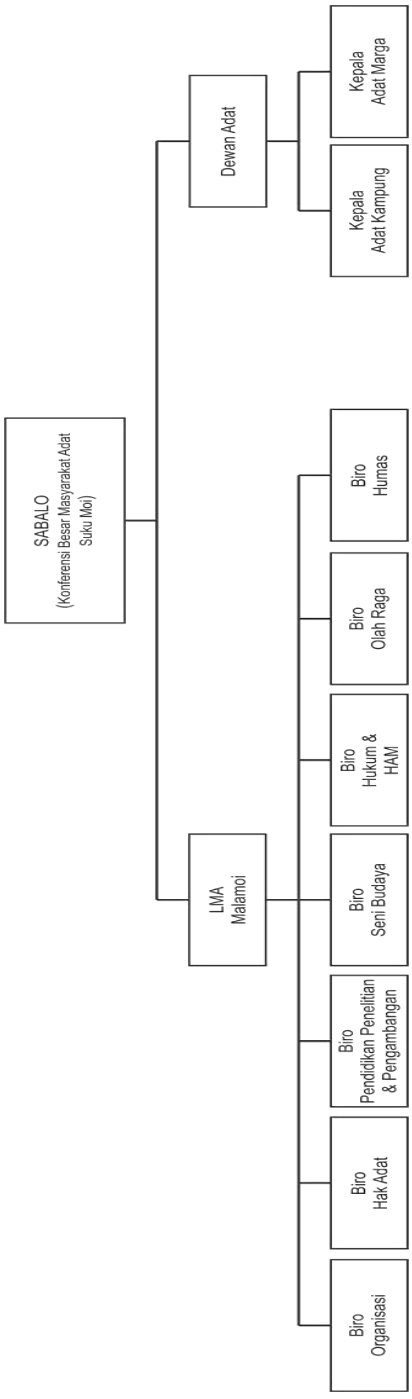
The Moi Kelim community does not recognize social strata based on economic wealth or nobility. On this basis, it is not easy to explain who is rich and poor in Malalilis and Siwis villages. Previously, the predecessors of the Moi Tribe had known the leadership system of *big man* or charismatic man [31] (Malak dan Likewati, 2011: 125). The *big man* system is still valid and is known as the customary leader. The *big man* occupies three spheres, namely customary head in the clan, customary head in the village and customary head in the district or joint district (customary council). The main requirement for being in a customary structure is that the person has passed the *Kambik* traditional education.

[31] Mansoben's (1995) dissertation on the political system in Papua mentioned that there were 4 leadership systems, namely: charismatic man (*big man*), *ondoafi*, royal and mixed.

There is a link between the local political system and the community system. The characteristics of a big man or a customary head are chosen based on the quality of their individual abilities (Mansoben, 1995: 83). Benchmark quality is known for its ability to accumulate wealth. When the barter system is still valid, the form of wealth is the ownership of "east cloth" and valuable assets. Not only concerning the ownership of wealth, a big man must also have the ability to distribute (redistribution) his wealth through donations, traditional rituals, customary processions and marriages in the lives of his people. This is what then characterizes a system of society that adheres to the egalitarian principle (Muller, 2013: 112). That is a society that strives for social balance in terms of ability, achievement, welfare and position. In other words, in egalitarian societies, it is as if they do not want individuals who are too prominent in material wealth. Another distinctive feature of the big man political system is that there is no division (differentiation) of specific work tasks.

In the Moi Kelim community itself, the selection of customary heads is carried out through a closed *sabalo* (customary friendship) procession. In fact, the descendants of the customary head indeed have a great chance to be re-elected, but that is not a standard customary rule. The most important standard is that the customary head must be a graduate of *kambik* traditional education. When in Malalilis village, researchers observed the behavior between community members and the village head. There is no excessive respecting behavior in daily life. They look familiar and often joke together. Respect can only be seen in matters relating to customs, for example, only elders who can talk about *kambik*. As in events involving supernatural issues, for example when there are events that people are eaten by crocodiles. The community did not immediately act to overcome the problem, but waited for the arrival of the elders who were considered to have occult knowledge. It was only when the elders arrived by showing their supernatural powers that took humans out of the crocodile's mouth. Then the people killed the crocodile.

Basically, the duty of the customary head is to maintain order, security and the application of customary institutions according to their respective scope. The task of the customary head has limitations when it comes to matters of ownership and control of customary land. The customary head does not have the right to interfere with the authority of the customary owner in using his land. The customary head will only carry out his role if there is a dispute between the clans and the owners who claim to each other and they want customary settlement.



Gambar 30 Customary Council and LMA Malamoi

The Moi community also has a formal organization, which is the Indigenous Peoples Institution (LMA) of Malamoi which was formed on March 25th, 1998. Furthermore, in 1999, the Malamoi LMA received traditional recognition through the traditional tribal assembly of the Moi. In terms of connectivity, the Malamoi LMA becomes a connecting road between local traditional organizations and the government. Structurally, Malamoi LMA plays an executive role and the Moi Indigenous Council plays a legislative role. The main duties of the LMA Malamoi include (1) upholding the authority of the Moi customary law, (2) arranging the land boundary rights of each clan, (3) administering the Moi traditional law court, (4) enforcing human rights of Moi indigenous peoples, and (5) curbing the management of natural resources in all Moi customary law areas for the welfare of the Moi people. The Chairperson of LMA Malamoi since 2010 until now is Silas Ongge Kalami, MA.

3.1.4 Forest condition in Malalilis and Siwis

Malalilis and Siwis are two villages located in Sorong district, West Papua Province. Until 2018, based on satellite imagery analysis and digital calculations conducted by FWI, it showed that 86.7% or around 744,000 hectares of land in this district were still covered by natural forests. The area of natural forest was reduced by 50,700 hectares when compared to 2000. The area of natural forest in the Sorong district in 2000

forests was 795,000 hectares (92.6% of the land). Sorong district itself has a land area of around 858 thousand hectares.

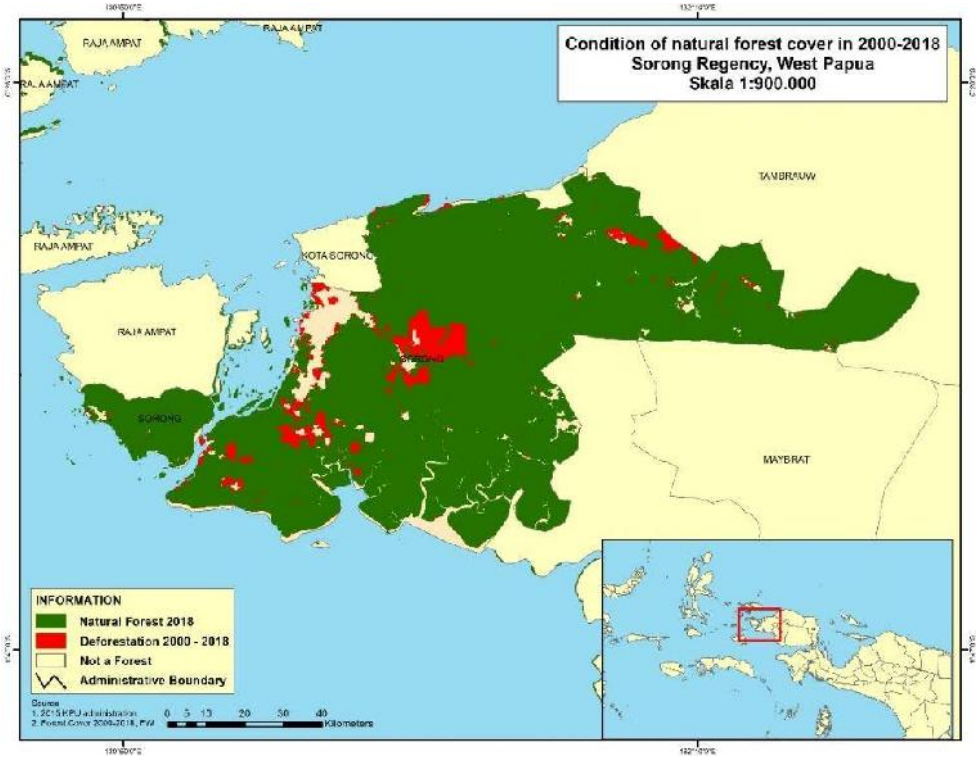


Figure 32 The Condition of natural forest in Sorong district, West Papua in the year 2000 to 2018

The map above shows the locations of the lost natural forests in Sorong district from 2000 to 2018. The picture also shows the lost natural forest on a large expanse which is located in the middle of Sorong district (red in Figure 32). That is an area that has been encumbered by PT. Henrison Inti Persada (HIP). The area where natural forests in period 2000 to 2018 were lost 36,200 hectares or 71%. Deforestation in Sorong district occurred in areas that have been encumbered with corporate licenses such as HPH, HPT, Oil Palm Plantation, or Mining. Meanwhile the remaining 14,500 hectares (29%) occurred outside areas that are not burdened by permits

Malalilis

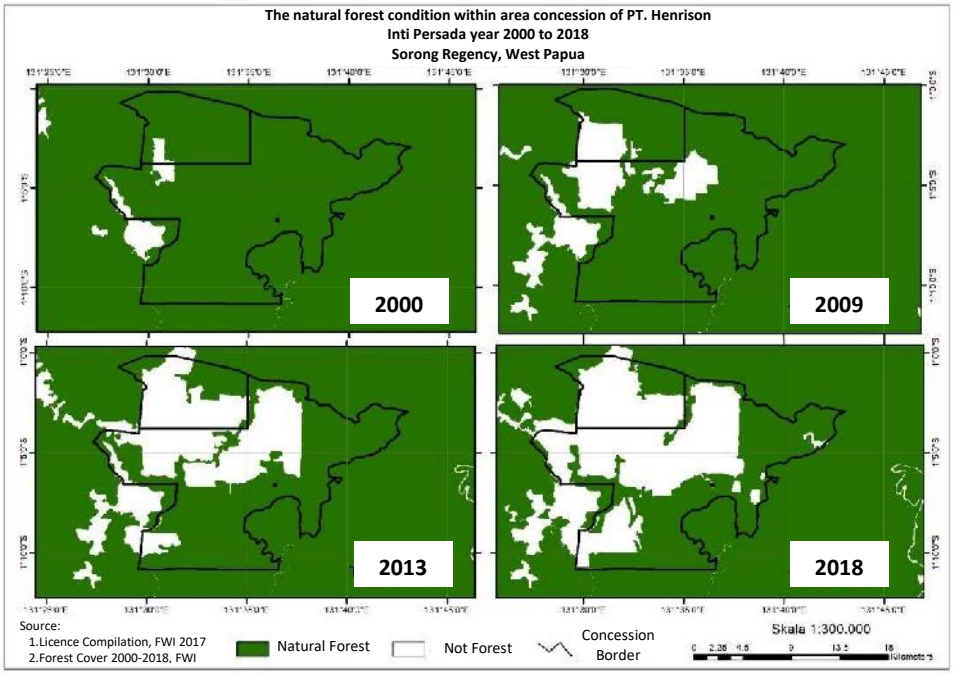


Figure 31 The natural forest condition within area concession of PT.HIP year 2000 to 2018

With the operation of converting natural forests to oil palm plantations in Malalilis, practically the remaining natural forests are only in the northern part of the village. Eventhough, It was no longer primary forest because in the 1990s there had been a harvesting of natural timber by PT Intimpura's HPH permit. As a result, commercial timber such as Merbau and Kuku (Nandu wood) had a high reduction in population, while Matoa trees are widely used for railroad boards. Likewise, hunting animals are increasingly farther into the forest to the north.

The loss of natural forests due to the conversion of forests into oil palm plantations can also be seen from the results of digital calculation of forest cover in the period 2000 to 2018. Until 2018, the concession area of PT HIP, which has an area of around 31,600 hectares, leaves natural forest in its concession area of 14,100 hectares (44%). The area of natural forest was reduced by 16,400 hectares compared to the year 2000. In 2000 alone, the PT HIP still holds 30,500 hectares of natural forest or 96.6% of the total concession area.

Siwis

Digital calculation that refers to administrative data shows that Siwis Village, Klaso sub-district has an area of 17,036 hectares. In contrast to Malalilis Village, the condition of the forest in Siwis Village is still well preserved. the condition of the forest that is still maintained is also evident from the results of the analysis of forest cover. Until 2018, 15,600 hectares or 91.6% of the land in Siwis Village was still in the form of natural forests. The area of natural forest was only reduced by 531 hectares compared to 2000.

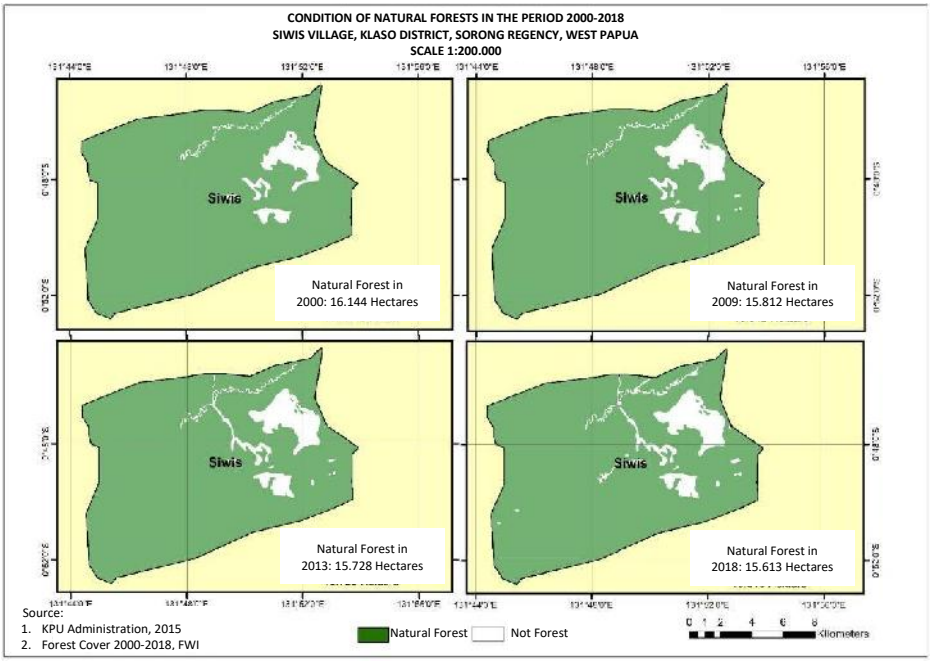


Figure 32 The natural forest condition in Siwis in the year 2000 to 2018

Unlike the Malalilis village, in Siwis Village there is no corporate license to utilize forest. The community uses the forest by hunting, gardening and planting sago. This shows that basically the life systems of indigenous peoples in Papua are highly dependent on forest resources. It also shows that indigenous peoples have a local governance system and control over the natural resources that are around them.

Figure 33 River of Kalaben Igik (left), River of Kalaben Lebe (Right), Siwis

3.2 The Aru Islands[32]

Aru Islands is a group of islands located in eastern Indonesia. Administratively, Aru Islands is located in the Province of Maluku. Nevertheless, the Aru Islands have ecological conditions that tend to be closer and similar to Papua and parts of Australia. Animals found in the islands were the Australis type, such as cuscus, wallabies (*Macropus agilis*), tree kangaroos (*Dendrolagus sp*.), bird of paradise (*Paradiseae apoda*), black cockatoos (*Prebosciger aterrimus*), cassowaries (*Casuarius casuarius*), yellow crested cockatoos (*Cacatua sulphurea*), maleo (*Macrocephalon maleo*) and other species. This is reasonable, considering the location of the Aru Islands that is still in the Indo-Australian plate.

The results of Wallace's journey to eastern Indonesia in the mid-18th century completed his findings related to land connection in eastern Indonesia, seen from the distribution of flora and fauna and the communities he found in these areas. The publication of the results of Wallace's journey triggered the researchers afterwards to explore Wallace's discoveries.

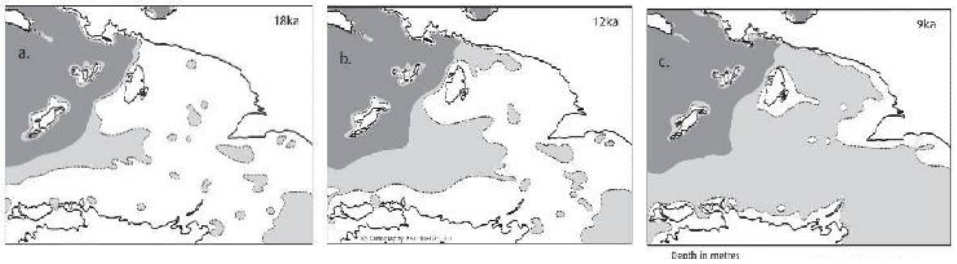


Figure 34 Palaeo-shoreline map in the west of Arafura showing the process of land separation in the Aru Islands from the mainland. Yokoyama et al. (2001a) in Spriggs (2003).

Geoffrey Hope and Ken Aplin conducted research on environmental changes that occurred in the Aru Islands in 2002. The paper reinforces the argument that Papua-Australia, including the Aru Islands, was once connected as one land. One of the

[32] The data presented in the Aru islands topic is the continuation from the previous researches done by FWI since 2014..

contents discussed is global sea level fluctuations from 150,000 years ago. These fluctuations are illustrated as shown in Figure 37.

A significant phenomenon started from 12,000 BP (Before Present), an increase in sea level as high as 40 meters. At that time Aru was still in the mainland with the western peninsula of Papua, also to the southern part was still connected with the mainland of Australia. About 1500 years later, sea level increased to 25 meters. At that time the land connection between Aru, the Papua peninsula and northern Australia began to sink. Sea level rise increased again around 16 meters in 9000 years ago. The incident made the mainland of Aru become a single island, leaving half of the previous area. The process is illustrated in Figure 36.

Based on the geological map of the Aru Islands sheet, the geological structures found in the Aru Islands are faults and lineaments. The geological history that developed in the Aru Islands started in the Early Miocene period with the deposition of limestone and stones of the Koba Formation in shallow marine environments. Limestone deposition continued until the middle Miocene era. Most likely at the end of the Middle Miocene to Early of Late Miocene, the lifting was occurred resulted in a hiatus. At the Late Miocene to Plisocene, the sea water was once again in the form of shallow sea with deposition of limestone and stones of the Manumbai Formation (Hartono and Ratman, 1992).

The Aru Islands cluster formed during the Pleistocene era. The Aru Islands are separated by small straits that resemble rivers. The straits are formed due to enlargement and expansion by the tectonic process. All rivers in the Aru Islands are thought to have evolved into stumps (Patmawijaya and Subagyo, 2014). The results of the FWI spatial calculations up to 2018 show the number of islands in the Aru island is reaching 832 islands. Most are identified as small islands. Based on Law Number 27 Year 2007, only one island, Trangan Island with an area of 2,300 km^2 was included into the big island category. While the rest are categorized as small islands. According to the community's perspective, only five islands were considered as big islands, namely Trangan, Kobror, Wokam, Maikor, and Kola.

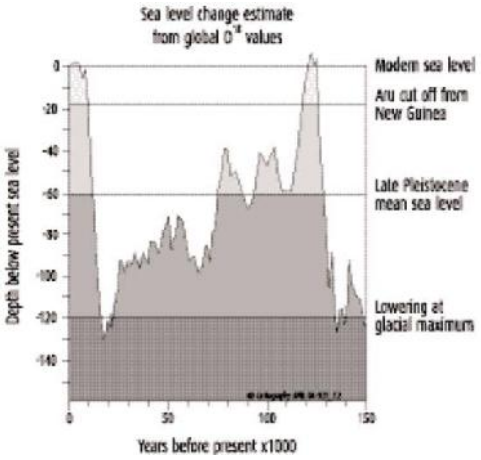


Figure 35 Fluctuations in sea level rise over the past 150,000 years. Oxygen isotope record of Martinson et al. (1987).

The Aru Islands topography consists of low hills, lowlands and swamps. Morphology of low hills in the form of karst hills formed by limestone and napal with a height of about 50-200 meters above sea level. Lowland morphology is spread extending from northeast to southwest, from south of Kobror Island to Trangan Island formed by limestone, sand and sandstone with a height of 10-100 meters above sea level. While the morphology of the swamp area in the Aru islands is mangrove forest with a shallow mud substrate of about 30 cm and directly touches the surface of the karst.

3.2.1 The History and Demography of Aru Islands

According to the story, the people of Aru Islands came from the island of Eno Karang. Because of the disaster, they flocked to move from the island. They left as a group. Each group uses a certain symbol at the end of the boat. The tip of this

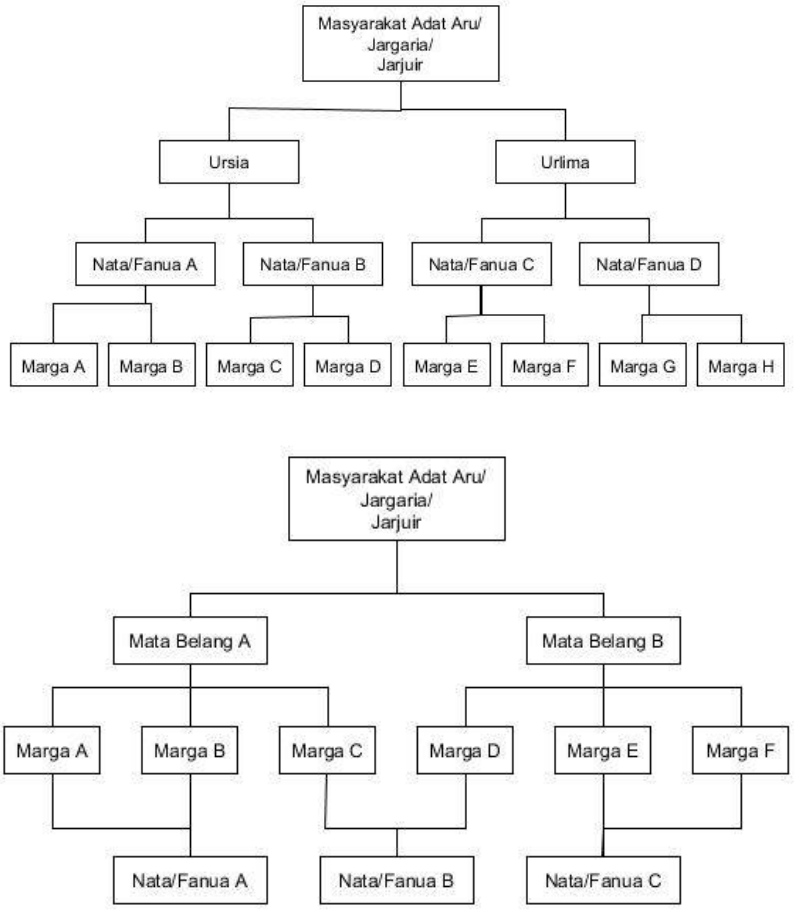


Figure 36 Community Structure in the Aru Islands

ship is called by the term "*mata belang* (striped eyes)"[33]. Each of these stripes consists again of *Galan* (clans)[34]. *Galans* or clans are spread to all corners in Jargaria. Each *galan* is headed by a *taper*[35] *galan* or clan leader. The clan leader is the coordinator of the clan members. However, any decision related to the clan cannot be decided by the clan leader himself, but must be made by consensus by all members of the clan.

On the way, each ship dropped clans in different areas ranging from North to South on the islands in the Aru. Each clan has their own area in accordance with the location where they were descended. Furthermore, during the Dutch colonial era, the scattered clan groups were united in a settlement as part to facilitate data collection and administration processes. These clans eventually settled in one location including the territory of each clan grouped into customary territories of *Nata* or *Fanua*[36]. *Nata* or *Fanua* is what is currently transforming into a village

Referring to O'Connor et al (2006) in the results of his study entitled "The Archeology of the Aru Islands, Eastern Indonesia", explained the origins of civilization in the Aru Islands. According to him, in the Pleistocene era (about 600,000 years ago), when there had been no sea level rise, the Sundanese Exposure was still connected to the southern Afro-Eurasian-American continent. Sumatra, Java, Bali, Kalimantan, Palawan belong to one land with the mainland in the Sahul Exposure (New Guinea and Australia) including Aru Island.

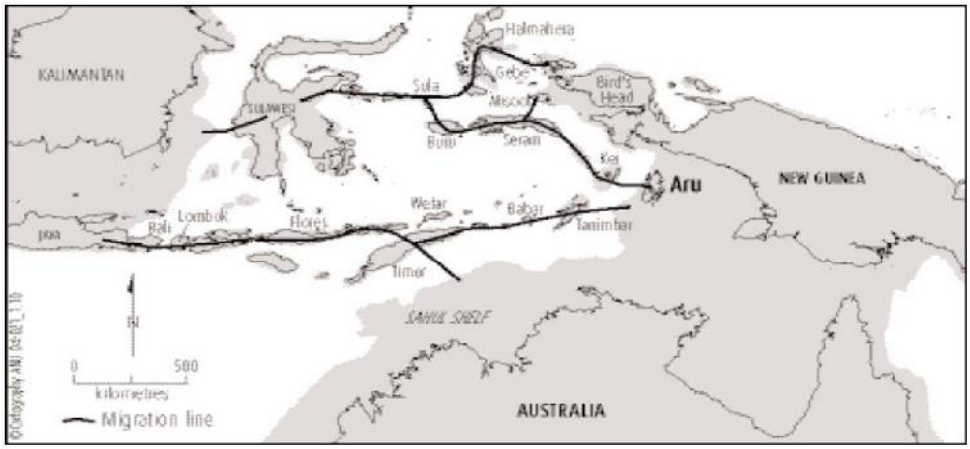


Figure 37 The trade route during the colonial period from Southeast Asia to Sahul (O'Connor et.al, 2006)

[33] in local term, *belang* means ship. *Mata belang* means the edge of the ship. From this then the groups are called, based on the stripe of the ship.

[34] Galan in Aru language means clan

[35] Taper in Aru language means leader

[36] Nata or Fanua is term of Aru people about the unit of costumary community area. There several stripe eyes (mata belang) and clans in it.

There are two possible routes taken by human colonization at that time on their journey to Sahul (Figure 39). The first distribution route to the Maluku, through Sula, then divided north (via Halmahera and the Bird's Head of Papua) and south (via Buru and Seram) then to the Bomberai Peninsula area, to the Kei area and across to Aru. The second colonization was estimated to travel along Lesser Sunda to Timor, then to Australia (at present), and to Maluku (via Wetar, Babar, and Tanimbar) to reach South Aru. It is estimated that the two routes take almost the same time, around 55,000 years of history.

Local Cosmology: Ursia and Urlima

The folklore about *Siwalima* is a concept of the Moluccan community in general for the classification of community groups. This concept has many locations in Maluku. It's just that there are differences in the names of the characters they tell. The Aru Islands have *Ursia* and *Urlima* stories; in Seram with *Pata Siwa* and *Pata lima* and *Uli Siwa* and *Uli Lima*; and the Southeast Maluku region with the *Lorsiwa-Lorlima* concept for the Kei community.

Siwalima in Southeast Maluku (including West Southeast Maluku, various islands in Aru, and Southwest Maluku region) has the same story content as in Central Maluku and Ambon, namely two brothers like brothers who have different characters, but still one blood and one spirit. *Ursia* refers to the number nine, with the elements of buffalo, hammerhead sharks, land, and mountains. Whereas Urlima refers to whales, oceans, earth, and beaches.

The Aru people often associate the Siwalima story with the history of Aru's origin. The Aru people believe that their ancestors used to live in Eno Karang. Until at one time there was a natural disaster that required everyone in the area to leave to save themselves. People believe that their ancestors were helped by their progenitors in the form of animals when migrating. The people who belong to Ursia were saved by a hen in the form of a hammerhead shark and brought it to the north, while Urlima was saved by a whale that brought them to south.

However, some other historical records mention that Siwalima's cosmology did not originate from Aru's local knowledge, but rather came from the Sultanates of Tidore and Ternate. Pata Siwa has ties with Ternate and Pata lima with Tidore. The reason for the emergence of the division of Shiva and Pata Lima is to divide the Seram people to make it easier to conquer (Kadir 2012). Various historical records show that the Ternate and Tidore people have continued to compete at least since 1450.

Marafenfen Village

Figure 38 Settlement in Marafenfen (left); cultivation in the yard (right)

Administratively, Marafenfen village is included in the Aru Selatan sub-district, Aru Islands district. Marafenfen village is directly adjacent to the villages of Jerol, Kalar-kalar, Feruni, Popjetur and Gaimar. While the boundaries with Lor-lor, Laininir and West Doka Villages are limited by the big bay, namely Teluk Serowatu[37]. According to village data of 2018, Marafenfen village is inhabited by 115 households with a population of 403 consisting of 213 men and 190 women

Before it was named Marafenfen Village, the name of this village was the Mala Redi. The village is inhabited by four clans, namely: Gaelagoi, Botmir, Tiljuir, and Bot mona-mona. The people in Marafenfen initially settled in groups based on clans, in their respective areas. Because of Dutch administrative interests, they were united in one settlement in the territory of the clan of Tiljuir clan.

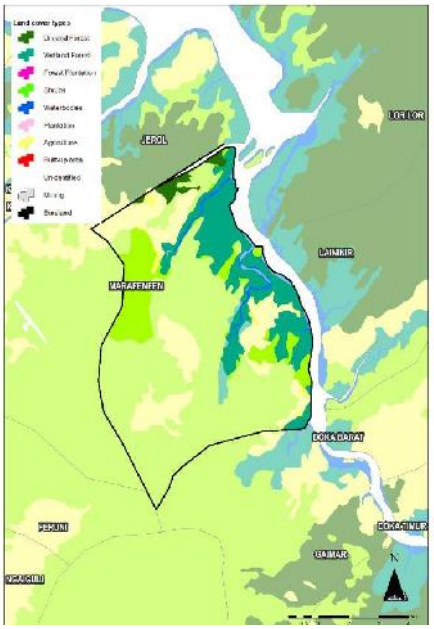


Figure 39 Map of Marafenfen village

Literally, Marafenfen means close to the river. This is in accordance with its location which is indeed close to the rivers. Not only rivers, Marafenfen also has a lot of springs that spread throughout its territory, both in residential areas, fields, or small forests. They use these water sources for their daily needs such as drinking water, bathing and washing. Due to the large number of springs, agriculture in Marafenfen is quite good when compared to some other villages that lack water. Thus, the production of sago and cultivation in Marafenfen is not too disturbed during the dry season.

[37] This bay is known as Serowatu river by the local people

Access to the village of Marafenfen is relatively difficult given its location far from Dobo (± 90 km) the sub-district capital. Meanwhile, transportation facilities are still very minimal. Only two ships operate twice a week, namely Tarangan and Karaweira. The boat trip from Dobo takes about five hours to arrive at the port of Serowatu. The distance from Serowatu to Marafenfen is still quite far, about one hour away by truck or two hours by *ketinting* (small boat). Sea travel from Dobo to Serowatu also cannot be done during the bad weather, usually during west monsoon. In this season, people have to wait for a long time for transportation. Only a few "reckless" ships can depart in this season.

Because of these conditions, the people of Marafenfen Village took the initiative to buy a village motor boat using village funds. This boat is used as an alternative transportation for Marafenfen villagers. In addition to passenger transportation, this boat is also functioned to transport harvested goods, such as *tumang* (sago products), copra, and swallow nests. In addition, this village motor boat also functions to bring food for Marafenfen's children who are studying in Dobo. This boat can go to Dobo once or twice a week.

Village Owned Enterprises (BUMDES) have not operated well in this village. BUMDES funds are operated in the form of business assistance to groups or individuals. Business assistance in one group consisting of 5 members with total fund of IDR 20 million. While business assistance fund for individuals is IDR 10 million. It is planned that this assistance will be carried out in rotation for the whole community. The problem is regarding the reporting that is still being a big obstacle here.

Facilities in the village are quite complete, namely:

1. Healthcare : 1 building of *Posyandu* (Integrated Healthcare Center)
2. Education : 1 building of Pre-school and 1 building of elementary school
3. Sport : 1 volley field
4. Transportation : 1 big motor boat, and 1 small motor boat owned by the village
5. Sanitation : 5 public toilets, and 7 wells (two of the 7 wells built in a program of “ABRI Masuk Desa” (Armed Forces Enter the Village))
6. House of worship : 1 building of Christian churc

On average, Marfenfen villagers fill their tubs by drawing water from wells and transporting the water to their homes. Usually they transport water in the afternoon. Only three people have a water pump to fill the tub. Because of this, the provincial government provides assistance for the construction of a large water tank at the location of the baptismal water (one of the springs in Marafenfen), as a provider of clean water that will be channeled to settlement areas.

Marafenfen is an indigenous territory in Aru with large savannah area. In addition to having vast savanna fields and spring pools, Marafenfen also has caves that can be entered through rivers using canoes or *ketinting* (small boat), directly leading to the sea. The caves usually become a water transportation route as access to the Marfenfen Village.

The natural beauty of the Aru Islands, including Marafenfen, is starting to be glimpsed by the tourism agency to be a tourism development project. This can be seen from the inclusion of Marafenfen Village in the promotion of tourism during the Pesona Aru (Aru Enchanment) event. In the promotion video, the locations includen in the video are:

1. Village of Eresin, sub-district of South Aru
2. Village of Lutur, Kjambel beach
3. Cape of Rebi, in Rebi village, sub-district of North Aru
4. Savannah of Korpuy, in Korpuy village, sub-district of South Aru
5. Savannah of Popjetur, in Popjetur village, sub-district of South Aru
6. Berbunyi beach, in Kalar-kalar village, sub-district of South Aru
7. Fatural beach, in Fatural village
8. Tabarfane
9. Village of Iljabatu Kapal
10. Cave of Marafenfen, sub-district of South Aru
11. Feruni beach, sub-district of South Aru

Village of Benjuring

Administratively, Benjuring village is included in sub-district of Aru Utara Timur Batuley, one mainland with Kabasiang Village (in the east), facing the Batuley and Kuwul Villages (in the north). This village can only be accessed by the sea, for about 4 hours if using a speedboat or 8 hours by ketinting (from the Capital sub-district). The sub-district office is in the Village of Kobamar (about 1 hour from Benjuring if using a speedboat).

The life system of the people of Benjuring village is very dependent on sea conditions. The area which is surrounded by a vast and shallow reef group / sandbank causes the community to have to take into account the tidal time of the sea to be able to lean the boat on the village dock. This condition also makes most of the people of Benjuring Village have a livelihood as fishermen.

The language used daily by the indigenous people of Benjuring is *Gwatle lir*, but can also use Dobo Malay language to interact with migrants. There are three religions embraced by the community, including Catholicism, Christianity / Protestantism, and Islam. Some of the families often has family members who have those 3 different religions. Because of these family relationships, tolerance for those of different faiths is very high.

Elements of the community living in Benjuring Village include village organs, village elders, traditional elders, religious leaders, small fishermen, traders, education workers, and health workers. Facilities owned by the village include village main roads, village offices, Puskesmas (Community Health Center), elementary-junior-senior high schools, water dams, fields, docks, Christian and Catholic churches, and a mosque that is still under construction.

The area of the settlement of Benjuring Village is only 157 hectares. The location of the settlement is on a large coral rock and directly facing the Arafura sea, so that many community activities are affected by the wind season. Swept the wind from the east will be felt to be stronger than the west wind, because the location of this village is in the outer east of the Aru Islands that directly facing the Arafura Sea. This condition makes many people use the coastal and marine areas to support their daily needs. Livelihood activities are also found on the mainland by means of gardening. However, these activities are not the main occupation of most people in Benjuring Village.

Figure 40 The entrance to the Benjuring village

Communities in Benjuring Village utilize the potential of the coast and the sea as their main livelihood. The activity was accompanied by local knowledge and wisdom. In the east monsoon season, in May to September, most people use seaweed as the main commodity in supporting their economy. But when the west monsoon season comes from October to April, almost all people in the village use the sea as an economic source. This is inversely proportional to villages on the west coast of the Aru Islands. Most of the fishermen in Benjuring village only use canoes (some use sails) measuring about two meters long and only 50 cm wide, as transportation to find fish or other sea products. This illustrates the very weak competitiveness when compared to other ships originating from outside the village of Benjuring, including ships from outside the Aru Islands Regency. This competitive edge can also be seen from the fishing gear used such as small fishing nets, fishing rods, and several types of spears.

Village of Benjina

Benjina Village is located on the west coast of Kobror Island. Administratively, this village is included in the sub-district of Aru Tengah, district of Aru Islands. Benjina is one of the villages that is easily accessed from Dobo because the crossing ship

(Palembang Ship) is available every day from Benjina to Dobo, or vice versa with a travel time of 2 to 3 hours.

The area of the settlement of Benjina Village according to the spatial analysis conducted by FWI (2018) reached 1,848 hectares. Benjina saves the potential of rich natural resources, both forest resources and marine resources. The livelihood of the Benjina people depends on the land and sea. When the west monsoon arrives, the people of benjina do a lot of activities in the forest to hunt and utilize wood. Whereas if during the east monsoon or the shady season, the people of benjina are more active in the sea to utilize sea products by fishing, netting, or trapping.

The name of Benjina has been widely known since the 1980s as one of the areas that have large fish companies in Eastern Indonesia. Moreover, after the uncovering of illegal fishing and human trafficking cases by fishing companies PT. Pusaka Benjina Resource (PBR) in April 2015. Not only the practice of slavery, but PT PBR also employed foreign crewmen from a number of countries without clear documents.

Benjina is one of the bases of fishing activities in the Arafura Sea region. Aside from being a fishing base for the company-scale fishing and fishing fleet (now only PT Rumah Merah), Benjina has also become a fishing base for large-sized fishermen of 30 GT vessels. Those who have a fleet of ships are Javanese transmigrant fishermen who have long lived in Benjina.

There are three fleets of ship owner. One fleet has 3-5 vessels with 30 GT measure and more than five small vessels (15 GT) for catching shrimp. The catchment area of the large ships is only around the waters of the Aru Islands, approximately 5 miles to the ocean. The ship usually operates in the sea the twice a month. Ship activities do not adjust the season. Most of the year these ships always operate. It's just that they have to adjust the catchment area. If the east wind season, the fleet will direct the ship to the waters off the western of the Aru Islands. Conversely, in the west wind season, the fleet will direct its ships to the eastern waters of the Aru Islands.

Figure 41 10 PT PBR, Benjina (left) Javenese fishermen’s boats (right)

In addition to Javanese fishermen, in Benjina Village there are also local fishermen who still use local knowledge in managing and utilizing their coastal and marine resources, including in terms of marine governance. Traditional fishing groups in Benjina, belong to small fishermen. The fishing gear used includes traditional nets, or at times catching fish with only spears, traps, and simple fishing rods. The boat is also relatively small, (under 15 GT). The catchment area is only on the coast to shallow waters to catch reef fish, crabs, pearls, and crustaceans.

Village of Mesiang

Mesiang Village is located on Workai Island, southeast of the Aru Islands. Administratively, this village is located in Aru Tengah Selatan sub-district, bordering with Jambu Air Village in the North, Bemun Village in the South, Babi Island in the West, and Arafura Sea in the East. The travel time from the Capital District to Mesiang Village is around 8 to 9 hours using a motor boat (15 GT) or 3-4 hours if using a speedboat. Meanwhile, the travel time to the capital of the sub-district in Longgar Village is 1 to 2 hours drive.

The area of the settlement area of Mesiang Village reaches 2,166 hectares (FWI 2018), with a population of 1,238 people. The data confirms that Mesiang has a large area and a larger population than other villages in Aru Islands regency. The distant village from the center of the Capital City (Dobo) becomes opportunity for the businessmen in Mesiang Village. There are four department stores that sell a variety of goods ranging from food, electronic, fuel and so forth, to meet the daily needs of the community in the village of Mesiang and surrounding areas.

The majority of the livelihoods of Mesiang Village villagers are full fishermen, who depend on sea products throughout the year. In addition to fish and shrimp, the other marine products are crabs, pearl oysters, and sea cucumbers. Some community members also use garden and forest products such as sago, copra, and wood products to support their daily needs.

3.2.2 Socioeconomic and Environmental Condition

Agrarian System in Aru

Before the Dutch colonial period, Jargarians lived in groups based on clans. They settled, opened gardens, hunted, and so on in their respective lands. During the colonial period, in the interests of efficient tax collection by the Dutch, several adjacent clans were united in one settlement location.

Up to 2017, the administrative data of the Aru Islands district showed that the majority of the community was Protestant Christians. According to Aru Islands Regency administration data, around 80% of the people are Protestants. Some others embraced Catholicism and Islam. Before Christianity and Islam entered the Aru Islands, the people of the Aru Islands had a belief called Tip Loi-loi (which

means "all the time"). In 1976, based on the president's order, all citizens had to choose one religion out of five religions recognized by the state at that time. Because of this policy, we can find many religions in one house held by the family members in Aru Islands.

As mentioned in the Aru Islands Community History section, the movement of Jargarians from Eno Karang Island formed groups of striped eyes consisting of clans. This initial move can be said as a new period for the Jargaria community. Because the clan group who landed on these islands then determine their territories. In the initial division, the boundaries between clans were still unclear because one clan could land on one side of the island, while another clan landed on the other side of the island. Each of these clans initially did not know each other that in one region there were other clans. When they meet each other and know each other's whereabouts, only then do they determine the boundaries between clans. This clan-controlled area is referred to as *petuanan* or customary land. This *petuanan* boundary was originally only marked from natural boundaries such as rivers, rocks, hills, and so on. When the Dutch colonial era, the boundaries of several clans turned into stakes. Usually this began with a disagreement about the strict boundaries between the petitions. The existence of this stake was expected to reinforce the boundaries between clans that had begun to dispute.

The authority over the guidance was automatically at the same time a sign of power over existing agrarian resources such as land, forests, reeds, sea, hills, etc. Ownership of *petuanan* here is collective. Therefore, access to agrarian resources is then regulated together.

The system of regulating the use, ownership and control of the entire Aru Islands is roughly the same. In principle, agrarian resources are owned and controlled communally based on clans. Each clan is headed by the clan leader or in the local language called *Taper Galan*. *Taper Galan* was appointed by the community based on deliberation to coordinate community needs, including agrarian issues. As a person chosen by the community, he must represent the voice of the community. In the custom of the Jargaria community, all decisions must be made by deliberation. Therefore, *Taper Galan* cannot decide for himself the voice that represents the community, especially its clan members.

Although the *petuanan* is controlled by the clan, it can be accessed by people outside the clan. Even people who are not descendants of Aru. The condition is that the person must reside in the village where it is. Another requirement is that the person must ask for and be given permission by the clan.

History and Tenurial Dynamics

Similar to the Aru community in general, landownership in Marafenfen Village is based on the clan communal ownership. However, access to land is open to other

clans, even outsiders from the village of Marafenfen, as long as the person lives in the village of Marafenfen. Anyone can access the clan's land with a note asking permission from the clan's owner. Thus, land belonging to clan A, for example, may be used by clans B or C, and vice versa.

Access of the whole community to *petuanan* land is arguably the same. There are no special privileges such as land area or soil fertility in traditional, village, or religious figures. The clan leader is only a coordinator. All work is also done individually from the owner of the field or garden. Even if there is joint work (mutual cooperation) to work on the garden, house, and so on, everyone can ask for it. It is different from some other indigenous peoples who give certain privileges to their customary elites. For example, elites get more extensive and fertile land, or work in indigenous elite fields is done by non-elite.

There are no restrictions on land clearing to be used for agriculture. The limit is the ability of the land manager, because all fields and gardens are done by each family. There has been no field or garden work done by labor

Unlike the other Aru regions, especially around the sub-district capital, communal ownership in Marafenfen and its surroundings or in South Aru in general, is still very strong. Now, especially in Dobo, private ownership is starting to emerge. This is indicated by the existence of certificates of private property. This private ownership changed the agrarian law in force in Aru. According to some informants, this private ownership was started by outsiders, who actually based on Aru's customary system, did not have land rights in Aru. Due to the private ownership system, land ownership has also begun to be concentrated in a number of people who have sufficiently strong capital.

In 1978, the fishing company Djayanti Group emerged in Benjina. The company claimed to own ± 60 hectares of land that was owned by eight villages. The company went bankrupt along with the collapse of the New Order regime, precisely in 1999. After that the company temporarily closed, in 2004, the company was claimed by PT Pusaka Benjina Resources. Until finally, in 2015 the company was forced to close because it was proven to do human trafficking activities. Workers who work at this company were treated improperly. The workers came from several countries, including Thailand, Vietnam, Cambodia, Burma and Myanmar.

In the year 1989 to 2004, there was a company named PT Budi Nyata, a logging company in Tunguwatu Village, sub-district of Pulau-Pulau Aru. This company is under the Djayanti Group company. Now the forest isndamaged. In the 2000s, in Lutur Village (North Aru Selatan), an HGU permit was issued for coffee plantation. This location has been cleared and logged. However, until this moment it is never planted.

The expansion of the Aru Islands into a regency occurred in 2003. Since this division, a lot of infrastructure development has started, such as airports, roads, ports and so on. In addition to the positive effects, the construction of the infrastructure also causes several negative effects. According to one source, when the road becomes good, the rate of illegal logging is higher so that the rate of deforestation is also higher. Logging is usually done with permission from the owner of the *petuanan* land with a rental permit of around one million per month. Meanwhile, in one day, they have produced more than one million rupiah for the value of the timbers they cut.

The description above illustrates that the beneficiaries of some *petuanan* land in Aru are no longer the owner of the land, but the owners of the large capital. With this large capital they are able to make maximum profits from the land, exceeding the owner of the land. This also led to changes in the use of agrarian wealth which initially only to serve the needs of the community turned into servants of large market needs. Thus, control over the carrying capacity of nature becomes uncontrollable.

Regarding the control of the carrying capacity of nature, it is closely related to what systems are served from nature itself. There is a significant difference between the natural use system according to the Aru community's procedures and the new procedures based on the capitalistic system. In the Aru community system, the limit is the needs of the households that live there. Because of these restrictions, all people can control their limits. For example, people who need woods to build a house, the community will see the construction of the house and the wood used as house material. If the house construction is complete, then the person may no longer take wood in the forest. Whereas in the capitalistic system, the limits are market needs, both local, national and global markets. Meanwhile, the market needs are not limited. Such limits cannot be controlled by the community because there is no limit to these needs. Even if there is limit, it is difficult for the community to track and control it. This also applies to other commodities.

Coastal and Water of Aru Islands

The Aru Islands Sea waters face directly the Banda Sea to the west; Arafura Sea to the east; and the Timor Sea to the Southwest. Broadly the movement of sea water and its load in the Arafura Sea, Banda Sea and Timor Sea is greatly influenced by tides, wind patterns, and the rate of mass of water transported from the surrounding waters. The currents and major water mass transports that form from the surface to the seabed are very dynamic and control the regional climate in the region.

The rate of transported water mass contained in these waters is influenced by the global flow lane that has a significant influence on capture fisheries activities in the Aru Islands Sea waters. Water masses from the Western Pacific routinely flow into

the Indian Ocean through eastern Indonesian waters (ARLINDO). Seasonally, there is a change in the direction of the mass of water in the Banda Sea which also affects the Arafura Sea, which is generated by the Indonesian moonson currents.

During the west monsoon winds in the Aru Islands sea waters, locally referred to as the west monsoon (from December to February), there will be a decrease in the mass of water or downwelling due to water input from the Java Sea and the Flores Sea, and at least the mass of running water to the Pacific Ocean. This results in an increase in surface water temperature, and a decrease in salinity and nutrients, resulting in a decrease in plankton biomass.

Conversely, in the period of east monsoon winds, from June to August, there is a dominant movement of water mass towards the Flores Sea and the Java Sea, while the mass of water entering from the Pacific Ocean is insufficient. As a result, water from the bottom layer of the Banda Sea will move upward, or known as the upwelling process (Wyrtki 1958, 1961). This circulation is directly related to the circulation of the world water mass or ocean conveyor belt (Ilahude, 1999).

The process of lifting the mass of water that occurs in the Banda Sea in the east monsoon season due to the emptiness of the mass of water in the parasitic layer results in a decrease in temperature, an increase in salinity, and removal of nutrients. The availability of abundant nutrients will in turn affect the abundance of plankton, the main source of economically important fish such as tuna, skipjack and tuna.

The western part of Aru Islands sea waters is directly bordered by the Banda Sea which includes deep waters, the depth of Aru waters in the west reaches 700 m. Whereas to the east of the Aru Islands sea waters have shallow water character with depth less than 60 meters including the Arafura Sea region. Located on a large continental shelf, it provides opportunities for coastal fishing for trawling fleet activities in capturing demersal fish resources such as shrimp and other demersal fish species.

The great potential of fisheries in the Aru Islands Waters is not separated from the abundance of ecosystem habitats that are scattered along the mainland lines of the islands contained in the Aru Islands. There are at least three coastal ecosystems in this region, which are mangrove, coral reef and seagrass ecosystems. The open waters that surround the islands cause a sloping coastal landscape characterized by intertidal coastal swamps with extensive mangrove forests. The open waters around it with strong current patterns support the development of coral reefs. Sloping coastal landscape and there are many intertidal areas whose soil types are muddy or muddy sand, making it easy for mangroves to grow and spread widely, almost in all districts in the Aru Islands.

The total area of mangrove ecosystems reaches 150,400 hectares. The character of the Aru Islands, which consists of many islands which converge, causes many narrow niches between islands, generally termed as strait, but the Aru people used to call it the *sunge*. Besides along the coastline of the Aru islands, mangroves are also found along the straits found in the Aru Islands. The character of the straits that are narrow and protected from ocean waves causes minimal water movement, so that mangroves can develop and spread widely optimally.

Abundant fisheries resources due to the availability of naturally abundant food chains. There are bases that occupy the food chain, namely plankton bases (small fish as demersal / pelagic fish food) and detritus bases (detritus / shrimp eating organisms). Both of these food chains are related to the distribution of plankton that determines nutrient fertility and the availability of mangrove forests as a primary source of detritus.

In addition to mangrove ecosystems, there are also seagrass and coral reef ecosystems, both of which also have links to the bases underlying the food chain needed by marine biota. This explains the role of seagrass and coral reef ecosystems that also have an ecological function as fish habitat.

The appearance of coral reef distribution and depth contour is presented in Figure 44. The spatial distribution can explain the optimal areas that support the existence of coral reef and seagrass ecosystems in the Aru Islands. Clusters of reefs and contours around shallow water also have a function as a barrier to waves from the high seas.

Amidst the many infrastructural developments, such as the construction of roads, offices, houses and other developments, beach sand and coral reefs from the islands are often used as building materials. The quarry activities on coral reefs weakens the protection of coastal ecosystems to prevent land erosion. This is a threat to the existence of coastal ecosystems and even the existence of the Aru Islands as a whole.

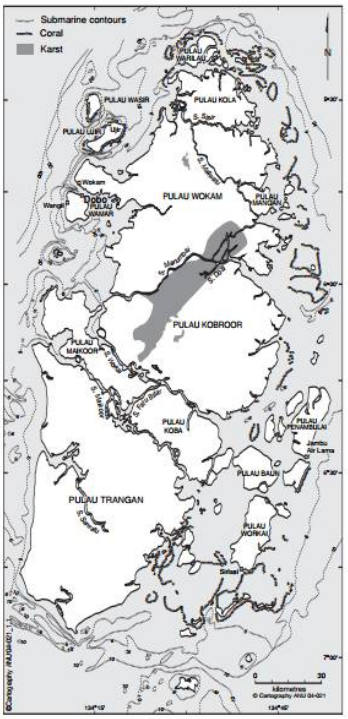


Figure 42 Map of the Aru Islands showing bathymetric contours and coral distrubution (Spriggs 2005)

The History of Trade in Aru Islands

The East Indies region (Indonesia) has long been recognized by the global market as a producer of spices, especially vanilla, cloves, nutmeg, and pepper. The making of spices as the most sought after and high-value commodity on the world market at that time, plus after Europeans came to Maluku and built hegemony over the area, further made Maluku, specifically the Banda and Ternate Islands, known as sources of spices in the world. This has become one of the causes of the lack of attention of other regions in the Maluku region, including the Aru Islands.

The lack of attention also affects the limitations of information and literacy related to the origins of aru community contact and interaction with migrants. This interaction with the outside world is likely that the initiation of Southeast Maluku Islands contact with the outside world has begun since prehistoric times as marked by humanity's early journey more than 30,000 years ago in the Aru Islands. Furthermore, shipping and trading activities in the southeastern Maluku Islands increased, following the arrival of Nusantara merchants (Bugis, Makassar and Java), China, Arabs, and finally Europeans (Bellwood, 2000).

Commodity trade supporting needs in the Aru Islands, together with a group of other islands that stretch between Timor and Papua, including Kei, Tanimbar, and islands in the southwest, are another picture of the source area for other commodities in the Maluku Islands. This trading activity developed and became increasingly crowded following the arrival of Europeans to Maluku. The presence of this new group rivaled the Javanese, Arab and Bugis-Makassar traders who had dominated earlier.

The central commodity of course is nutmeg from Banda island. Not surprisingly, the Banda Island later became a trading center for the surrounding regions. Including for the Southeast Maluku Islands. With such limited land and intensive nutmeg cultivation, the population of the Banda Islands is almost completely dependent on the food supply needs of the surrounding area. Rice imported from Java and Sulawesi. Apart from Seram and Papua, Sago was also imported from Kei and Aru (de Jonge and van Dijk 1995; Ririmase 2010).

Ships from Southeast Maluku that carry basic necessities also brought various other commodities to Banda as a transit market for exotic commodities. The commodities consisted of slaves, various marine products, pearls, dried parrots and birds of paradise. These various commodities were usually bartered with various needs (Ririmase 2010), mainly metal objects and textiles. Metal objects usually consisted of gold jewelry, swords and krisses, small cannons, to elephant ivory. At present, these various metal objects are still used in the Southeast Maluku Islands, including Aru, as a family heirloom, dowry and a tool for paying customary fines.

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Long after that, after World War II until the 21st century, global attention to the islands in southeastern Maluku began to increase, as a result of the many countries began to pay attention and develop the fisheries economy, especially in the marine fisheries sector. This argument is strengthened by Martosubroto (2004), by including data on the development of world marine fisheries production. He mentioned that marine fisheries production increased from 9.7 million tons in 1950 to 57.9 million tons in 2002 or increased by almost 500% in the period of five decades.

Increased global marine fisheries production is not only from the contribution of developed countries but also developing countries with the influx of capital and modern capture technology from developed countries. Including fishery products originating from Indonesian sea waters, specifically, the Timor Sea, the Banda Sea, and the Arafura Sea. Until now, sea waters in the southeastern part of Maluku, including the Aru Islands, are widely known as areas that have high fishery potential. The number of local and foreign vessels looking for seafood in the Aru Islands sea waters, and there are also many fishing companies, marks the high activity of fisheries in the region.

Those things slightly indicate a change in the level of existence of the Southeast Maluku marine commodity, which was originally it was only a supporting commodity but now it has become a central commodity.

Potential of the Fisheries Sector

Included in the Fisheries Management Area (WPP) 718 which includes the waters of the Aru Islands Sea, Arafuru Sea, and East Timor Sea, the potential of fisheries owned by the region has reached two million tons per year (Maluku Marine and Fisheries Service 2016), not to mention if combined with the potential of fisheries from seas that are still close together, such as the Banda Sea and the Seram Sea. This value indicates that the Aru Islands sea waters have abundant fishery potential. Some marine commodities that are targeted include sharks, stingrays, pelagic fish, demersal fish, squid, shrimp, crabs, shellfish, and some invertebrate biota. Demersal fish group is the most catched fish that commonly found. Mulyana

(2012) added several important types of economical fish resources that can be found, among others, such as tiger prawns, white shrimp, red snapper, grouper, mackerel, and others.

The area of the Arafura Sea is estimated at 150,000 m^2, with an estimated total fish resources of 1,076,890 tons per year (Daniel 2006). With a large fish resource, in its utilization, it will certainly be a challenge because it can lead to problems such as over-fishing. For example, what happened in 2003, the potential for demersal fish resources including shrimp was estimated at 145,830 tons per year, with a utilization rate of 145,070 tons per year. Thus, the utilization had reached the optimum level of the amount of catch allowed (Directorate General of Capture Fisheries 2003). This will be very vulnerable to overfishing or exceeding quotas.

The activity of catching marine products in the Arafura Sea including the Aru Islands sea waters is categorized high, it can be seen from the number and variety of fishing fleets operating in this area. Data obtained in 2006 by the Directorate General of Capture Fisheries, there were 1,650 vessels operating in the Arafura Sea. Most of them were shrimp trawlers and fish trawlers

Intensive utilization of the marine products has been carried out since the introduction of trawl fishing gear in the 1970s (Daniel 2006). In addition to fishing fleets, many fish companies are also found collecting the products of the Aru Islands sea such as those found in Dobo and Benjina. These companies are categorized into Indonesian fishing companies and foreign fishing companies.

In addition to the fleet groups and companies, the Aru indigenous people also have a dependency on the potential of the Arafura sea. Communities in coastal villages whose activities are directly affected by the sea, especially those living in villages on small islands around Aru, utilize the potential of the coast and the sea as their main livelihood. In the eastern part of Aru, in the east monsoon season from May to September, the wind from the sea is strong, so that most people use seaweed and crabs as a commodity to support their economy. But when the west monsoon season comes from October to April, or commonly called the shady season, almost all people in the village use the products from the sea, such as reef fish, pelagic fish, to crustacean classes. Conversely, for the coastal communities of the western Aru Islands, there is little activity in the sea when the west monsoon season and only a lot of utilizing sea products when the east monsoon or shady season.

The fishermen mostly only use canoes and some still use sail boat, measuring approximately 2 meters long and only 50 cm wide, as transportation to fish. But there are also fishermen who have used motor boats with less than 30 GT that are found in Benjina and Mesiang. This illustrates the narrowness of their cruising space at sea. Fishing gears used include small nets, fishing rods, several types of spear-spear, and bubu (specifically for crab).

Seafood products that are obtained usually for self-consumption or sometimes sold to the surrounding community at very cheap prices, around IDR 5,000 to 10,000 without calculating the weight and type of fish. If the catch is good or lots usually in the shady season, fishermen who are actively looking for fish will sell it to collectors or fish brokers. The mechanism of determining the price of fish made by fishermen adjusts to the type and weight of fish. These collectors will then market to the market or to a fish company in Aru.

Production and consumption in the Aru Islands

As mentioned earlier, the Aru community has two economic sources, which are land and sea. This depends on the location and geographical conditions of the villages in the Aru Islands. There are villages whose main economic source is from the sea and some have main economic sources from the land. However, there are also both as the main sources of economic community.

The difference between these two economic sources is not only a matter of what products are obtained or produced. Moreover, there is a very striking difference between production from the sea and from land. This difference is seen from the potential formation of social layers of the community on the basis of economic control, which is a result of differences in the mastery of the means of production. This is also very influential on the lifestyle of the people in villages in the Aru Islands.

In the agrarian system it has been explained that ownership of *petuanan* in the Aru Island is communal based on clan mastery. *Petuanan* as an important production tool, of course, has a big influence on production. It should be remembered here that in the Aru agrarian system, people's access to *petuanan* is the same. However, the control of other main production equipment in the form of equipment for the production process is privately owned. This private ownership is the entry point for the creation of economic class distance between the people. From here, the mastery of production equipment at sea is more imbalance than the mastery of production on land. This is because production at sea is familiar with a variety of production equipment (fishing gear) whose fishing power can be very much different between one fishing gear and another fishing gear. For example, between a simple fishing rod and a canoe with a large net and a large boat will certainly produce a different catch. Meanwhile, to obtain the means of production highly depends on how much capital you have. In its development, it is those who have large capital who will occupy the highest economic class.

Unlike the marine economy, the means of production used on land (other than *petuanan*) are still relatively uniform. Changes in production equipment due to technological developments also occur on land, but are still relatively few, simple,

and can still be reached by almost all people. For example, sago anchors now use machines, but the average family has one.

The Aru community in general underwent two economic systems at once. First is the Aru-style economic system based on local knowledge. This is illustrated for example from the division of labor. They work together with the whole extended family or by *masohi*, which is mutual assistance by neighbors. Work to open fields or build houses is still done with the *masohi* system. In some other needs they still use the barter system. The second system is the capitalistic economic system. This is illustrated by the existence of the owner of the ship owner and fishing laborers who are paid in wages. This wage labor system also appears in other occupations, especially in cities. Boeke called this phenomenon as economic dualism. The battle between the two is still strong because the Aru people still hold strong knowledge about the economy.

Mapping Actors and Trading Systems

Actors involved in the marine supply chain system consist of fishermen (fishers; machine owners; net owners), small collectors, large traders and exporters. Fishermen and small collectors are local people and migrants who live and settle in the Aru Islands, while exporters are generally people who live outside the Aru Islands district.

Figure 43 Boats and rafts (left); *Bubu, tool for catching fish* (right)

In traditional fishing fishermen using vessels smaller than 15 GT, the fishermen carry out economic activities using a production sharing system. Routine income of fishing fishermen is derived from total sales of marine products minus operational costs (in the form of fuel and supplies during fishing). Marine products obtained are not more than 100kg. After that, it is divided into two parts, one for boat owners and nets, the other for boat crews and fishermen. The gross income earned by one group of fishermen or one boat at sea reaches Rp 7 million-Rp 10 million, with net income earned by fishermen ranging from Rp 100 thousand to Rp 300 thousand at sea. Specifically, for fishermen who use 30 GT vessels, they have already used contract schemes with fish companies on Wamar Island. The range of marine products obtained between 5-7 tons at sea.

So far, at least four stages of the supply chain process have been found, namely fishing activities by fishermen; small-scale fish collection by collectors, and large-scale fish collection as well as shipping and marketing stages by companies that are mostly located on Wamar Island and some are outside of Wamar Island such as Benjina and Panambulai, Aru District. Specifically for non-fish commodities such as crabs and lobsters, most people directly sell them to companies on Wamar Island, Aru Islands, then most companies directly package and ship to restaurants, domestically (Surabaya and Jakarta) and abroad (Thailand, Hong Kong, and Taiwan).

Production and Consumption of Marafenfen Community

Marafenfen's settlement is located quite far from the sea. Therefore, they are more likely to be farmers than fishermen. Of all Marafenfen's residents, only one person works as a fisherman. And that's because he came from the village of Feruni, which is a village directly adjacent to the sea and the majority of the people are fishermen. Like other Aru people, in agriculture, the main commodities of the Marafenfen community are sago and coconut. While other plants such as vegetables and tubers that they grow in the fields are more likely to be managed subsistently. Even if there are sales, only a small portion.

There are two main collectors where Marafenfen villagers sell sago and copra, namely Serowatu Harbor and Jerol Village (capital city of Aru Selatan District). This is also a place for Marafenfen villagers and surrounding people to buy daily household needs. Of these two places the results of the copra are directly sold to Dobo.

Sago

Sago grows or is planted in forests in the *Petuanan* area. The place where sago grows is called the sago village. Most of these sago groves or sago trees are inherited from their parents. Although there are some who do rejuvenation or expansion of the area of the sago village.

One sago tree produces an average of 20 units of *tumang*[38]. Although there are also up to 30 *tumang*, depending on the size of the tree. These results are obtained by the the way of *pangkur*[39]. Usually one sago tree takes one week to be processed until it becomes *tumang*. The price of one *tumang* currently reaches Rp. 60,000. If one tree takes one week to process, then in one month four crop production can be done. If the average production of one tree is 20 *tumang*, with the price of one

[38] *Tumang* is a unit of packaged sago products. The size of *tumang* varies, and usually the size is like one 10 littres bucket

[39] *Pangkur is a way to take starch extract from sago trees to be packaged in the size of tumang.*

stir is IDR 60,000, - then their income in one week is 20 x IDR 60,000, - = IDR 1,200,000. If they produce continuously in one month, the result is 4 x IDR 1,200,000, - = IDR 4,800,000. However, the value of IDR 4,800,000 is the potential value of sago / month. Because the Marafenfen people usually do the anchor only twice a month, the real value is 2 x IDR 1,200,000 = IDR 2,400,000. This value is the price in Serowatu or Jerol. If the tumang is sold to Dobo, the price has reached IDR 80,000, - per tumang.

Copra

Making copra is one of the main jobs of the Marafenfen villagers. Copra is the leading commodity that every family in Marafenfen village has. Usually, coconut plantations are carried out in mutual cooperation (*masohi*), but the harvesting process is carried out individually. Coconut fruit that is used as copra material is old coconut fruit that has dried and fallen from the tree. The dried fruit is then collected, peeled, taken its contents then dried. There are two ways in the process of drying copra, the first can use direct sunlight. The second is heated by fumigation[40].

There is a time difference between the two methods. Direct drying in the sun requires a drying time of up to seven days. Whereas the fogging method only takes 1 day-2 days. On average, in a month the Marafenfen community can produce 200 kg to 400 kg of ready-made copra. It depends on the area of the garden and how diligently a person processes the copra.

The Marafenfen community used to sell the copra to three collectors in Serawatu, Jelor, and Dobo. What distinguishes it all is the distance and access from the village to the collectors. The farther the merchant distance, the higher the price of copra. Of course, this is related to the capital spent to transport the copra. The price of copra at the beginning of October 2018 in Serawatu was at IDR 3,500 / kg in Jerol IDR 3,900 / kg while in Dobo as the main collectors it was IDR 4,300 / kg. The Marafenfen community sold their copra to Ikian, a copra collector in Jelor Village who is also a Chinese descent who became a big businessman in the village.

The easy access that can be reached by truck, the reasonable purchase price, and not big enough capital is the reason for the Marafenfen's community to sell copra to him. In one month, Ikian can collect copra reaching 4 tons to 30 tons. Ikian will decide to sell the copra he has collected when the stock of goods in his shop has begun to run low. When he went to sell his coffee to Dobo, when he returned he would buy things to add stock to his shop. Something similar happened to collectors in Serawatu, Mas Jawa.

[40] The local term for the fogging is *asar*.

Copra in Dobo comes from all regions in the Aru Islands. The collectors scattered in the Aru Islands sold it to Dobo, and from there it was sent to Surabaya. The price of copra in Dobo is very volatile. The determinant of the price of copra is a factory in Surabaya. Big collectors in Dobo can only wait for news from Surabaya about the price. This happens because the owner of a large warehouse that holds copra is a person from Surabaya. In the range of October 21st to 27th, 2018, the price of copra is in the range of IDR 4100 to IDR 4300. The table related to the Aru Islands community production section can be seen in Appendix 7.

Forest Products

The daily life of the Aru Islands community is like that of the Marafenfen Village community who depend their lives on the forest. In the forest the community can hunt and farm. Hunting activities carried out from generation to generation make the forest a part of their lives. Some of the forest is also used as land for farming. Usually they grow tubers, beans, coffee, rice, corn, vegetables and so forth. The produce from this field is usually used for own needs. Only a small portion is sold. They also used to barter for this purpose. The Marafenfen people most often barter agricultural produce with fish which they do with the people of Feruni.

Walet Sarang Hitam (Collocalia maxsima)	Walet Sarang Putih (Collocalia fuciphaga)
Foto 	Foto 
Morfologi: memiliki tubuh berukuran agak kecil (13 cm), kaki berbulu lebat	Morfologi: memiliki tubuh berukuran agak kecil (12 cm), tubuh bagian atas coklat kehitaman.
 Sarang: Struktur sarang terbentuk dari campuran liur, bulu, dan sersah	 Sarang: Struktur sarang terdiri dari liur
Nilai ekonomi lebih rendah	Nilai ekonomi lebih tinggi

Figure 44 Swiflets and nests in Aru Islands

In addition, the Marafenfen people also used to collect swallow nests in caves for sale. The walls and roofs of the cave passageways are places where swallows attach their saliva to nests. This swallow's nest has high economic value. Besides being used as food, it is also used as medicine. There are two types of swallows whose nests are sold for use, namely the black nest swallow and the white nest swallow. Swallow harvest is usually done 2-3 times a year.

Staple Food

The Marafenfen community still consumes sago as the main food. The sago are abundant in *petuanan* land. In addition to sago, they also produce other food needs themselves. Usually they produce these needs in the fields or in the yard of the

house. Therefore, the Marafenfen community is a sovereign community of food, especially sago. Kitchen needs that they do not produce themselves, they get from buying it in a small shop in the village. Previously, they also produced their own cooking oil from coconut. But now it's rare to make coconut oil, except for the elderly.

For the need of housing, the people used to take the materials from the forest. In the past they use timber for housing. When the house materials turned into concrete, they buy the materials like cement, iron, zinc, etc. in Dobo. Until now, the need for timber is still taken directly from the forest, that still widely available in nature. Therefore, the expenditure is relatively small. The average Marafenfen community has excess income when compared between their production over consumption. The average income of each family in Marafenfen village is fairly even, which is at the range IDR 3 million to IDR 4 million. The difference of the income of each family in the village is not very visible because the access to the production means (especially land) for each community is the same. If there is difference, it is not too much.

Marafenfen villagers' expenditure is almost the same. For a family with three family members, the average expenditure is around IDR 1,668,000. Whereas for a family of six people in one house, the expenditure is around IDR 1,846,000 (Appendix 8).

3.2.3 Forest Condition

More than 80% of the Aru Islands mainland consists of natural forests in the form of lowland forests and mangrove forests. The forest ecosystem in the Aru Islands consists of several formations of tropical rain forest, mangrove, and savannah. Lowland tropical rain forest is scattered in the north of the Aru Islands, in the Wokam, Kobror and Koba islands. Savannah is scattered in the south, in the Trangan Island. While the mangrove ecosystem is almost everywhere on the entire island in the Aru Islands.

The forest structure on Aru Islands is in the form of lowland rainforest which is overgrown with trees reaching 40 m to 60 m height and very tight canopy. Van Balgooy (1996) noted several types of trees that became the main canopy such as *Canarium spp*. (walnuts), *Flindersia amboinensis* (fruit such as dorian), *Dillenia pteropoda* (sempur or simpu), *Instia bijuga* (merbau), *Maranthes corymbosa* (kolaka wood), and *Podocarpus spp* (type of jur or ki putri). He also found several plants underneath such as *Elaeocarpus, Diospyros, Cryptocarya, Litsea, Myristica, Rauwolfia, Kibara, Gardenia, Fagraea, Antidesma,* and *Macaranga*. According to Van Balgooy, plant diversity in Aru is very high. The vegetation is more diverse than other islands in Maluku. This is because the vegetation on Aru is a combination of western Melanesia and Australopithecus taxa in Papua.

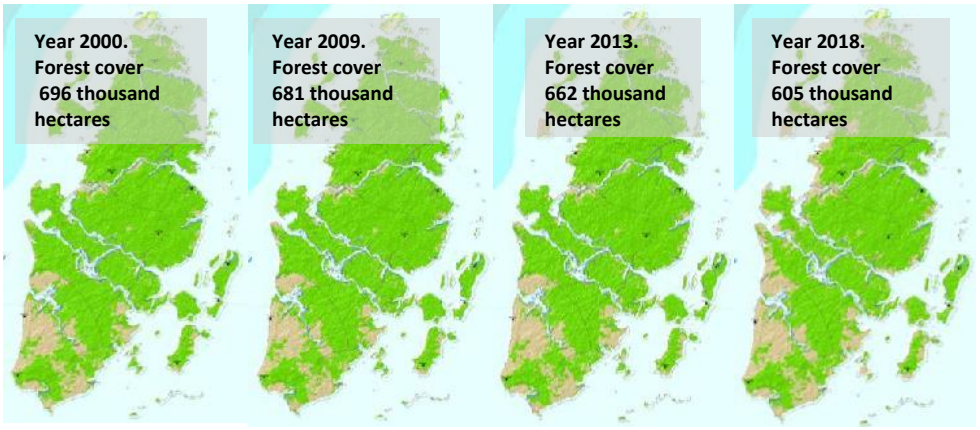

Figure 45 Map of changes in forest cover in the Aru Islands in 2000 to 2018

The savannah on Trangan Island is in the form of an open forest with trees of 15 to 20 meters height. The diversity of vegetation is dominated by various shrubs and trees such as *Melaleuca leucadendron*, *M. caja-putih*, *Lophostemon suaveolens, Asteromyrtus symphiocarpa, Xanthostemon brassii,* and *Syzygiumspecies (*spp*.), Banksia dentata, Acacia mangium, Pandanus spp.,* and *Timonius timon* (Van Balgooy*,* 1996). The structure of savanna plants on Trangan Island has a close relationship with savannahs in southern Papua and northern Australia. This is known by the discovery of one type of plant that is *Melaleuca* (*gelam* or eucalyptus) which is widely distributed in Northern Australia and many are also found in the Aru savannah. Spatial analysis conducted by FWI in 2018 shows that forest cover in the Aru islands has been reduced at least in the year 2000 to 2009, and 2013 to 2018 (Figure 47).

Unlike the karst ecosystem in general, the Aru Islands mangrove ecosystem grows in karst areas that have thin mud sediments. The diversity of mangrove species in the Aru Islands is relatively high. Van Balgooy (1996) recorded 17 species of mangrove taxa in the Aru Islands. The habitat of the mangrove is very limited and only spreads in swamps and between sago trees.

3.2.4 Sea, Land, and Islands as A Unity

The geographical condition of islands makes Aru people have two main sources of livelihood, which are the land and the sea. Most of the Aru people rely on the sea as their main source of income. However, the people who also rely on the land as the main source of income are not few. The relationship between sea, land and islands itself is an integral and inseparable relationship as a system. Separating one of them will only cause system chaos, both natural and social systems. Because of this awareness, this study tried to photograph the sea and the land conditions.

As an archipelago, Aru consists of 837 islands, of which only 59 islands are inhabited. While 778 other islands are uninhabited.

Because of the condition of its territory which consists of small islands, Aru has a fairly high level of vulnerability. Sea and land conditions need to get attention and good care and extra caution. As a unified ecosystem, uninhabited islands, totaling 778 islands throughout the Aru, have a role that is no less important than inhabited islands. The mention of "uninhabited" is actually not quite right when viewed from an ecosystem perspective, especially with a social-ecological perspective. Because, in fact, the islands are inhabited by a variety of other biodiversity (biotic). Meanwhile, the existence of biotic factors is strongly influenced by abiotic factors that are there. The existence or absence of these two factors, biotic and abiotic, that exist on these islands which are considered uninhabited, has an influence on the lives of humans who live on "inhabited" islands.

Likewise, in the context of sea and land relations. If the condition of the land on the islands is damaged, then it will adversely affect the condition of the surrounding sea. For example, if the mangrove on the shoreline of the island are damaged, the food supply for marine life will decrease. So that the fish population will also go down. Thus, the survival of humans who depend their lives on marine wealth will be threatened. If the sea polluted, there will be no other alternatives, then land will be massively exploited.

3.3 Jayapura

Jayapura Regency area stretches from Lake Sentani to the Mamberamo River Valley to the interior. Jayapura district has a land area of 17,516.60 km2 which is divided into 19 sub-districts, 144 villages, and 25 *kelurahan*s (same as village) (BPS, 2018). Based on its geographical characteristics, Jayapura Regency administrative areas are grouped into 4 (four) Regional Divisions namely:

- Development Region I is the rural geographical area around Lake Sentani. this region is in the form of villages surrounding the lake and villages on small islands in the middle of Lake Sentani waters.
- Development Area II is the rural geographical area of the northern sea coast of Jayapura Regency. This region is in the form of a rural area along the north coast facing directly to the Pacific Ocean. This area is isolated by the Cycloop Mountains and gentle slopes, stretching from Muaif Village in the west to Ormu Village in the east.
- Development Region III is a rural geographical area of hills and the Grime-Sekori-Muaif valley. This region is in the form of a countryside with fertile wide plains.
- Development Region IV is a rural geographical area of hills and upstream plains of the Nawa and Wirwai rivers, which are the southernmost of Jayapura

Regency, which has large and fertile plains. Some of these areas are still isolated because road infrastructure has not yet been built to connect regions around the area, especially in the Airu sub-district.

- Grime Development Area III consists of 6 (six) Districts namely the sub-districts of Kemtuk, Kemtuk Gresi, Namblong, Nimboran, Nimbokrang, and Gresi Selatan. This region is considered to be very strategic and may be used as an industrial center because of its affordable access and fertile area due to the topography of the valley. From the area of each sub-district, Nimbokrang is the sub-district with the largest area, while the smallest is Gresi Selatan sub-district. The area of Development III is 2,463.09 km², inhabited by 23,570 people.

3.3.1 The History and Demograhpy of the Villages

An Overview of Rhepang Muaif

Rhepang Muaif is one of the villages around the Grime valley. The name of Rhepang Muaif is taken from the two rivers that form the boundary of the village namely the Rhepang River and the Muaif River. This village is the location of Alex Waisimon to hold bird watching ecotourism. Administratively, Rephang Muaif village is part of the Nimbokrang sub-district, Jayapura district. This village is located in the western part of Jayapura and has an area of around 190.5 Km^2. Rephang Muaif borders the old Yenggu village in the north, Ombrob and Yenggu Baru Villages in the Nimboran District in the south, Unurung Guay District in the west and Nimbokrang Village in the east.

The topography of Rhepang Muaif is included in the flat or valley category. The settlements in this village are based on their clans and follow the main road. Access to the village of Rhepang-Muaif is relatively easy. The road to the village is paved and many are traversed by public transportation. This village is about 80 kilometers from Jayapura City or about 2 hours-3 hours away by car. Rhepang Muaif is next to the transmigration area of Nimbokrang Village so that not far from the village, there is a trans-center economic community in the form of shop houses that sell a variety of needs.

An Overview of Ombrob (Oyengsi) and Yenggu Baru

Ombrob and Yenggu Baru are villages in hilly areas. The locations of these two villages are next to each other and are directly adjacent to the Unurung Guay District. In the past, the two villages became an administrative unit, namely Oyengsi Village (Ombrob, Yenggu Baru, and Singgri). But in 1992, the Singgri and Yenggu villages were separated from Oyengsi or now only Ombrob. Ombrob and Yenggu Baru villages are included in the administrative area of Nimbokrang sub-district, Jayapura district.

The total area of Ombrob and Yenggu Baru villages are respectively around 58.6 km^2 and 34.9 km^2. The settlements in these two villages are relatively small and close together, with not so many houses. Access to Ombrob and Yenggu Baru villages is the road to Genyem. Then from the center of Genyem, head south through Singgri village and go up the road to the hills. The distance from Jayapura City is around 90 km. The road to this village is not paved, only in the form of rock (limestone). These two villages, bordering the village of Rhepang-Muaif, Nimbokrang sub-district in the west and Singgri village in the north.

Figure 46 Road to Ombrob village (top left), condition of Ombrob village (top middle), vilager's house (bottom left), house from government (bottom middle), settlement in Yenggu Baru village (right)

An Overview of Khamdera/Tarpia

Khamdera village is the administrative name of the village of the People of Tarpia. Geographically, Khamdera is located at 2°19'15.69"S and 140°6'56.09"T. This village is located on the north coast of Jayapura district. Khamdera Village is included in the Demta District administration area. This village is bordered by Rhepang Muaif village of Nimbokrang sub-district in the West, Pacific Ocean in the North, Ambora village in the East, and Nimbokrang sub-district in the South.

Figure 47 Administrative map of Khamdera village, Demta sub-district (top), settlement in Khamdera village (bottom)

There is only one road to Khamdera village, and in addition it must be through the sea by ship or boat. The road to the Khamdera village is from Berap village to the north. Along the road to the village is wilderness and a paved road. The distance from the district city is about 8km to the west. There is bus route of DAMRI that leads to this village. The topography of the village is a coastal area, lowlands and hills. Location of settlements is on the beach at the end of the peninsula with the pattern of settlements grouped together.

Composition of Population

Almost all of the population in the study location are indigenous Papuans. The characteristics of the Papuan people in each village are generally inhabited by several clans or tribes, as the villages in the study location. The people of Rephang Muaif village are divided into four clans or tribes, namely the Waisimon, Wouw, Demonggreng, and Demotekai. Similarly, the people in Ombrob village have four clans or tribes namely Wouw, Bay, Bano, and Demonamang. The people living in Yenggu Baru village are dominated by the Waisimon clan, and the people in Khamdera village are divided into five clans or tribes, namely Bernifu, Taurui, Dasiu, Pitowin, and Ondi.

In 2018, the population of Ombrob and Yenggu Baru villages in Nimboran district was 225 people and 108 people respectively. The population in Rephang Muaif illage of Nimbokrang district was 252 people and the population in the Khamdera village of Demta district was 479 people. The highest population rates in the three study location villages is in Khamdera village, Demta District. Whereas the least population is in Yenggu Baru village, Nimboran district. Population density levels in the three study locations are almost evenly distributed except in Rhepang Muaif village, Nimbokrang District which has the lowest population density level of 2 people per km^2. The population and population density in the three study locations can be seen in Table 13.

Table 13 Profile Area and Population in the Researth Location

Village	Sub-district	Area (Km^2)	Population in 2018	**Density** (persons/km^2)
Khamdera	Demta	134.32	479	4
Rephang Muaif	Nimbokrang	190.5	252	2
Ombrop	Nimboran	58.6	225	4
Yenggu Baru	Nimboran	34.9	108	4

Source : BPS, 2018

In general, the population density in several study locations is quite low with an average density of 4 persons per km^2. From the field observation, every house in the villages has a large yard. Villages in hilly areas like Ombrob and Yenggu Baru, almost every house has a yard which is deliberately allocated to herd cattle. In the village of Rhepang-Muaif, the settlement are scattered far apart. The area of

settlement for one family reach an area of 0.5-1 hectares. Furthermore, the average household member in the three villages in the study location is 3-4 people. This figure shows that households in the study location are classified as small households. The number of households and residents in the study location can be seen in Table 14.

Table 14 Population Condition in the Research Locations.

Village	Sub-district	Population	Household	Average family member
Khamdera	Demta	479	153	3
Rephang Muaif	Nimbokrang	252	57	4
Ombrop	Nimboran	225	65	3
Yenggu Baru	Nimboran	108	32	3

Source: BPS, 2018

The composition of the population according to sex in the three study locations is spread evenly between men and women. In the village of Khamdera, there were 255 male, while there were 224 female. Then in Ombrob and Yenggu Baru villages, the composition of male population was recorded higher than women, which were 115 in Ombrob and 59 in Yenggu Baru. While the female population was 110 in Ombrob and 49 in Yenggu Baru. The number of male residents in the village of Rhepang-Muaif is less than the women, with a male population of 121 people and women of 131 people (Table 15).

Table 15 Male and female composition in the Research Locations

Villages	**Sub-districtc**	**Sex**		**Total**
		Male	Female	
Khamdera	Demta	25	224	479
Rephang Muaif	Nimbokrang	121	131	252
Ombrop	Nimboran	115	110	225
Yenggu Baru	Nimboran	59	49	108

Source: BPS, 2018

Infrastructure of Education

Based on the results of interviews conducted in each village, the level of education in the village of Rhepang-Muaif, Ombrob, Yenggu Baru and Khamdera is quite good. Most parents send their children to high school, some even go to university. People who study at the high school level generally migrate to the district cities because the education in the village is inadequate.

Educational facilities available in the village in general are inadequate. In every village, there are only elementary schools. In Ombrob and Yenggu Baru villages there is only one elementary school. Then in the village of Khamdera there were also only elementary school buildings. Whereas in Repang-Muaif village there are

no educational facilities, so the children go to school in the next village which is Nimbokrang village.

Furthermore, teaching and learning activities at the elementary school level are actually quite concerned. Learning activities in Ombrob elementary schools are felt to be very far compared to schools in Java. The number of teachers who teach is generally a major factor. In Ombrob elementary school there are only two teachers. The teachers generally are not from the village. Because of the insufficient number of teachers, teaching and learning activities are carried out alternately from grade one to grade six so that effectively one day each class only gets one meeting.

Religion and Faith

Most of the people knew and embraced religion. The beginning of Christianity entered and spread in the Nimboran area in 1925 by priests from the Netherlands through *Zending*. At present, the majority of people in three villages adhere to Protestant Christianity. Islam, Hinduism, and Buddhism came around 1980 around Nimbokrang through transmigrants from Java and Sulawesi. Religious facilities and infrastructure are almost found in every village. It recorded that the Ombrob and Yenggu villages only have three churches as house of worship. Then in Rhepang-Muaif village there was only one church, as well as in the village of Khamdera.

Social Structure - Custom

The social structure prevailing in the community is a tribal or clan customary leadership system. The customary structure of the Wouw clan consists of *iram* (chief), *tekay* (representative), *dunesqou* (secretary), *rum* (treasurer), and *ruaji*. *Iram* as the chief be in charge to protect the village and the people in it. For example, in Ombrob village there are several clans, namely Wouw, Kencim, Bay and Bano clans. *Iram* only protects everything related to the rights to the territory in each tribe. *Tekay* as a representative of *iram* is likened to government. *Iram* only gives orders (for example, like the president), then the order is given to his deputy (*tekay*) and the technician who carries it out. As an example of the *tekay* function in the inauguration ceremony of *iram*. *Tekay* prepared all the needs related to the event. All inaugurations of traditional ceremonies are managed by *tekay*. *Tekay* also regulates the territories and land of each tribe related to territorial boundaries and land disputes. Usually, *tekay* already know the exact borders of the tribe. That knowledge was passed down by the parents.

Then *dunesqou* has functions like a secretary. Under *dunesqou* there is *rum* and under *rum* there is *ruaji*. *Rum* has a job as treasurer. He is responsible in managing all costs incurred for equipment, food, and others. Whereas the task of the *ruaji* is to monitor the structure of the customary administrator (if the *iram* makes a mistake, the *ruaji* has the right to collect *tekay* and *dunesqou* to negotiate the

replacement of the *iram*).

The change of power in the customary system is hereditary from the same family. Change of *iram* can be done if *iram* makes a violation or when the *iram* dies. Likewise, *tekay* and *dunesquo*, can be replaced only when they die. In customary structure, everything is held by men (from *iram* to *ruaji*). When there are no male descendants, adat structures can be held by women as long as the women are not married. However, this condition is very rare.

If the woman (who is included in the structure) then marries, her rights will be taken by other villages or tribes for a while. When they have male offspring, the right will be given back. All traditional structures (*iram, tekay, dunesquo, ruaji*) were also re-installed at the time of inauguration.

When inauguration, the wife of *iram* must be simultaneously installed besides the *iram*. *Iram's* wife has the role of coordinating other women when there are traditional events. When the inauguration ceremony, *iram* wears a crown made of birds of paradise feathers. While the structure underneath uses other bird feathers. In general, preparations for the inauguration of the *iram* is about one month.

In each village usually only has one *iram* although there are several tribes who settled in it. However, it is possible that there are several other *iram*s if all the tribes are ready to form their customary structures. The process of forming the traditional structure of a tribe that has not been installed yet depends on the candidate of the *iram*. If a candidate of iram has leadership quality, then he can be appointed as *iram.* The inauguration was held by *iram* from a tribe that had already existed in the village. The customary institutional structures cannot be taken from other tribes. For example, the Wouw tribe, all the customary structures must be from the Wouw clan, from *iram* to *ruaji*.

3.3.2 Socioeconomic and Environmental Conditions

Influence of Interaction with Outsiders

Since long time ago, the Grime Valley region has been exposed to people from outside Papua. This region now includes the Nambluong, Nimboran, and Nimbokrang sub-districts in Jayapura district. The people who live around the Grime Valley are generally called the Nimboran people. Before the influence of Christianity and the government (the Netherlands and Indonesia), the Nimboran community had occupied the Grime Valley region.

The first presence of outside communities in Nimboran was since 1903 through an expedition team led by Prof Wichman for coal investigations. There were also people who come from Tidore that entered Nimboran to hunt for bird of paradise

and had involved Nimboran people. The expedition team and bird of paradise hunters entered the Nimboran area through the mouth of the Muaif River, Demta.

At that time the Muaif River became one of the trade routes for traders from Tidore and China. Interaction with the bird of paradise hunters caused the Nimboran community to get to know several types of food such as salt and canned food as well as gardening and hunting equipment made of iron, such as machetes and spears. Interaction continues to develop through the exchange of goods with people on the north coast (Demta), Pedangan, and Tidore. The items exchanged are dried birds of paradise exchanged for salt, fish and jewelry such as beads, iron and cloth.

In the period 1917, Nimboran entered into *onderafdeeling* (regency) Hollandia as part of the Demta District. Then in 1925, Nimboran became a separate district with an administrative center in Genyem. In 1925, Christianity began to be developed in Nimboran by the Rev. Jacob Bijkerk and George Schneider of *Uthrechtsche Zending Vereeniging* (Gospel Preaching Association). The Dutch government concentrated the Nimboran people whose lives were scattered over the hills to settle in the adjacent plains.

In broadcasting Protestant religion, *Zending* established schools, educated cadres of religious teachers and established polyclinics. The influence of religion and government system interventions felt by the community is the prohibition of the *iram bekabi* activity (*iram* party), which is one of the local community's customary parties. In addition to the ban, there are also decisions taken by the Netherlands without taking into consideration the people's opinions. The appointment of *korano* (village head) by the Dutch government did not consider the representation of indigenous people.

Then, the Dutch government developed the Nimboran area as an agricultural center in 1946 known as the Nimboran project. To facilitate government activities and the spread of Christianity, a connecting road was built from Genyem (Nimboran) to Holandia (Jayapura). While the connecting road to the villages is a path. The presence of the Nimboran project affected the rate of land clearing, changes in community economic preferences and heterogeneity of livelihoods. Relatively open Nimboran and supported by adequate road networks encourage high interaction with outside communities. This is indicated by the transition from a subsistence economy to a market economy in agricultural business, because of the need for money to buy goods that they cannot produce.

Land clearing around the Grime Valley occurred again during the Indonesian government period for settlements and agricultural land for transmigration program. There were three transmigration villages formed, one village in 1976 and two villages in 1980. At that time, the administrative area was the Nimboran

District. Then with the regional expansion policy, the Nimboran district area was divided into two districts namely Nimboran (eastern part) and Nimbokrang (western part). In 2003 the area of the Nimboran district was again divided and formed into one more district, Nambluong. The expansion of the area led to the clearing of forests for several new settlements.

In addition, the compulsory cocoa planting program issued by the local government has affected the rate of land conversion in the area around the Grime Valley. The government-funded cocoa planting program for the purpose of improving the community's economy began in 2006. Until 2018, land conversion for community cocoa plantations reached 2,396.93 hectares for three districts, which are Nimboran, Nimbokrang, and Nambluong (BPS 2018). The various situations above show that government intervention has influenced environmental change such as forest conversion in the Nimboran and Nimbokrang District areas.

Land Use and Tenurial System

Land use in the three study site districts consisted of forest cover (wetland forest and dry land forest), agricultural land, settlement, open land (shrub and water body). Of the total area, 46,590.4 hectares or around 85% of the land is forest cover (74% of dryland forest and 11% of wetland forest). The second and third position of the largest land use are agricultural land and built land (settlements), with percentage of land use is around 9.7% and 3.55%. And the rest is in the form of open land, shrubs and water bodies with a total percentage of around 2%. (Table 16)

Table 16 Land use in 3 districts of study locations in 2017

Land use	Area (hectare)	Percentage (%)
Wetland Forest	6164.33	11.25
Dryland Forest	40426.11	73.78
Agricultural land	5332.20	9.73
Built land or Settlements	1944.15	3.55
Open land	79.66	0.15
Bush and Shrub	553.67	1.01
Water Body	291.87	0.53

Source: Spatial data analysis of land cover, MoEF, 2018

In general, the communities in Ombrob, Yenggu Baru, Rephang Muaif, and Khamdera villages have a similar land tenure system that is tribal/clan and individual based. The clan/tribal ownership rights, which are ownership of land and natural resources, are controlled by the clan/tribe. Regarding the regulation and utilization, it is held by the *iram* (chief of clan/tribe), and *dunesquo* of the clan/tribe. Access to the land use and natural resources is owned by individuals from each member of the clan/tribe that controls the land.

Individual ownership rights is ownership of land and natural resources controlled by individuals or families. The matter of decision making is fully held by the individual or family who is in control. Access to use the land and its natural resources is open to family members but not the access to control.

The right to control land and natural resources is inherited through inheritance. The tenure right is inherited for the son. However, in their use, men and women have the same rights. Communities in the four villages have been provided for generations about territorial boundaries, rights to natural resources and their customary territories and other customary rights verbally. They recognize territorial boundaries using natural boundaries such as roads, large trees, rivers or streams, mountains, large stones, areca trees, sago trees, coconut trees and others.

Local people have their own spatial plan in managing their natural resources. In general, in Ombrob Village, Yenggu Baru, Rephang Muaif, the local people divide the spaces in their area into three parts, namely protected forests, production forests or arable land, and settlements. Protected forest is a local term for natural forest that is still preserved, and access to protected forest is open to the tribes that control it. According to custom, utilization activities that may be carried out in protected forest areas are only limited to hunting activities.

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Livelihood

The livelihood system of the people in the three study locations is very dependent on the natural characteristics in the area. The majority of villagers in the village of Rhepang Muaif, Ombrob and Yenggu Baru rely on the agricultural sector. The activities of farming and collecting forest products are carried out to meet the daily needs and the rest is sold to buy necessities they cannot produce such as sugar, salt, coffee, tea, oil, and others. There are about 86 types of commodities obtained from forests and gardens for their own consumption or for sale.

Gardening and Farming

Gardening activities are carried out on small scale shifting system on family-owned land. The area of land under cultivation has no restrictions, according to the abilities of each person, usually a minimum of 0.5 to 1 hectare. Community gardening patterns are divided into two types of commodities according to the age

of harvest, which are short-term and long-term crops. Types of agricultural crops grown include *petatas* (sweet potatoes), cassava, spinach, beans, bananas, taro, *sayur lilin* (a kind of vegetable), corn, and several other types of vegetables.

In addition to short-term agricultural crops, people in Ombrob and Yenggu villages also open gardens to plant commodity crops such as cocoa. Planting cocoa is a program from the government. Before the year 2005, the results of the cocoa are fairly massive. But now cocoa is no longer harvested because of pests. Cocoa is just left to rot on the tree.

Figure 49 the newly opened garden after burning process (left), a garden that has been overgrown with corn (right)

Figure48 Dried spinach seeds (left), crop sales in the market (right)

To meet the staple food needs, people also processing sago. Harvesting sago today is not only to meet the needs of the family, but there is also harvesting sago only for sale. The equipment used to harvest sago start to be modern. The use of several tools such as machines and chainsaws to cut down the tree. The current process of producing sago is faster because the technology used is more sophisticated. The process is generally done a week, now only 2 to 3 working days.

Fishing

In Khamdera village that its ecosystems in the form of coastal and marine, almost most of the population relies on the fisheries sector. Fishing is an activity to fulfill family needs. Besides, when there is more yield, some fish are sold to the Demta market. The area of fishing for the people of Khamdera is quite extensive with various sizes of boats and fishing gear. In general, people go out to the sea in one day fishing. They leave in the morning before the sun rises and return at noon. The tools used are various, starting from fishing rods, nets, spears, to *molo* (shooter).

The types of fish obtained are usually reef fish species such as grouper, snapper, parrot fish, *samandar* (rabbit fish) and pelagic fish species such as tuna, skipjack, mackarel, mackerel and others.

Figure 50 Fish from Khamdera (left), shooting the fish in around the bay (right)

Hunting and Raising Livestock

Figure 51 Cattle farm in Ombrob village

Another activity to meet food needs is hunting. In general, the people in the three study locations still carry out hunting activities. The equipment used for hunting is arrows made of wood. Hunting activities carried out by adults. Hunting communities use two methods, namely self-hunting and group hunting. Generally hunting alone is done at night. The types of animals that are hunted are wild boar, cassowary, kangaroo, deer and other mammals. The hunted animals are generally consumed alone, but some of them are sold.

At present, some residents in the village of Rhepang Muaif and Ombrob are raising cattle. Cattle is known to the community through the people's economic development program by the Jayapura district government. The community through the village head is given a cow by the government. The return system is given one female cow then must return two animals. Cattle raising is felt by the community as a form of savings when there are urgent needs such as school fees. Generally, people choose to sell their cattle. Other livelihoods are civil servants, the private sector, merchants, and others. This proportion of these livelihoods is less than the others.

Table 17 Livelihood of the people in 4 study locations

Livelihood	Ombrop	Yenggu Baru	Rephang Muaif	Khamdera
Farming	X	X	X	x
Hunting	X	X	X	x
Fishing	-	-	-	X
Merchant	X	x	X	-
Sago	X	x		
Cattle	X	x	x	x
Private employee and civil servants	X	x	x	x

Consumption

The community's staple food at the study site is sago, cassava, and *petatas*/sweet potato. However, with the opening of the region to the outside world, there is currently a tendency to shift staple foods. Local food consumption (sago, cassava, *petatas*) began to decrease and was replaced by rice. This was felt by children in the local area. Parents complain that their children are no longer interested in eating traditional foods such as sago. They prefer to eat rice.

Table 18 The Expenditure of Household in Ombrob and Yenggu Baru villages

Expenditure	Nomina/month
Electricity	50,000
Sugar	150,000
Coffee and tea	150,000
betel nut	150,000
Cigarette	750,000
School tuition	120,000
makan sumbang	100,000
bike taxi or transportation	160,000
Donation	30,000
cooking oil	72,000
Soap	100,000
Kerosene	200,000
Rice	350,000
Total	**2,382,000**

Division of Roles and Accessibility of Communities to Land Based on Gender

The people in Ombrob Village have naturally agreed on the division of roles between men and women in various daily activities. From starting to enter the garden, into the forest, selling, to doing all the domestic work. Usually there is no longer a question of who should do what, because every young generation looks at the generation above them and automatically imitates and divides themselves,

who will do what. Likewise, the older generation invited boys into the forest to open gardens, while women were invited by their mothers to be able to cook in the kitchen.

Table 19 The division in each activity between man and woman

Activity	Role		
	Man	**Woman**	**Man and Woman**
Gardening			v
Processing sago			v
hunting wild boar	v		
construction laborer	v		
road construction laborer	v		
bridge construction laborer	v		
Searching for other additional jobs	v		
Garden yields for sale		v	
Shopping		v	
Cooking (determine the food)		v	
Selling in the market		v	

In general, there is no imbalance between the division of labor between men and women. Inequality is only seen when talking about income in money. In terms of components, the distribution of money as income from work done by women and men looks evenly distributed, but when viewed from the amount of money, then women have less control and access than men.

The amount of money from selling garden and forest products is less than the money generated from selling the main commodities. If we think about money from the sale of garden products, which is one bunch of vegetable, it can generate enough money to meet daily needs. While the money from the sale of vanilla, which is a major commodity, can be 10 times that. Coupled with the role of women who have to manage the adequacy of household needs, children's school fees, and other costs, with limited access to income in the form of money.

Table 20 Control and access to income between men and women

Control and access to income			
Income	**Role**		
	Man	**Woman**	**Man and Woman**
Money from selling garden yields		v	
Money from selling forest products		v	
Money from selling hunted animals			v (a little money for man, a lot of money for man and woman)
Money from selling main commodity	v		
Money from additional jobs (construction laborer)	v		

The stages in gardening are land clearing, planting, caring, harvesting, to selling the products. The first stage started with selection of location for the garden. The consideration in selecting location for garden is a place that is overgrown with trees. According to the community, this indicates that the level of soil fertility is good. This process is carried out by men.

The process of opening a garden is carried out by following a cycle of one year. In the stages of opening a garden, many activities are carried out jointly between women and men, such as planting and harvesting activities. However, when looking at the activities carried out by each gender, women have a greater share of roles and are closely related to post-production processes (table on the division of roles in gardening activities between men and women is attached in Appendix 9).

Women have a role to harvest, which means that women are more often to the garden to check whether the garden plants are ready to harvest or not. Women also bring crops to the market and have the obligation to sell these products, so that money can be obtained to meet their daily needs.

Women's access to gardening processes can be said to be equal to men. If men are more tied to the pre-production process by determining land, women have a role in the post-production process by determining commodities that can be harvested and sold in the market, or even self-consumed. Thus, women also have a greater role and access to domestic affairs.

The division of roles between men and women can also be seen through the process of production from sago to papeda, which is the staple food of indigenous Papuans. The sago process is divided into traditional and modern processes. The traditional process is usually still using manual production tools such as tools and filters made of coconut flowers. While the modern sago process uses chainsaws to cut down sago trees and grinding machines, which replace the traditional process.

Sago harvested usually comes from the sago hamlets or from sago groves belonging to each person. Sago palms that can be harvested are those that already have flowers, and it is usually men who have a role in determining which sago palms can be harvested. (Table of the division of roles in sago production activities between men and women is attached in Appendix 10).

3.3.3 Forest Condition

Forest is a high order in the territorial space of Papuans (in general) because they provide important value to the lives of the people. From forests, people can get livelihood sources such as water, protein, and materials to make buildings. Then, it was from the forest that Papuan cultures emerged.

Forest sustainability guarantees the availability of livelihoods for the people of Papua. The condition of the forest ecosystem that is still sustainable will provide suitable habitat for animals to carry on their lives so that the population of these animals is still abundant in nature. Then, the vegetation that grows also has a function as a natural protector of the soil from surface water and to prevent the soil erosion. Forest destruction is directly proportional to the loss of animals due to their degraded habitat. Damage to vegetation cover provides great potential for disasters such as drought and landslides due to high erosion rates and reduced water absorption capacity. It is clear that the destruction of forests for Papuans is the loss of their living space and livelihoods.

Figure 52 Iron wood in Ombrob village (left), Forest in Ombrop and Yenggu baru, Nimboran sub-district (right)

Nearly 80% of the land area of Jayapura district is still forested. The forest in Jayapura is spread almost mostly on the western side of the area around the Grime and Nawa Valleys, that are the Nimboran, Urunum Guay, Nimbokrang, Demta and surrounding areas. The current condition, the forests around the Grime valley have undergone many changes. The activities of forest destruction and the elimination of living space and the livelihoods of the local communities continue to this day.

Forest Condition and Its Changes in Period 2000 to 2018

The characteristics of the forest around the study site consists of tropical rainforest with topography in the form of hilly plateaus, lowlands and valleys. In the hilly plateau zone, the condition of the forest is overgrown with vegetation structures in the form of large diameter trees with dense crowns, vines and undergrowth that dominate the standing basement. Highland forests can be found around villages of Ombrob and Yenggu Baru, in Nimboran sub-district. Then in the lowland and moist zone, the condition of the forest is characterized by a vegetation structure dominated by sapling and pole levels and overgrown with pioneer vegetation

(*Macaranga sp*.). Lowland forests are found around Nimbokrang and Demta sub-districts.

The results of the analysis conducted by FWI show that in 2018 the area of forest cover in the three study sites, namely Demta, Nimbokrang and Nimboran sub-districts is 40.6 thousand hectares or about 74% of the land area. In the Demta sub-district, the percentage of forest cover area to the land area is 93.3%. Then in Nimbokrang sub-district the area of forest cover is about 57.6% of the land area, and the Nimboran sub-district has a percentage of forest cover area of around 64% of the land area. Demta sub-district is an area that has the largest area of forest cover, which is 21,200 hectares or around 51% of the total area of forest cover in the three study locations. (Figures 55 and 56).

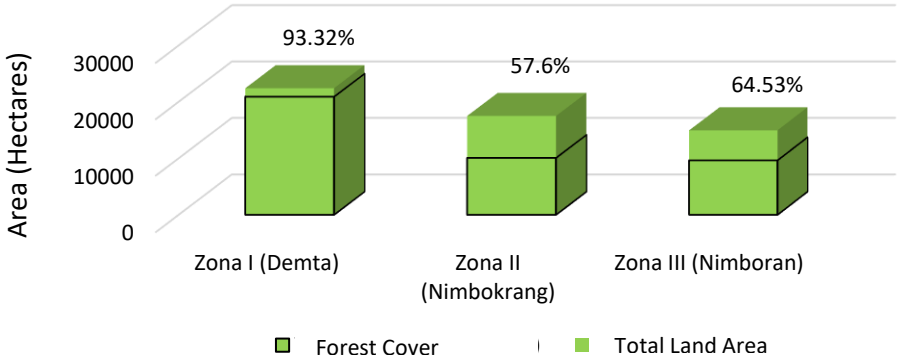


Figure 53 Comparison between forest cover on land in 3 study sites in 2018

The percentage of forest cover on land in Nimbokrang sub-district is the smallest of the two other sub-districts which could be caused by several villages in Nimbokrang which were formed due to the transmigration program. The transmigration program, which provides two hectares of land for each transmigrant family, indicates the disappearance of forest cover intended as land and settlements for transmigrants.

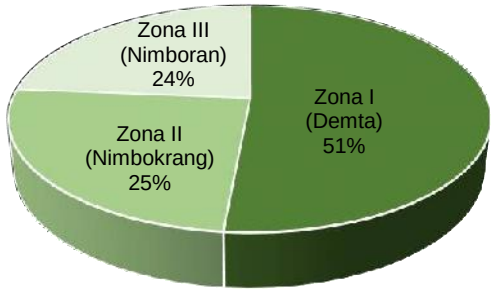


Figure 54 Forest cover percentation in three district research area year of 2018

While Demta sub-district has the highest forest cover in terms of area of land. Because, in addition to local wisdom, this condition is also supported by activities

of indigenous people that is more at the sea. Many activities at sea have resulted in communities not completely dependent on forest products, such as hunting and gardening, when compared to indigenous people in two other sub-districts. The economy of the people, especially in Tarphia Village, which is visited, is more dependent on fisheries

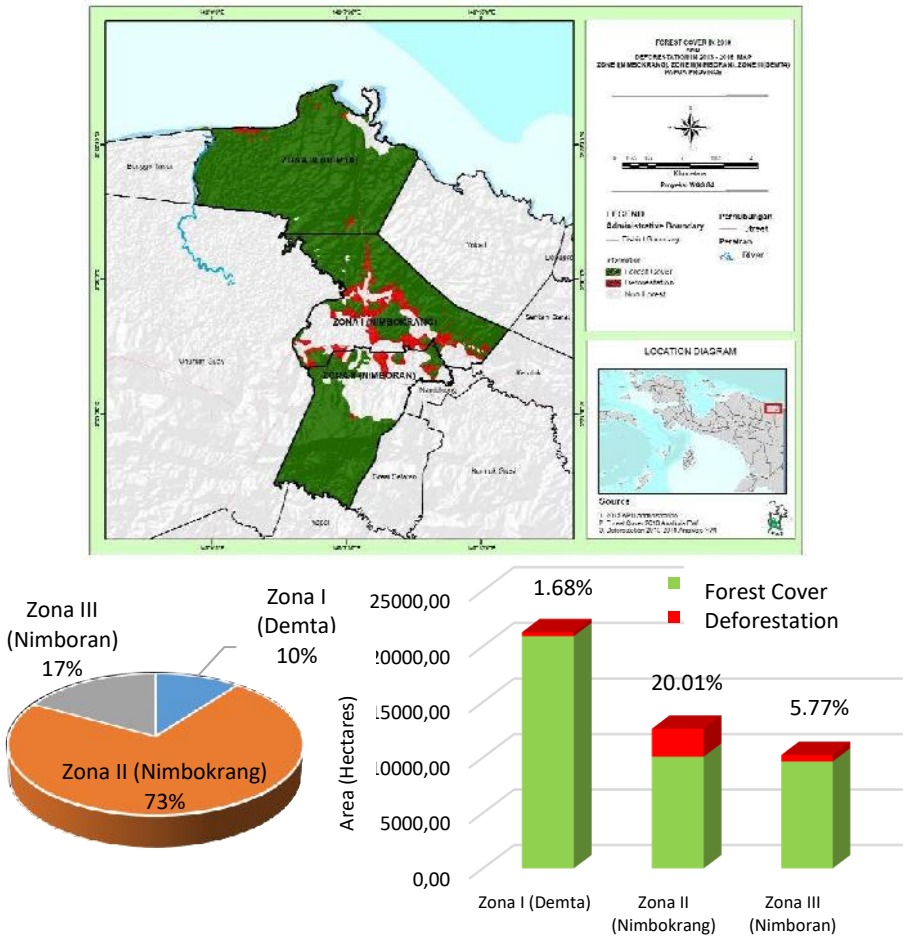
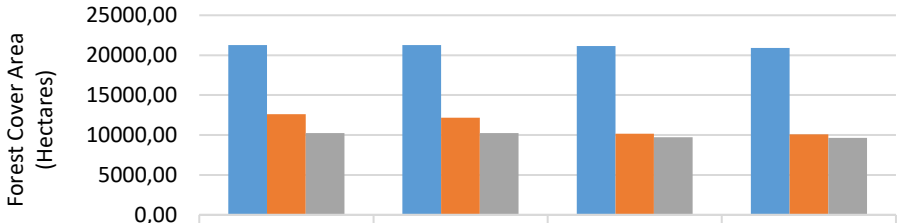


Figure 55 Map of forest cover and deforestation in research area on period 2000-2018 (top). Percentation on deforestation in research area on period 2000-2018 (bottom)

In eighteen years, the condition of the forest around the study site has undergone many changes. Based on the analysis of forest cover between 2000 and 2018, it can be seen that the forests in the 3 study locations experienced deforestation covering 3469.06 hectares. The area that suffered the greatest deforestation was Nimbokrang sub-district with an area of 2520.1 hectares or around 73% of the deforestation area in the 3 study locations (Figure 57).

The deforestation happened because the transmigrants began clearing one hectare of land given by the government, which initially was forested land. It is known from the interviews with the community, land clearing was intended to be used as garden. The deforestation is also indicated by illegal logging carried out by the communities (transmigrant, unscrupulous apparatus, and so on), in collaboration with local people. The illegal timber then sold.

According to the division of the study area, up to 2018 Demta sub-district experienced forest loss of 358.2 hectares or around 1.68% of the area of forest cover in 2000. Then, Nimbokrang sub-district experienced forest loss of around 20.01% and Nimboran sub-district lost forest area 590.6 hectares or around 5.77% of the forest area in 2000 (Figure 57). Further analysis of deforestation in Demta sub-district, the most significant occurred between 2013 and 2018, which was 245.2 hectares. Whereas in the Nimbokrang and Nimboran sub-districts, the most significant deforestation occurred between 2009 to 2013, which was around 1976.8 hectares and 512.1 hectares. (Figure 58).



	2000	2009	2013	2018
Zona I (Demta)	21265,54	21259,88	21152,52	20907,29
Zona II (Nimbokrang)	12592,22	12157,33	10180,47	10072,08
Zona III (Nimboran)	10230,54	10230,54	9718,38	9639,86

Figure 56 Deforestation rate in 3 research sites in year 2000 to 2018

*F*orest condition based on Area Functions and the Changes

Forest area is a certain area designated and/or determined by the Government to maintain its existence as a permanent forest. Based on Law Number 41 Year 1999 concerning Forestry Article 6, it is said that forests have primary functions as conservation forests, protection forests, and production forests. The division of forest area functions is based on the direction map of the Ministry of Environment and Forestry. The forest is divided into protected forests (HL), limited production forests (HPT), production forests (HP), and conversion production forests (HPK).

Forest areas are not always associated with forest cover conditions, because deforestation can occur in forest areas, even though the area has been designated as a protected forest area or conservation area. Vice versa, an area that has forest cover is not necessarily included in the protected forest area or production forest,

because the area can be included in the Othe Utilization Area (APL) category. Based on the function of the area, the forests in the three study locations are divided into protected forests, conversion production forests, limited production forests.

Percentage of forest cover in the forest area of three research sites is almost entirely over 80%. In the protected forest, natural forest cover is 94.35%. Production convertion forest is 81.9% and limited production forest is 98.7%. While the other utilization area (APL) has forest coverage of 41.3% (Figure 59).

Spatial analysis of forest cover in the function of forest areas in 2018 shows that the largest forest cover in the three study locations is in protected forest areas reaching around 18,828.3 hectares or about 46% of the total area of forest cover. While conversion production forests and other utilization areas have the second and third largest forest cover after protected forests, each reaching around 11,621.67 hectares or around 29% and 7,368.9 hectares or about 18% of the forest cover area. Limited production forest areas have the least forest cover among other areas, which is only 2,779 hectares or around 7% of the total forest cover area (Figure 59).

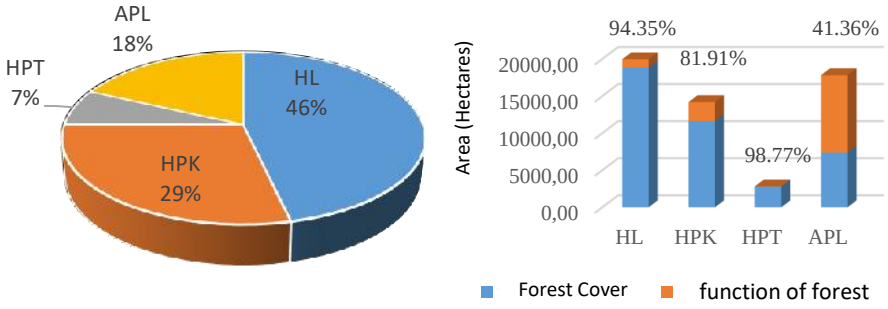


Figure 57 Distribution of forest cover area by function of forest area in three study locations in 2018 (right) Area of forest cover to function of forest area in three study locations in 2018 (left)

The data shows that there is still 47% forest cover in conversion production forest area and other utilization area that are likely to be deforested in the future. This is because those functions of forest areas can be converted into forestry sector businesses such as IUPHHK, plantations, and even mining. Potential threats to forest cover outside protected forest areas in the three districts cannot be dammed if the area functions are still HPK and APL.

The results of forest cover overlay on the function of the area from 2000 to 2018, that other utilization areas (APL) are the most dominant areas of deforestation, which is around 2551.86 hectares or the percentage of about 73.7% of the total deforestation. Then in the second position is the conversion production forest with a deforestation percentage of around 23.7% or an area of 822.16 hectares.

Furthermore, protection forests with a percentage of 2.3% or 81.98 hectares and at least in limited production forests are around 0.3% or 10.58%.

Furthermore, the analysis of deforestation in the three study locations according to the function of the area from 2000 to 2018, showed that protected forest areas experienced deforestation around 0.44% of the area of forest cover in protected forest areas. Furthermore, in the conversion production forest area, forest loss is around 7.07% of the total area. In limited production forest areas, forests are reduced by about 0.385% of the total area. Whereas forests in other utilization areas experienced deforestation around 34.68% of the total area. Percentage and amount of deforestation in the three study locations by area function can be seen in Figure 60.

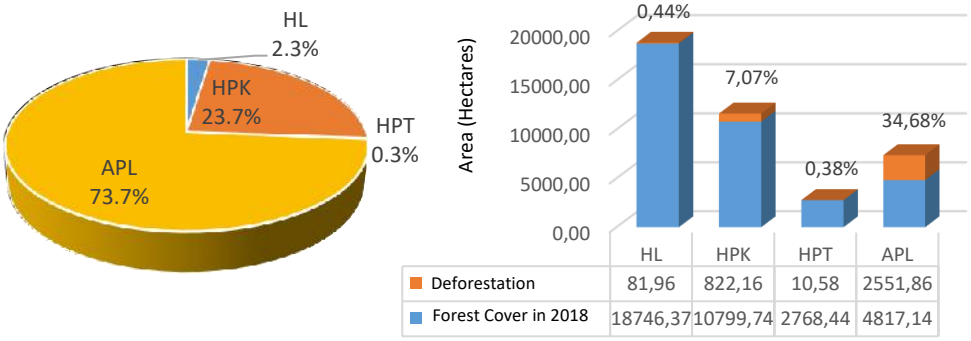


Figure 58 Distribution of deforestation and forest cover based on area functions year 2000 to 2018 in three study sites.

Broadly speaking, during 2000 to 2018, forest cover in three districts experienced deforestation of 3,000 hectares, or equivalent to the size of Yenggu Baru village. Development, plantation, or even illegal logging can be the causes of deforestation occurring in the span of the year, because there are no companies engaged in the forestry sector operating in the three districts in the above timeframe. Indications of the causes of deforestation in the three study sites will be explained next.

Forest in Jayapura and Alex Waisimon

Until 2018, there were four companies that had stuck their nails or established in the Grime Valley and surrounding sub-districts, namely PT Kopermas Tangtey, PT Permata Nusa Mandiri, PT Rimba Matoa Lestari, and PT Lembah Grime Plantations. These companies are engaged in the oil palm plantation industry. On the other hand, the presence of the oil palm plantation industry has the potential to cause ecological damage to forests in the Grime Valley and surrounding areas. For Papuans, forests are a living space that generates their livelihoods. Therefore, the presence of industry certainly has the potential to threaten the living space and livelihoods of the people of Papua.

Behind the bad story about the industrial plan that will threaten the living space of the people of Papua and the destruction of the forest by the sawmill business, in fact, local initiatives have emerged about the success of Papuan people in managing and preserving their nature. Yes, he is Alex Waisimon, a person who in recent years has made his name in various media because of his efforts in protecting and preserving the forests around his place in Nimbokrang, Jayapura. He (Alex Waisimon) is a Kalpataru award winner in 2017, made an economic alternative to ecotourism in the form of birdwatching and involved several tribes in fighting for the protection of their forests and customary territories.

The birdwatching ecotourism initiated by Alex is located in Kampung Rephang Muaif, Nimbokrang sub-district, Jayapura district. In his journey to develop ecotourism, Alex also involved several tribes in other regions, namely Ombrob and Yenggu Baru villages, Nimboran sub-district and Tarpia village in Demta sub-district. Therefore, in addition to information about Alex's profile and ecotourism in Rhepang Muaif, other places in the three villages are also the focus of research.

The three study areas of the three sub-districts are unique and different that makes the findings and things that can be studied from the three locations also different. Ombrob and Yenggu Baru villages from Nimboran sub-district were chosen as one of the three research focuses because the area still has a fairly good forest cover, which is more than 30 percent of the land area. The forest is in a hilly area with many springs in it.

While the area of village of Nimbokrang I in the Nimbokrang sub-district is one of the two villages studied, because it has an area populated by transmigrant communities. With the smallest forest cover area between the two other villages, the location of this study is expected to show the condition of cultural assimilation between indigenous and local communities, as well as how external influences are able to change the cultural perception of indigenous people towards the forest and its nature.

Tarpia village, the last visited village was a village with a higher percentage of forest cover than the other two villages. Different from the other two villages where the livelihoods of the people depend more on land on land, the native people of Tarpia village depend on the sea. This big difference can provide interesting findings related to community interaction with forests and indigenous social conflicts.

4 Main Challenges & Local Initiative

In this chapter, the main findings of the research will be elaborated further, particularly in regard to the scope of the problems faced by communities in the three research sites, in relation to their internal and external social, economic, political and ecological conditions. Moreover, this chapter will also show local initiatives that have emerged to respond, fight, protest, move, and to prevent the rate of deforestation and further destruction by various parties, such as from the plantation (oil palm), timber processing, illegal logging industries as well as exploitative and extractive corporate threats to natural resources and local ecosystems. The description of this local initiative is important to be shown as evidence that the people in the Papua Bioregion are not submissive to the intervention and policies that destroy their living space, even though that initiative and resistance is not enough to stop the process of natural destruction that is happening now. However, these efforts and initiatives are the "good news" as well as the foundation for advocacy and the movements to rescue and to recover their natural forest and ecosystems in the future.

If compacted, the range of problems faced by the communities in the three study sites is in five domains, which are (1) National political policies and interventions and the involvement of the state apparatus in projects that have the potential to damage forests and the environment in Aru. This can be seen in the case of the plan of a cattle breeding program that ignores the traditional spatial layout of the local people in the Aru Islands; (2) Government regulations and formal rules that are not yet strong, specifically related to the recognition of indigenous rights and territories. This happened in almost all study sites, which on average were indigenous peoples; (3) Land grabbing regime expansion, such as oil palm plantations and other forestry industries that occurred in almost all study locations; (4) Agrarian conflict. This conflict does not only occur between indigenous or local communities with the government and the private sector, but there are also internal issues between clans, due to a disagreement in responding to the economic expansion of money into the villages brought by extractive industries. (5) The lack of exemplary of local economic independency that is able to integrate the goals of forest and nature conservation in Papua with the economic objectives that strengthen the welfare of the Papuan people. The case of Alex Waisimon is deliberately presented as a case to inspire that there is Papuan who succeed in synergizing the goals of conservation and economic values at the same time, certainly with many notes.

Therefore, this chapter maps out various local initiatives in the community and village level in order to pioneering saving the natural living space of the Papuan from further destruction. The various initiatives extend from the resistance process, the refusal of permits for extractive industries, encourage recognition of indigenous territories, conservation of Papua's local biodiversity (birds of paradise,

etc.), to those that are long-term in nature, education (reading schools) and training for future generations.

4.1 Problems in Sorong Region

The problem findings in the Sorong Region show a wide variety of problems which include a variety of issues, especially those related to the breakdown of a sacred perspective on land and nature, which results in being forced to release and "sell mama (land)" of the clan. The expansion of oil palm plantations, the fading of the customary tenure system, and changes in customary spatial planning, have an influence on meeting the basic needs of the community and have the potential to create various types of poverty.

4.1.1 The Problems of Land Ownership and Land Release

The customary land ownership rights in the Moi Kelim community are communal at the level of sub-clan. Although communal, there is a degree of influence of force on communal ownership rights in sub-clan (the right to talk about land), namely: (1) customary elders who are *kambik* graduate, (2) married men, (3) older men, (4) the only male member of the sub-clan family, and (5) the only female member of the sub-clan family. Take for example some of the research field findings, for example the release of right belonging to the Gilik Klasafet sub-clan. In the agreement to release right with PT HIP, there was a Lukas Gilik's fingerprint as a customary elder who was seen as representing family members in the sub-clan.

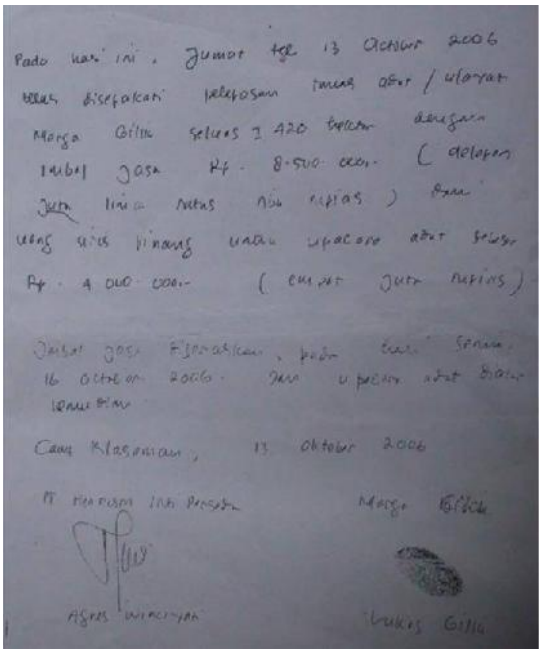


Figure 59 An agreement on customary landownership release from Gilik Klasafet clan to PT HIP.
*Researchers do not get this picture directly. The picture is taken from https://www.youtube.com/watch?v=iiWl

The existence of customary elders has the highest influence in customary ownership. This is also reinforced by the statement from Dance Ulimpa. Dance Ulimpa exemplifies himself as an elder.

> *"This company can enter here because of the owner's signature, like me and my children. If I have signed, what can they do? Just choose between two, hit me or just let it be. "*

The case of the release of customary land owned by Gilik Klasafet to the palm oil company PT HIP caused the dynamics of ownership. The boundaries of the customary land and the sacred place (*kofok*) as proof of ownership have changed to oil palm plantation. The status of land ownership becomes unclear because in the agreement to release the land, it is not written how long the land is leased or if it has transferred ownership to PT HIP.

4.1.2 Lesson Learned from The Case of Gilik Klasafet's Customary Land Release

Forest exploitation by PT Intimpura had started since the 1990s. After that, 14 years later, in 2004 the oil palm company PT Henrison Inti Persada (HIP) began operating in the Klamono area, which was on the customary land owned by clan of Gisim. PT Intimpura former employee who previously managed to get entry permits from customary owners, were then recruited by PT HIP to carry the same task, namely Mrs. Meri. The entry of PT HIP in Klamono marks the success of getting the signature from the right owner of Gisim clan.

PT HIP then tried to expand its oil palm plantation to the southeast where it was a customary land owned by Gilik Klasafet clan. Lukas Gilik said that he had refused the entry of oil palm into his area for about a year. If we look at the date of the agreement on the release of customary land to PT HIP, it means that the rejection effort had been going on since 2005. In the same year, PT HIP made efforts to approach to get the signatures of the elders of the Gilik Klasafet clan.

One such effort was to hold a meeting at the Waigo City Hotel in Sorong for two days. The meeting was attended by PT HIP employees, members of the House of Representatives and clans of Gilik Klasafet and Klasibin Klawilis. The government explained that the development of oil palm plantation would improve the welfare of the community and their customary owners. The company explained that the examples of welfare improvement had been proven by the existence of oil palm plantations on the islands of Sumatra and Kalimantan. The company then submitted money of IDR 8 million as compensation or "door knocking" money, and promised to fulfill whatever the customary owner's demands, such as school fees for children, homes, cars, and other luxury goods. Bernadus Gilik disagreed and requested to the leader of PT HIP, who immediately met him, a request of IDR 50 billion as compensation for the release of land for each clan. PT HIP did not agree with Bernadus' demands by stating that the price offered has become a market price in general. The proof was that Gisim clan was also willing to accept. Bernadus still refused by stating that different clans had different rules. After going through a feud for two days, as a result the meeting at the Waigo Hotel did not result an agreement between PT HIP and the customary landowners.

The former employee of PT Intimpura continued her efforts to obtain the signature of the customary owner. She also asked for help from the Gisim clan to get close to the Gilik clan to get the signature. Gisim clan was then seduced and urged the Gilik clan to accept the agreement. Gradually, company employee learned about the gap where the target was directed at Lukas Gilik who was illiterate and had never received formal education. Until 2006, PT HIP succeeded in obtaining Lukas Gilik's thumbprint for the release of 420 hectares of customary land. The incident took place at the office of PT Intimpura. PT HIP also presented a letter of release of customary land which had received approval from the Klasibin Klawilis clan. Lukas Gilik stated that he actually only agreed to "door knocking" money and not for the release of customary rights.

Lukas Gilik rejection of the entry of oil palm into his customary land was shown by stopping the operation of heavy equipments that would carry out the land eviction. Several times Lukas Gilik did the refusal, until finally the company showed the letter of agreement for the release of the customary agreement which contained his thumbprint. After that, Lukas Gilik could no longer keep the company from entering his land. Even when Lukas Gilik was about to block the entry of heavy equipment that would displace his sacred place (*kofok*), he could not resist because the eviction was escorted by security forces. Knowing the letter of agreement, Bernadus Gilik expressed his protest that all members of the Gilik Klasafet clan should be involved in the agreement process. Bernadus Gilik was also unable to go further because the one who agreed was the traditional elder who was also his own brother.

About 12 years after agreeing to release the customary land, Lukas Gilik expressed his deep regret. He has lost everything. The ancestral inheritance he was supposed to protect for his descendants, has now been changed to oil palm plantations. Spiritual belief about the ancestors' spirits that inhabit the sacred place is also unknown now. His mind is unable to withstand the collisions of the changing world around him that are moving so fast. He wanted to be prosperous and wanted a better, just the same as any human being in other parts of the earth. But he never knew where he would take everything he had, until now he felt like a slave in his own land. Lukas Gilik can only set himself up as an example, and advised the other customary right owners not to release their land to oil palm plantation.

> *"This is an experience for us, landowners. I represent the customary landowner. I thought this palm oil is good. First, they made us happy. But now we suffer. Because of that other people, other clans do not let them (palm oil plantation) take more land of Papuans. We are like rats in our own land. Therefore, other clans, do not let more oil palm plantations. Stop it".*
>
> *"I was not poor. What do poor people need? I live in my own place. Papuans cannot be poor. We can drink water anywhere. Now we drink ground water. In the*

past, our parents, they used this water. We who drink ground water are afraid. We are afraid of this company. In the past, parents planted in a fertile soil. Now the soil is poisonous. Everything is polluted." (interview with Lukas Gilik)

The case of the release of the Gilik Klasafet clan's land to PT HIP shows that there is no clarity or transparency regarding important information in it. There is no information regarding the status of the post-release customary land, whether the land has changed ownership or is using a land contract system. Even if it uses a contract system, there is no information on how long the land will be contracted. The global investment process that targets indigenous peoples seems to play "under the hand" or with unclear contract. It means that the owner is deemed not to have any power to determine the future of his land. Alex Klasibin further explained that he also demanded clarity of his status and customary contract after learning that PT HIP had transferred its shares to Nobel Group. Ironically, the state was not present as an intermediary witness in the agreement for releasing the right. The absence of the state will certainly complicate the position of the customary landowners when in the future there is a problem with PT HIP.

It is explained earlier about the history of *sirtu* (sand and stone). When road construction programs start entering, that is where the problem with the customary land claim occurred. The issue was realized by Dance Ulimpa as, "People conflict arose in Moi because of Moi people's own problems". Furthermore, Alex Klasibin explained that the actual boundary of the customary ownership is clear. Only because the customary land belongs to a nearby clan has a high economic value, so there is a claim of land that actually owned by another clan.

Silas Kalami also emphasized that the customary land boundaries never changed. Silas Kalami often handles the problems of customary land claims. The problem arises because there are people who claim to be the owner of the land and then sell the land. There are clans whose fate is "*gontang-gantung* (loose or unclear)". This means that they do not own customary land because: (1) he has no inheritance evidence of land ownership, and (2) customary land which used to be in conflict with war and there has not been peace. The clan that was "loose" then joined in "milking" the customary land of another clan that had close clan relations. The customary owner gives permission for land use to the clan that is "loose". Until later, the clan that "loose" claimed that the land he cultivated was his property and then sold it. Such problems often occur and the legal landowner will take the customary settlement route.

4.1.3 Conflict Resolution of Customary Land [41]

The land dispute between clans of Kalami and Sapisa, had been going on for almost a year. A plot of land on the coast of Malaumkarta which had been owned for generations by the Sapisa clan, was suddenly claimed by Kalami clan as the owner of his inheritance. Customary elders gathered to solve this problem, because the conflict could not be resolved by deliberation by the two clans. Even Kalami's relatives, a lawyer, had filed this case with the court. Because each of them retained their rights, the elders then decided to take the last resort, the Sapisa clan was asked to issue sacred objects as proof of valid ownership.

That afternoon on August 28th, 1998, it was agreed as the day to determine the truth. The Sapisa clan was represented by the Reverend Paulus Kaflok Sapisa, S. Th, leading the taking of sacred objects from the caves in the family's treasury. Taking this was not easy. Some people who participated at that time told me, "we like just circling in one place, it was very difficult to find the cave".

Reverend Sapisa then began to say customary prayers and beg for permission from the ancestors to borrow sacred objects, not to take them forever. Shortly after the cave was found, several strong people entered the cave and took out some things and took them to the traditional congregation.

> *"At that time, we were all silent in silence. The sacred objects were carried inside, I saw the face of the young man who carried it pale with trembled legs. Some people present including me jumped up to the door because they could not help feeling strange when four sharpening machetes, the fire butts left by the heir to the Sapisa clan were placed in the room. The stones are simple in shape but look old,"* recalls a witness who was at the house where the traditional congregation took place.

Some witnesses said, Malaumkarta Beach suddenly darkened as night. Heavy rain fell and a great lightning flashed. Seawater was like stirred by a large spoon. The rain then subsided, and when the sky was clear again people found many domestic chickens from the people across the village, along with their cages, also fallen trees, scattered floating in the middle of the sea. There were no fatalities in the storm that lasted for nearly two hours. Kalami clan finally surrendered and acknowledged the truth that the land belonged to Sapisa clan.

4.1.4 Dynamics of Customary Land Use

The customary land tenure rights in the Moi Kelim community can be communal or individual. There is no obligation to own and use the land collectively. The results are used to meet the needs of the individuals and their own families, and there is

[41] Source: https://suarapapua.com/2016/04/21/gerakan-perlawanan-suku-malamoi-mencari-keadilan-atas-sda-dan-identitas-budaya/.

no obligation to share them with all family members in sub-clan. Based on observations and interviews, customary land users can be grouped into 4, as follows.

(1) *Land use by family members in sub-clan.*

Every family member in the sub-clan has the power to use the customary land without any specific size area. For example, Yusup Malak in Klaso sub-district, which does wood processing business on Malak Gitili customary land. There is no limit to where he will process the wood, and he does not need permission from other members of the Malak Gitili clan. Only when the clan customary elders gave him strong warnings because of the wood processing business that was too extensive, then Yusup should limit his area of wood processing. Yusup also does not share the results of the wood processing to clan members in the clan of Malak Gitili. The owner who is a family member in the sub-clan has the right to sell natural products from customary land more than just for subsistence needs.

(2) *Land use by other clans that have kinship ties.*

Marriage relationships have consequences for the extended kinship and customary land use. Married women do not lose their land use rights. She and her husband have the right to use customary land owned by the women's family. Vice versa, women also have the right to use customary land from the family of men. As happened in Malalilis village, Joni Klasibin has the right to open a garden on a land owned by his wife's family, clan of Su.

(3) *Land use by other clans that have a close relationship.*

As has been explained in social relations in the Moi community, a close relationship can be between individuals, playmates, and work colleagues. A very close bond can be a "*baku sobat*" bond. Customary landowners allow and even give utilization rights to clans that have a close relationship. As happened in Malalilis village where almost all of its citizens have a close relationship with the customary owners. Clan of Gilik Klasafet provides the opportunity for villagers to open a garden on their customary land.

(4) *Land use by migrants who have obtained permission from the customary elder of the customary owner.*

Migrants may use the land after obtaining permission from the customary owner. As happened in Malalilis village, Dhofer was allowed to open a garden after obtaining permission from Lukas Gilik. Previously, Dhofer had obtained a residence permit from the customary owners in three villages. After considering that Malalilis had built a house and was closer to the oil palm plantation, he decided to stay in Malalilis.

The fundamental difference from the four land use categories is that only family members of customary landowners are allowed to sell natural products directly for non-subsistence needs. While those who are not customary owners may only use natural products directly limited to subsistence needs, such as building houses and meeting their daily needs. Whereas natural products for non-subsistence needs must be processed first, such as opening a garden. Garden products may be sold to the market without having to share the results with customary owners.

4.1.5 Distribution and Access to Customary Land

As far as the findings are found in the field, the distribution of land use harvest can be categorized into: (1) customary right owners, and (2) non-right owners. Looking at the case of the release of 420 hectares of customary land of Gilik Klasafet to PT HIP, the consequence of this relinquishment is that the other members of the customary landowners can no longer use or process the land. Therefore, the crops obtained from palm oil 'plasma' are then distributed to other owner members.

From this case, it can be concluded that the distribution of results of a land use must be distributed to the family members of the customary landowners when the land can no longer be used or cultivated collectively. There are no specific provisions regarding the distribution of nominal amounts. The nominal value received by Lukas Gilik as a customary elder is actually lower than his daughter and son.

Table 21 Kinship relation between Oil Palm Plasma beneficiaries with Lukas Gilik

The Plasma Beneficiary	Relation with Lukas Gilik
Maria Ulimene	Wife
Dolfince Gilik	First daughter
Jhoni Doo	Son
Linda Fani Gilik	Daughter
Hans Luther Gilik	Foster son from Lukas' younger brother
Bernadus Gilik	Younger brother
Bastiana Gilik	Younger brother
Sargius Paulus Gilik	Neighboring land
Katrina Klasibin	Sister in law
Yermia Gilik	Younger sister
Nikodemus Lagu	Foster son from Lukas' younger sister
Benyamin Malak	Uncle

Landowners who individually carry out direct cultivation from their own land, are not obliged to distribute the results to other members of the right owners. For example, as happened in Klaso sub-district, Yusup Malak was not obliged to share the results of his wood processing work to other members of the Malak Gitili clan. The consequences of processing wood in the future do not limit the members of other customary owners to re-cultivate or utilize the land. Meanwhile, for non-

owners who have obtained permission to use the land, they are not obliged to share the results with customary owners. However, direct land use is limited to subsistence needs. Meanwhile, to meet the needs of non-subsistence need must first be cultivated, such as for example opening a garden and then cultivating it.

While the extent and boundaries of customary land owned by each sub-clan have never changed. However, this does not mean that the profits are limited from their customary land. A person can get benefits outside of his traditional land through social relationships that have been established. Some data findings in the field show this.

When Joni Klasibin lived in Klayili village, he did not live in his own customary land. The fulfillment of his life's needs is obtained from the use of customary land from other clans. Joni does not live and make intensive use of his own customary land because it is too far away. One time, the owner warned him that he was processing too much sago. For Joni's family, the warning is an eviction notice. Then Joni migrated to Malalilis village where his family had close clan relations with Gilik Klasafet. Joni also obtained the widest possible rights from customary landowners to open gardens in the surrounding Malalilis village.

Regarding access to ownership, we can take an example from the case of Joni Doo who is the son of Lukas Gilik. The biological father of Lukas Gilik actually has the surname Doo. Then the family of the Gilik clan raised Lukas as a "foster child". At the time by the church institution, Lukas was given the baptismal name based on the name of the clan who had raised him namely Gilik. Meanwhile, the "real" clan of Lukas actually does not have a successor and is extinct. For the customary land of the Doo clan does not transfer ownership to another clan whose customary land borders, then Lukas Gilik gives his son's baptismal name Doo. Thus, Doo clan still has a successor to its customary land ownership and does not move its ownership.

The dynamics of access that occur, both in terms of ownership rights and use rights still occur today. As told by Silas Kalami about the rise of land sales in the suburbs of big cities like Sorong and Aimas whose prices have soared. Silas often deals with land issues in the area. There are clans whose fate is "*gontang-gantung* (unclear)" because they do not have customary land. The clan then "drinks milk" in the customary clan land nearby. Unbeknownst to the customary landowners, the clan then sells its arable land to others. There are also people who have been given the right to work the land by the landowner who then claims to be the owner and then sells the land to someone else.

4.1.6 Gender and Agrarian in Moi Tradition

Some myths about the creation of the Moi Tribe involve the role of women. There is a myth of the creation of the Moi Tribe, which states that the Maladofok area is a representation of the strength of women and Tamrau as a representation of the

strength of men. The combination of these two forces then created the Moi tribe. The distribution area of the Moi Tribe is called *teges malamoi,* which spreads to the Manokwari, Teminabuan, Ayamaru and Raja Ampat Islands (Kalami, 2010).

The naming of clans in the Moi tribe follows the lineage of the men. However, this does not mean that customary inheritance is limited to men. As has been explained that the customary ownership rights are communal. That means women also have ownership rights. The difference between men and women lies in the power to talk about customary land. Regarding this, women are in the lowest position. Women have full authority to deal with customary land when there are no more male family members in sub-clan. Whereas in terms of customary land use rights, women still have rights even though they are married.

Women are not permitted to attend traditional education (*kambik*). Matters relating to traditional secrets and sacred places should not be known by women. There is a concern that if women find out about traditional secrets and customary land, they will later tell their husbands or outsiders. Given that the evidence of customary ownership is based on certain traditional secrets, if it is known, many people will later lead to land disputes.

Although in the case of traditional education (*kambik*), the role of women is very limited. It does not mean they have no role at all in the custom. Women get traditional education in the family environment. In this education, women who already have competence also have a traditional honorary title called *fulus*. In women's traditional education, there are lessons, such as womanhood, the ability to extract sago, gardening, concocting drugs, making a place for sago kneading (*ifiok*), making papeda, and processing the sago.

Women also play a role when cutomary land is released. They play a role in the "betel-nut" ritual to summon the spirits of women. In the Moi custom, the female spirit has a very high position. During the process of releasing customary right, it must first obtain permission from women. Even when a clan member is a woman who lives far outside the island, she must be invited so that the process of releasing the right is considered to be customary legal. In the "betel-nut" ritual, all female clan members must be present. As a housewife, women play a role in childcaring, cooking and gardening.

In Malalilis village, problems related women actually occur when they work in PT HIP's oil palm plantations. At 05.00 in the morning, they have to gather to follow the direction. Finished work hours around 14:00. Women's work is generally cleaning grass. Very hot temperatures in the area of oil palm plantations cause high energy out. Leave at 05.00 in the morning makes the mothers can not take care of their children who want to go to school. After returning from working on oil palms, they also had to be burdened by domestic work at home.

Melda Gilik who has been working at PT HIP's oil palm plantation for five years explained that the workload was very heavy. Her income is only based on the activeness of the workday. Therefore, the salary is also uncertain and ranges between IDR 1.5 million and IDR 3 million per month. When menstruation comes, requests for holidays must go through complicated procedures. There must be a statement from the health clinic and must show menstrual blood samples. For the Moi custom, menstrual blood is a thing of the beginning and should not be shown to others. In this case, PT HIP in carrying out its plantation practices has violated the Moi women's customary norms.

Around 2016, Melda Gilik received a Termination of Employment from PT HIP. The reason is because Melda has been absent without permission for three days. Melda did not get a termination letter and only received a First Warning Letter. After being laid off, Melda did not receive severance pay from PT HIP. In this case, PT HIP has violated Labor Law Number 13 Year 2003 Article 156 Paragraph 1 for neglecting its obligation to provide severance payment to employees who are laid off. Melda only gets funds from the Social Security Organizing Agency (BPJS) which comes from salary deductions while working at PT HIP.

4.1.7 Oil Palm Expansion and The Actors

The results of interviews with family members in the Gilik Klasafet sub-clan showed that the mastery of extractive industries followed a pattern of a kind of water ripple effect. This means that when there is one customary landowner who has released his land gives permission to the company to enter, the other landowners who are nearby are also affected. The following are excerpts of the interview,

> *"The first door is those who live near the city, they accept the offering. We are in the back. When the door has opened, we will also get the impact […] If those in the front is hard, we will not be impacted. Those front people are from Aimas […] Similar with oil palm, if the Gisim clan gave up their land near here, we will be impacted."*

When looking at the position of Malalilis Village from the City of Sorong, the direction of the extractive industry moves towards the southeast, starting from the Aimas, Klamono and Klayili areas. Another event that shows a pattern is that if a wood processing company has entered such as PT Intimpura, then after the permit period expires, it is often followed by an oil palm company.

Meanwhile in Siwis Village (Kalaben), the customary landowners and the Klaso sub-district community have been conducting a blockade as a form of rejection of the entry of the palm oil company PT Mega Mustika Plantation. However, a family member of the Ulimpa Ameskiem sub-clan reminded to always be vigilant, "if one owner has signed, ouh, no matter what we do, like in this Kalaben, one person dares to sign, then the Ulimpa clan will be finished. It's over."

Based on field findings in Malalilis and Siwis villages, the history of forest destruction can be categorized into four phases, as follows.

1. The entry of PT Intimpura's forest processing company in the 1990s. According to the informant's story, previously PT Intimpura entered with payment to the customary owner of IDR 5 million. The timber that was taken was only merbau trees of the highest quality. Such a low price was later protested by members of the clan who owned the customary land which then had to go to jail for dealing with security forces.
2. After the completion of PT Intimpura's permit, the timber enterpreneur (*pion*) enter the area to supply the demand of the wood processing industry. The *pion* came to the customary landowners by paying net for merbau wood per cubic with price range from IDR 600 thousand to IDR 800 thousand and Kuku wood (Nandu wood) per cubic around IDR 500 thousand to IDR 700 thousand. The wood that the *pion* was looking for was actually pulp wood because the best has been taken by PT Intimpura. Not to mention the use of matoa wood to build railroad boards for access into the forest.
3. The customary owners who were looking for *pion* to do timber processing on their own customary land. If the customary owner himself plays the role of a *pion*, then he can sell directly to sawmill at a price of around IDR 3 million per cubic for merbau and Kuku wood.
4. After PT Intimpura has finished operating, the palm oil company PT HIP enter the area by recruiting employees who used to work at PT Intimpura who have successfully approached the customary owners.

Data reported by FWI mention that in 2013, there were 31% of the area with the status of Forest Concession Rights (HPH), Industrial Plantation Forest (HTI), oil palm plantations, and mining in Papua, West Papua, and Aru Islands. From 2009 to 2013 the deforestation rate in West Papua reached 102,000 hectares per year. The Greenpeace report entitled "Hitung Mundur Terakhir (The Last Countdown)" (2018) seeks to trace the actions of Wilmar International that have caused deforestation in Papua.

Existing data prove that private investment and state as the licensors are "major factors" that cause natural forest loss. However, in certain cases, customary owners also become a "minor factor" in changing forest conditions. In the case of Oktovianus Ulala, PT Intimpura as a logging company was not successful in running its business on the Ulala clan’s customary land in Sayosa. In the case of the Klaso sub-district, the refusal of customary owners to enter PT Mega Mustika Plantation (MPP) and PT Mancaraya Agro Mandiri (MAM) failed the operation of the two companies even though MPP and MAM had obtained bureaucratic permits and were still active. This means that investment relations, the state, and indigenous

peoples are systemic and interactive relations to changing forest conditions. In other words, the "minor factor" is the last defense when the "major factor" is broken. It is unfortunate that these "minor factors" are very rarely displayed to the surface for further analysis, the results of which may be very useful for saving the remaining forests in any bioregion.

4.1.8 Customary Land Use Change

In Malalilis village, the change of forest to oil palm plantations and customary landowners permitting the entry of timber entrepreneurs has implications for changes in local spatial planning. Sago Hamlet, a place with many sago groves, is getting farther and the duration of processing sago becomes longer. It takes weeks to process sago in the village. Likewise, hunting hamlets are getting further and further away due to wood processing activities. It took days to hunt into the forest to the north of the village. Not to mention the availability of clean water that is difficult to obtain.

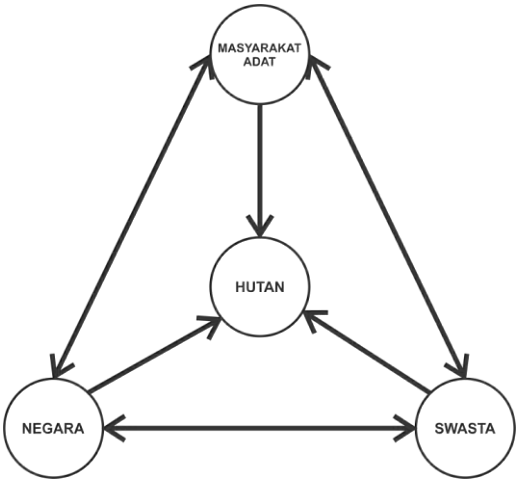


Figure 60 Sistemic relation of forest change

Actually, some of the Malalilis people complained about the condition, but what power it all returned to the customary owners. The owner is the most entitled to do anything on his own land, even though for certain things it is troublesome for part of the community. In fact, the community cannot do much when the customary owner has conducted a wood processing business that exceeds the need for subsistence, and even every day can take 3 to 5 trucks carrying merbau and kuku wood. Again, those are the rights of the customary owners.

Malalilis village as an assisted village of PT HIP company should be easier to obtain facilities and infrastructure for basic needs. But in reality, it is the customary owner who should submit all of this to PT HIP. The community is reluctant to demand their basic needs to PT HIP because the Malalilis village's land ownership rights are under the authority of the customary owner. In the view of the community, customary owners cannot be blamed for the ecological changes that have taken place, and have even led to flooding in the village. Respect for customary authority is so recognized by the community that they cannot protest openly the customary owners.

Since the 1990s, customary owners in Malalilis village had allowed the entry of PT Intimpura's timber exploitation, and in the 2000s had released their 420 hectares of customary land for PT HIP oil palm plantations. As has been explained that in Moi customary law is actually not permitted to utilize natural resources beyond the needs of subsistence (over exploitation). In this case, it is as if the customary landowner is affected by the "customary curse" with the emergence of meeting uncontrolled economic needs. The customary owner has over exploited by allowing timber business to enter the area. A common reason why they over exploit is for the needs of sending their children to school. According to Dance Ulimpa, that is a nonsense reason because for children's school needs there is already funding from the Village Fund Budget.

Another curse is seen in the welfare of the customary landowners, who, according to the Malalilis community, are still mediocre. Moreover, the entry of Kalimantan timber entrepreneurs has closed employment opportunities for the Malalilis community in the wood processing business. The arrival of the worker from Kalimantan also polluted the Klasafet River in the north where there were labor camps. The pollution is feces, urine and trash that are thrown anywhere.

With this reality, there has been a decline in the condition of forest cover in the northern Malalilis village. Many merbau and kuku trees have been cut down. There is also a lot of waste of merbau and kuku wood that are rejected because they do not pass the standard, and there are wooden logs that just lay there because of the wrong cutting. Not to mention the loss of the matoa tree that is used for the railroad board. Sago trees also died because of the falling down logs.

In Klaso sub-district, the construction of the Sorong-Tambrauw Trans-Papua road resulted in the opening of access to the customary landowners to carry out wood processing business. It also has an impact on the higher animal hunting because of the ease of selling it on the Trans-Papua road. Although on the other hand, the community also needs roads for ease of mobility towards Sorong City. The rise of village division also causes deforestation because they have to do land clearing to build houses.

Table 22 The Priority of Problems in Study Site in Sorong Region

Problem	Events
Social	The absence of the state in resolving the issue of Termination of Employment without severance that is carried out by PT HIP to the Malalilis community.
	The exclusion of local workers as a result of the influx of timber processing workers from Kalimantan.
Culture (Custom)	Customary land claims made by non-owners as a result of the economic value of the forest.
	Neglect of ecological damage as a result of too much respect for local authorities (communal owners).
	The waning of the use of Moi language as a result of the lack of socialization of Moi language learning to younger generations.
Ekonomic	The unavailability of transportation facility to market garden products which results in low profits.
	The low number of village youths who took the initiative to open businesses to process various natural resources.
Environment	Floods occurred as a result of oil palm plantations and logging on customary land.
	Uncontrolled logging on customary lands.
	Clean water crisis as a result of oil palm plantations and the presence of wood processing workers.
Local Politic	The expansion of new villages by customary landowners.
	Weak control of state in administering village's budget
Local Food	Increasingly distance of sago hamlets and increasing dependence on rice as staple food
	Increasingly hunted animals that go away as a result of oil palm plantations and wood processing businesses

Figure 61 Merbau wood ready to distribute (left), Matoa wood for railwood in Malalilis village (right)

4.2 Problem findings in Aru Islands

The study results in the Aru Islands show how the problems faced by indigenous or local communities are not only historical but also complex. Historical means that there is a long-term connectedness of problems up to the present, that is the strength of the PT Menara Groups and the Navy that supports various development programs that potentially damaging in Aru Islands. Complex means that there are many connections between problems that occur at the local level with new national policy plans that also want to enter on behalf of agricultural development goals. The case of the inclusion of the cattle breeding plan of the Ministry of Agriculture's initiative is the latest evidence of this problem.

4.2.1 The Entry of the Navy (TNI-AL)

The year 1991 was an important year in the history of the local people especially community in southern Aru. Because, this year the Indonesian Navy entered the Marafenfen village and the claimed the land area of 400 hectares. In subsequent measurements, they claimed 600 hectares. At that time the Navy claimed to have distributed certificates to 200 households, while there were less than 100 households there. This was the certificate used by the Navy to claim community land, as legitimacy that villagers had surrendered their land. But according to them, this is not true. For them, the certificate is a form of naval manipulation to fool them. This was successfully proven at a national inquiry held by the National Human Rights Commission (Komnas HAM).

During the head village was Philipus, the Navy made plot in the Botmir clan's land under the order of Colonel Kalinding. They replaced the land with the land of Bot Mona-mona clan. This made no sense to the Marafenfen community. The Navy cannot use other people's land as a substitute for the land they take. If the Navy want to compensate, they must use their own land, not with the land of Bot Mona-mona clan. That is, if the Botmir clan as the landowner whose land would be taken, agree to give up their land.

For the Marafenfen people, the problem is not whether their land is replaced or not. Basically, They do not want their land to be handed over to the Navy and controlled by the Navy. They want the *petuanan* (customary) land to remain theirs, because the *petuanan* is a legacy from the ancestors on one side, while on the other hand it is a mandate that must be safeguarded so that it can also be passed on to the next generation. Moreover, the Navy, in the assessment of the community, took the *petuanan* land by deceiving the community.

In addition to land claims, the presence of the Navy to the environment of Marafenfen Village has many influences on aspects of community life, be it environmental, economic, social or cultural issues. Testimonies from residents say

that since the arrival of the Navy, many animal populations have declined every year, such as various types of birds, kangaroos, pigs, deer, and so on. Of all these animals, the most attention of the people is deer and various species of birds, especially fanan birds[42]or birds of paradise. The reduced population of these animals, especially deer, is caused by hunting activities by the navy by using rifles to shoot and using trucks to crash directly into the forest. The noise from rifles and trucks is very disturbing to these animals. So that many animals that are not caught migrate to other locations. In addition, the quantity is also very large, reaching tens of animals per night. For the local people, the speed of hunting like that is not balanced with the ability of deer to breed to maintain its population (this also applies to other animals). While local people hunt using only simple arrows and traps.

In the 80s, deer populations in Marafenfen and its surroundings were very large. This is illustrated from the story of the people that the deer at that time often enter the village and settlement. Because the numbers are very large, even the villagers consider the deer as pests because they also damage the farm fields. At that time, people could easily obtain meat protein from deer. If they wanted to eat meat, they only needed to carry arrows around the settlement or around the fields, and they can be sure will get deer. In contrast to now, even if they go specifically hunting, the chances of getting a deer are very small. The animal that is still in large number is just wild boar, and that is also reduced a lot compared to the years before the Navy entered. For comparison, until the late 80s, at the time of the *tordauk* event, people could get dozens of deer. This result can reach more than 50 deer (not including wild boar, kangaroos, and others). Whereas in this *tordauk* [43] event, there was only one deer was obtained.

According to the Navy, the presence of the Navy in the aru area is intended for national defense. This makes sense considering the location of the Aru Islands which is directly adjacent to a neighboring country, Australia. In addition to that, in the Aru Islands a lot of foreign ships enter the territorial waters of Indonesia illegally. However, according to the local people' testimony, there was no action from the Navy to prevent this illegal fishing practice. Decisive action against illegal vessels has only been felt since Susi Pudjiastuti served as minister of maritime affairs and fisheries in 2014.

If indeed the presence of the Navy in the Aru Islands is for national defense, the people actually don't really mind. There are at least **three** factors that make people uncomfortable with the presence of the Navy, which are: **first**, their way to get land

[42] Fanan is Aru's word for bird of paradise.

[43] *Tordauk* is a traditional hunting tradition that is carried out every year in the South Aru Islands region. The area of *tordauk* is a stretch of savanna which is used by around 10 villages for traditional hunting.

is done by fraud; **second**, the land used by the Navy is considered too large if only for the base, and **third**, the activity of Navy personnel is considered to be the cause of the decline in deer populations and populations of various species of birds that exist in Marafenfen's nature.

4.2.2 The Entry Plan of Menara Group Company

The Menara Group company planned to enter Aru Islands in 2013[44]. The company planned to build a sugar cane plantation in almost all of the Aru mainland[45], especially in the southern part of Aru, including Marafenfen village and its surroundings. In addition to Menara Group, there were two other large-scale companies that plan to invest in the Aru islands, namely the Nusa Ina Group and Aru Manise Group.

Table 23 Investment Plans of the 3 big companies in Aru Islands

Company Name	Starting Year	Commodity	Permitted Area (hectare)
Menara group	2007	Sugar cane	452,740
Nusa Ina Group	2010	Sugar cane, oil palm, HTI sago	549,151
Aru Manise Group	2010	Sugar cane, oil palm, rubber	351,832

Source: FWI, 2014

When these companies entered, many rejections were made by the Aru people. They organized a movement called the #SaveAru movement. This rejection was born out of aru people's concern in his life space which was considered vulnerable. It is considered vulnerable because of its position as small islands, and a karst region. While the plan of this large investment will use almost all of the Aru landmass

The entry of Menara Group into the Marafenfen and surrounding areas is quite imprinted in people's memories. This was because at that time there was a horizontal conflict between Marafenfen Village and its neighboring village that is Feruni Village. Before this incident, between Marafenfen and Feruni there had been conflicts due to land issues too. In 1960, this case went to court which was won by Marafenfen. Since then, the issue of land disputes had not arisen. The problem arose again when Menara Group conducted a land survey with several villagers of Feruni. According to the Marafenfen community, they conducted a survey up to the Marafenfen's *petuanan* area. Therefore, the problem of dispute

[44] In 2013, if referring to a circular letter to the subdistrict heads in the Aru Islands to disseminate the presence of the Menara Group Consortium. Based on the Aru Islands Regional Secretary circular, the company has planned to enter the Aru region since 2007

[45] The total area of Aru lands are 807.843 hectares

in 1960 reappeared again. The people of Marafenfen and Feruni had an argument which almost led to war between villages. Fortunately, they were interceded and resolved by the police by observing the results of the trial.

4.2.3 Cattle Breeding Plan

On October 27th, 2017, the Minister of Agriculture came to Popjetur Village, Aru Selatan District (next to Marafenfen). The purpose of the minister's visit was to disseminate information on plans for the entry of livestock companies to the

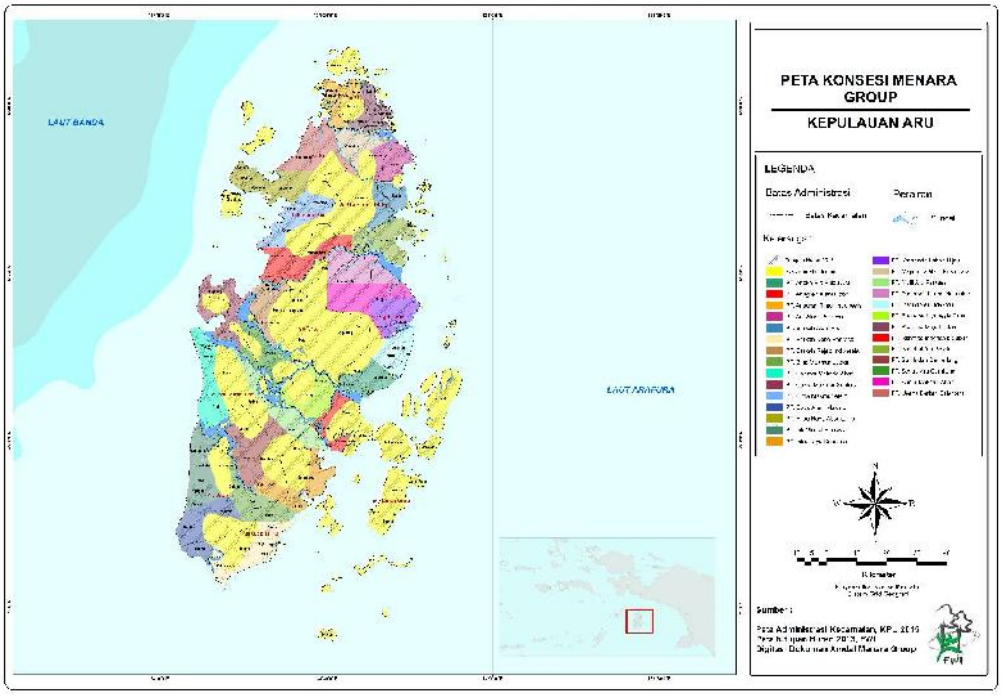


Figure 62 Concession map of Me in Aru Islands

Popjetur and surrounding areas. Before coming to Popjetur, representatives from investors came to Marafenfen Village, but were refused by the community. At the socialization meeting, the minister promised to send 200 cows and 5,000 chickens distributed free of charge to local communities on July 1st, 2018. However, until this interview took place, the promised cows and chickens was not realized. Later, the promised cows are a form of partnership between the livestock companies and the community. According to the Public Expose held on May 21st, 2018, there were at least four companies that will invest here. These companies are PT Natural Power Gemilang, PT Bintang Kurnia Raya, PT Cakra Bumi Lestari, and PT Livestock Beautiful Lestari.

Most of the people of Popjetur Village refused the presence of this investor. there were only a few people who support, and even they did not represent the clan. The public did not believe in the promises given by the minister. According to one community leader, the community has learned from the experience of being lied to many times by elites. People here term it with "*bicara suka dengar, percaya tidak* (to listen but not to believe)". That is, people just like to listen, but not necessarily believe. One form of "fraud" is that, when the Payansian clan gave 2 hectares of land to the livestock / agriculture center, the community was also promised cows. But the promise was never realized. There were only 10 cattle that are distributed to the community, and even one animal has died. Lying stories from the elite are most often heard when campaigns for winning legislative or executive members, who are often broken promises.

During the meeting with the minister, those who were present were the village government, village staff, and group of ministers (agriculture minister, deputy governor, district head, regional police chief, and an investor). When this group arrived, they distributed money to the residents they met on the street. Each received a different amount of money, between IDR 500,000 and IDR 2,500,000. In addition to cattle, the minister also promised to send 10 hand tractors. This hand tractor has arrived at the agricultural service to the district. Four of them have reached the village which are two in Leninir Village, and one each in Feruni Village and Popjetur Village.

Before the meeting with the minister, a meeting was held on 11th June 2018 in Feruni and East Doka. The next day, June 12th, 2018, a meeting was held at Popjetur (before the minister arrived). During a meeting in Popjetur, the people put up a rejection banner that read: "We reject investors".

At that time the company was represented by directors, namely Mrs. Yohana and Mr. Ismail. They come to the community to socialize and persuade the public to accept investors. He said that the projection of this company was to create a meat market. For this reason, large scale land is needed. The governor said they needs 200,000 hectares. Meanwhile according to BPS, the total land area of the land in South Aru is only 833.12 km^2 or 83,312 hectares. If the land needs are correct, then this investment will not operate in South Aru alone. At least the investment requires approximately 1/3 of Aru's land area which is only 642,677 hectares (BPS Aru Islands, 2017). Ms. Yohana and Mr. Ismail also promised employment opportunities for the community. But it will still be filtered based on skill (expertise). In addition, they also said, there would be other businesses such as lodging services.

In addition to sending directors, at other times they also sent villagers living in Dobo, namely Reti Botmir, to persuade the community, but the community still refused. According to the community, the company was eyeing the land that will

be used by Menara Group as a sugar cane plantation. The locations of this company were villages of Popjetur, Ngaibor, Dosimar, Salaren , Meror, Sia, and Baltubur. The attitude of young and old people in this matter is relatively the same, they were refusing the investors. The transfer of knowledge and sense of ownership of land from parents to young people in Aru is quite good, so that young people also have a strong enough sense to maintain the inherited land of their ancestors.

The people's arguments against investors are: **first**, widespread land tenure by companies will change their tenure system based on communal ownership to private ownership; **secondly**, the arrival of investors is considered to cause the release of their *petuanan* land to investors. While the *petuanan* land is customary land which was passed down from the ancestors, which must also be passed on to the next generation; **third**, with the activities of large-scale companies, they will not be able to carry out the hunting tradition by burning reeds; and **fourth**, which is the most important reason, they do not want to be dependent in their own land. If an investor enters, the activities on the land will depend on the company's activities. Community access in the *petuanan* land will certainly be restricted. Some activities that are considered to interfere with company activities will be prohibited, including burning reeds to hunt. If this continues, it can be considered as disturbing company assets.

4.2.4 Customary Boundaries and Potential Conflict

The transfer of knowledge from the older generation to the younger generation in the Aru Islands is generally done by oral means, through stories from the older generation to the younger generation. In addition, historical records, traditions and customs are also manifested in art, in the form of songs and dances. This also applies to the Marafenfen community and beyond. That knowledge continues to be passed down from generation to generation. In this way, the knowledge reaching each person or group can be different. This is illustrated, for example, from the knowledge of each person or clan towards the boundaries of the clans they have. Due to differences in knowledge of these boundaries, several potential conflicts arise between clans or between villages.

For example, there are several versions regarding ownership of *petuanan* in *tordauk* locations. There are at least four versions of the story about ownership. The **first** version, guidance in the *tordauk* location belongs to Gaelagoi clan (Marafenfen village) and Siarukin clan (Popjetur Village). The **second** version, *tordauk* belongs to the Gaelagoi clan and the Botmir clan. The **third** version states that the *tordauk* belongs to the Gaelagoi clan, the Siarukin clan and the Botmir clan. According to this version, the *tordauk* in the Popjetur are divided into two parts, namely in the part of the hill which belongs to the Botmir clan, while around the hill belongs to the Siarukin clan. While the **fourth** version states that the *petuanan* belongs to the Gaelagoi Clan, the Siarukin Clan, the Botmir Clan, and the

Apalem Clan. Each version claims to be a true story. This is very reasonable considering this story was revealed hundreds of years ago, so it is very possible misunderstanding about various stories, including boundaries and ownership of the *petuanan*.

One factor that led to the emergence of this version of difference is the migration of some Botmir residents from Marafenfen to Popjetur. Initially, the Botmir clans all lived in Marafenfen Village, but due to a problem, some of them moved to Popjetur Village. The Botmirans who moved to Popjetur did not have a petition there, but they were well received by the people of Popjetur Village.

According to the first version, the Botmir clan who moved to Popjetur is already considered a relative. Therefore, the Siarukin clan gave the borrowing rights to the Botmir clan to carry a torch to burn the reeds during the *tordauk* event. This has been going on for a long time, according to the Siarukin clan, it is estimated more than 100 years ago until now. This torch is an important symbol, because only the clan owner of the *petuanan* can hold the torch to burn the first fire in the *tordauk* event. Because of that, according to the second version, the symbol carrying the torch is proof that the Botmir clan has the clues. Meanwhile, according to the third version, the Botmir clan is the owner of the *petuanan* in the hills, while the Siarukin clan is the owner under the hill. According to some people, this third version does not make sense because there is no clue in the middle of the other clash. The fourth version is not clear how the story is because no informant knows for sure. It's just that this version also emerged from several informants, although they did not know how the background of the fourth version of the story was.

Because of claims made by the Botmir clan, this year, the Siarukin clan did not participate in the *tordauk* event. According to one person of the Siarukin clan, recognition of the Botmir clan about the war in *Tordauk* was strengthened by the village head surnamed Apalem. According to him, this support was given because the strong Siarukin clan refused to invest in a cattle breeding company, while the village head supported it. This means that if *Tordauk* is recognized as belonging to Siarukin, then it is probable that the land will not be handed over to the cattle ranching company.

Another potential conflict is between the people of Marafenfen Village and Feruni Village. This is because of the different historical stories of ownership of clans in Feruni and Tiljuir in Marafenfen Village. This land dispute was tried in 1960. The court result won the Tiljuir clan as the owner of the disputed *petuanan*. But this conflict arose again when the Menara Group company entered the area. The dispute at that time almost caused war between villages.

4.2.5 Two Customary Mechanisms in Conflict Resolution

The Aru community's habit in deciding a case is usually done by deliberation. This method also applies if there is a conflict between individual citizens or between community groups. For the Aru community, deliberation is the main road that must be taken. If the deliberation cannot be done, then it will be done in another way.

In addition to deliberation, the Aru people have a heritage of knowledge from their ancestors about the attitude in a conflict condition. This study notes at least two mechanisms, namely *maolosabuang* and *tepal jurin*. *Maolosabuang* is a way to resolve conflicts between two parties by sinking two conflicting parties into the water. Who among those who can last longer in water, then he is considered to be the right party. Before performing *Maolosabuang*, certain rituals are first performed. According to the community, the length of time a person stays in water is not determined by the strength of his breath, because this ritual is not to pit the power of diving. Even according to some stories, the right party will fall asleep in the water.

The second mechanism is *tepal jurin*. *Tepal* means an arrow; *jurin* means tip. Literally*, tepal jurin* means the tip of an arrow. In other terms, *tepal jurin* also called *topar*. The mechanism of conflict resolution with *tepal jurin* is carried out by holding a kind of hunting competition between the two conflicting parties. These two parties determine what animals will be hunted for them. Who gets the first prey, then he is considered as the right party. The Aru people believe that God gave their instructions by bringing the hunted animal closer to the right party.

With these two inherited knowledges from the ancestors, the Aru community actually has alternative ways to overcome the potential conflicts mentioned above. According to the community, usually, when this mechanism is taken, the party declared wrong will accept it sincerely. Of course, there are other mechanisms that can be used by the public, for example by way of court. But the problem is, this court decision has not proven effective in removing the problem. It has been proven, for example, that a problem has been resolved by the court will rise again in the future. That is, disputes between communities, especially about differences in knowledge about boundaries, are not taken for granted by the losing party.

4.2.6 *Tordauk* As A Joint Hunting Tradition

The *Tordauk* is a joint hunting tradition that is carried out by burning reeds. Literally, *tordauk* means crowing rooster. Giving this term comes from the story of a legend of two daughters who finally materialized into a hill because they wake up late when the chickens crow. Two hills in *Tordauk*, namely Setlanin and Guru Mamasel, are the embodiments of the two daughters.

The location of *Tordauk* is in the area of Marafenfen Village and Popjetur Village. However, this event does not stand alone from the context of the territory of the two villages, but rather is the highlight of the hunting event from the location of the surrounding village. So that the surrounding village community also participated in the event. The purpose of the highlight of the event was that, before hunting in the *tordauk* location, the community carried out labor by burning small reeds in their respective villages. Because the small reeds are burning, animals that escape the flames and the hunt will run to the other reeds. Finally, the animals will run to the large *tordauk* reeds. When all the small reeds burn out, then the big reeds for the *tordauk* are burned.

Before the burning day, community representatives from Marafenfen and Popjetur meet first to discuss and decide on the day of implementation. On the evening before the event, all the clans in the village gathere to discuss the implementation of the event. They also mentioned the prohibitions that must be obeyed during the event. Because according to experience, when there are violators there is always an accident, even to the death of a victim. That night the residents also prepared the necessary materials such as fuel (from coconut fronds), arrows, tents, food ingredients, as well as other materials and tools needed, especially kitchen utensils. When they were about to leave, all participants gathered together to read the prayer together. After that, the group leader who wore the traditional hat and carried the flag left first, while the others followed behind on foot. The person who carries this flag is a representative of the clan who has the *petuanan*. This person also served to burn the first reeds.

Tordauk event has an important meaning for the community because this is where all people gather between villages and clans to hunt together. Not only for the Marafenfen community, but also other surrounding villages. The total number of villages participating in the tordauk event are eight villages, namely Marafenfen, Popjetur, Gaimar, Doka Barat, Laininir, Feruni, Ngaiguli, and Patural Villages. During the hunting event, almost all villagers will come to the event, including women and children. Each village has its own location as a place to rest. Marfenfen's resting places are Bodil Island and Serin Island *kai kui-kui*[46].

All hunted animals will be collected based on their respective villages and shared equally among all villagers concerned. Each villager must look after each other's hunted animals. If an animal has been hit by an arrow from one village, the other village must help it until the animal dies and gives it to the first archer.

[46] In local language, island here means small forest

Figure 63 Praying together before hunting in *Tordauk* event

For people of Marafenfen and its surroundings, *tordauk* event not only means as a hunting event, but also means as a unifying event and symbol between villages that are close both in distance and in terms of kinship, social, and cultural relations. In other words, *tordauk* is a unifying symbol that penetrates the administrative boundaries of a village, religion, or clan. *Tordauk* is a binding symbol and a reminder for the next generation that they are a big family that lives together in the same living space. This is where their momentum further strengthens the emotional bond between extended families.

Tordauk events currently have another meaning because the location and this event began to be ogled by various tourism agencies. The tourism agency is planning the location of *tordauk* and to include the event as part of the tourist attraction. By location, *tordauk* is a vast savanna that is very possible if used as a tourist attraction. While *tordauk* events can be attractions for tourism.

Given the outside attention, both from government programs or the entry of large capital, this *tordauk* is becoming increasingly important for the Marafenfen and surrounding communities. At least to emphasize that there is no empty land, but rather owned by the community, even as an important location for community traditions carried out for generations.

4.2.7 *Masohi*: Manifestation of Living Together

The Aru community as a whole has strong family ties. This bond can be seen from the genealogical, agrarian system, and work tradition that they have. In the tradition of working, the Aru people have a habit of working together which they

call *masohi*. This joint work is not only realized for the public interest (such as road construction work, houses of worship, etc.), but also for personal or family interests.

Masohi is usually done when the community will open land or plant, build houses, and so on. Those who work *masohi* are not paid anything. This work was carried out because of strong ties between neighbors, which in the view of the Aru community did have to help each other. This *masohi* culture still exists today, although in some places or in some cases there are indications of fading. This can be seen from the decreasing intensity of *masohi* work in the community. This decrease in intensity is due to the beginning of "economic" calculations among the people.

The decline of the *Masohi* tradition needs to be an important concern because it will be correlated with the work system of the Aru community. For example, Aru people who were initially unfamiliar with the wage system, now they have started to know the wage system, especially in Dobo. Of course, this *masohi* tradition does not stand alone. The conditions of ownership and control of production equipment can be important factors, including access to markets and financial capital. Other factors such as adaptation to new technology and lifestyle trends also need attention.

4.3 Problems Findings in Jayapura Region

Research in the Jayapura region shows that there are old problems that are about to recur and new problems that emerge after the initiative to restore damaged forest is present. This is as well as social balance due to the presence of transmigrants, which is a measure of new progress in the area around the study site. The old problem is illegal logging and deforestation which still threatens until now. However, the existence of the conservation and ecotourism area of Mr. Alex Waisimon’s initiative and his clan became a "barrier" to the intention to re-destroy the customary forest. However, efforts to destroy customary forests through logging around the study site are still ongoing, as other agricultural models forced through cocoa cultivation are still being discovered and there is potential for new conflicts. On the other hand, the transmigration policy also slowly created a 'social jealousy' which needed a cultural bridge so that the progress achieved by transmigrant villages could be transmitted and became the spirit of progress of local villages.

4.3.1 Deforestation, Forest Degradation, and Potential of Social Conflict

Deforestation that occurred in the three study locations and the surrounding areas would not necessarily just happen without a cause. Several stories about activities

that cause the deforestation have been collected in this study, including the transmigration program, the timber industry and HPH, the cocoa planting program and the interaction of Papuan people with outside communities. The following is an explanation of each of these stories.

Transmigration program

Transmigration began since the Dutch colonial era, which was once intended as a political reciprocation to unravel poverty in Java, by moving some Javanese people to Lampung. Therefore, the Javanese community has now spread to various locations in Indonesia. After the Dutch colonialism ended, the transmigration program also ended, before finally being revived by the New Order Regime through the Soeharto Pelita (5 Year Development) Program. The Pelita transmigration program began to look at Papua as a transmigration location since 1978, through Pelita III. The Pelita III program is intended to improve the economy and finance of the community, both indigenous people and transmigrants. In the Ministry of Manpower and Transmigration, the program is expected to alleviate poverty, create employment, and create food security through agriculture.

Since 1978, Jayapura has been the target location for the Indonesian government's transmigration program. Hundreds or even thousands of people from various regions in Java were sent to Jayapura to build new life at that time. Many areas that were originally in the form of wild forests were then deliberately cleared for the benefit of the construction of transmigrant settlements, one of which was the Nimbokrang sub-district. Nimbokrang is a expanded sub-district of the Nimboran sub-district. Nearly 98% of the population in this sub-district are transmigrants from Central Java and East Java. In the beginning transmigration entered Nimbokrang in 1980, there were around 600 families sent at that time. As many as 400 families were sent in the first phase and the rest in the second phase. Each transmigrant family received two hectares of land from the government for housing and agricultural land.

Unwittingly, transmigration is one of the factors causing forest loss in Nimbokrang and its surroundings. According to local local people (native Papuans) and transmigrants, the Nimbokrang area was once a wilderness, before it was made a settlement and agricultural land for transmigrant families. Deforestation due to clearing for transmigrant settlements is thought to be quite extensive. Although there are no data on forest changes that occurred at that time, around 1980. Using a simple calculation, from a total of 600 families, each with two hectares of land, that means there are 1,200 hectares of forest that have been converted into residential and agricultural areas of transmigration communities.

Timber Industry and Logging Concession

The initial round of the timber industry around the Grime Valley or Nimbokrang and surrounding areas began during the New Order, which was around 1984. At that time, the timber industry company PT You Liem Sari stood majestically. The company cut down forests around Nimbokrang, Unurum Guay to Kaureh. Thousands of cubic iron wood or merbau wood (*Intsia sp*) and white wood such as matoa and linggua (often referred to as amboina wood) are transported out using containers to be taken to the Port of Demta and then sent to Korea, Japan and China. PT You Liem Sari cleared the forest until 1997 and after that stopped operations. Post-1997 sawmill businesses were present whose actors are former workers of PT You Liem Sari.

Until now, logging activities have taken place in sub-districts around Nimbokrang such as Unurum Guay. The logging activities are carried out based on the agreement made by the Papuan people with the logger (operators). Papuan communities around Nimbokrang in general have a lot to do with the loggers. Logger groups are migrants from Sulawesi and transmigrants (Java) in the Nimbokrang sub-district. Generally, loggers are part of the wood industry (sawmill). Loggers usually consist of chain saw operators and transport teams from the forest to the roadside.

After obtaining permission from the community who owns the forest, the logger group can begin to carry out the activities of felling trees, sawing and transporting logs. Local forest owners receive compensation in terms of premiums according to oral reports about the volume and type that have been taken from the forest area.

Logger groups market timber in the form of logs with types and sizes according to the demand of the timber industry. Types of merbau wood (*Intsia, sp*.) are sold to the wood industry with a size of 4 m x 10 cm x 20 cm. Besides merbau, groups of eucalyptus such as matoa (*Pometia sp.*), Linggua (*Pterocarpus sp.*) and others are also sold, but the selling price is not as high as merbau wood. Usually, groups of eucalyptus are sold with varying sizes, which are 400cm x 10cm x 20cm; 400cm x 10cm x 30cm; and 400cm x 16cm x 20cm.

In carrying out its activities, the logger is able to reach a distance of about two km from the edge of the road. The processing of trees into logs is carried out at the felling site by using a chain saw. Transporting wood from the felling location to the side of the road using a motor that has been modified for use on the tracks that have been prepared. Within a day, each chain saw operator is able to produce 4 to 5 cubic meters of merbau logs. The type of non-merbau is easier to process so that it can reach 6 to 8 cubic meters in a day. Transporting wood from the curb to the industry or wooden kiosks using trucks. Truck capacity for transporting merbau wood is ± 6 cubic meters and non-merbau wood is ± 8 cubic meters.

On its way, generally timber-carrying truck will pass checks at several security posts (Army / police). To avoid inspection and possible detention of illegal timber and transport trucks, truck drivers or timber owners usually pay a sum of money at each post that is passed. The total costs incurred for passing the army post, during the journey from the forest to the Nimbokrang sub-district ranged from IDR 50,000 to IDR 150,000. These costs can be increased if during the trip there is an inspection carried out by unscrupulous police officers who are conducting patrols. Then, usually the timber businessman spends around IDR 300,000 every three days only to give to unscrupulous officers who deliberately come to the location of the timber industry.

In the Nimbokrang District and surrounding areas, there are around 12 sawmill wood industries. Five of them are large scale and the rest are small scale. At present, some of the sawmills have not been operational for nearly six months. According to the community, large-scale sawmills received inspections from the KPK (Corruption Eradication Comission) of Jayapura and forestry agency. Meanwhile, the small sawmill that supplies its wood locally to Jayapura is still operating.

Figure 64 Transportation tool and its transporting technique (top left), railway to transport logs (top right), Timber operator who is cutting the trees (bottom left), log size 4m x 20cm x 5cm (bottom right)

Box 1. Sawmill's business profile and economic potential

> *"At first I started to pull wood with a motorbike. My motorbike pulled wooden carts from 10am to 10pm. Once I continued to work hard to start this business, until there seemed to be results. I started counting monthly income and the possibility of paying installments to the bank. Once it was enough, finally I ventured to try to borrow capital from the bank. I started to borrow 100 million to start a local timber business to sell in the Nimbokrang and Sentani areas"* (Interview with Nardi, a sawmill businessman in Nimbokrang)

Now, the velocity of money in the sawmill wood business is almost one billion a month. Nardi is one of the sawmill entrepreneurs in Nimbokrang I. His business has been going on for almost seven years, starting in 2011 until now. In addition to the sawmill business, he has two other businesses, which are *batutela* and furniture. However, the sawmill business is the main business that has the highest turnover of around 80%.

Nardi is a timber businessman who started his business from scratch. Initially, he worked as a laborer in one of the timber companies on Jalan Korea Nimbokrang, PT. You Liem Sari. With his work experience in a timber company, he then opened his own wood business. According to him, the timber business in Papua is a lucrative business that promises to move fast. Now, Nardi's timber business supplies timber at the local level in Jayapura, starting with building material needs for housing projects, schools and the construction of houses for oil palm workers.

Before carrying out a logging operation, the timber entrepeneur makes an agreement with the forest owner or Papuans. In general, timber entrepreneur engages with local forest owners *ondoafi* (indigenous leader) to negotiate. The process of timber commodity transactions in clan forests, between forest owners and sawmill entrepreneurs is characterized by a premium mechanism. In some cases, forest owners are made dependent on sawmill wood entrepreneurs through an upfront payment system.

Premi is a wood cubication system. Timber obtained from forests is paid per cubic by sawmill entrepreneurs to forest owners. The nominal *premi* is usually determined by the sawmill entrepreneurs. At present, the *premi* for 1 cubic iron wood (merbau) is around IDR 300,000, while the type of eucalyptus such as large *linggua* is around IDR 50,000. At present, Nardi manages three forests belonging to the *ondoafi* (indigenous leader of the Sentani people). For these three *ondoafis*, Nardi spent IDR 180 million to pay a month *premi*. In the case of *ondoafi*, in addition to being paid in cash, sometimes it is also paid by motorcycle, cow, and others.

Nardi's sawmill business is able to produce around 7 to 8 cubic meters of iron wood and eucalyptus per day. To reach his target, Nardi employs around 47 people. Of the 47 people, there were no indigenous Papuans. Based on the interview, Nardi had a bad experience working with Papuans, according to him Papuans could not do anything so that their work seemed careless.

In the sawmill business, there are five stages of work namely felling, scraping, leaving, raising in a truck, and producing in a sawmill. In the forest, there are two stages of cutting, scraping and transporting out of the forest. Logs are made in sizes 10x20 cm, 5x20 cm, 15x15 cm, 15x20 cm, 4 meters long. Then, at the sawmill, the scrape stage is made to make finished goods to order. Field workers are generally in a team of 2 to 5 people consisting of logger and motorcycle taxi driver. Neither did the team working on the sawmill consist of 3 people (towing, pushing and removing the powder).

The work system of sawmill businesses is piece rate, so that each worker has a target. The worker's wage system is calculated per cubic wood produced. For iron wood / merbau, the chainsaw operator wage is IDR 850,000 per cubic while the motorcycle taxi wage is IDR 800,000 per cubic. If there is additional work then the wage is increased to IDR 300,000 per cubic. Then, transportation costs, the cost of raising wood, and postal fees are around IDR 400,000 one way and the cost of scraping on the sawmill IDR 150,000. If added up, the production cost for one cubic timber from the forest until it is ready to sell is around IDR 2.5 million per cubic, then it is sold at IDR 3.8 million oer cubic iron wood (merbau).

Within a month, the total turnover of Nardi's sawmill business was almost IDR 1 billion. Of the total production, Nardi's timber business reaches 240 cubic wood (30 days x 8 cubic per day). The price of iron wood (merbau) currently reaches IDR 3,800,000. Within a month of total sales, Nardi can get IDR 912,000,000. Of the total sales, net profit reached IDR 312,000,000.

Nardi explained that the challenges in the sawmill business were many illegal levies (extortion) carried out by police, thugs, soldiers and the forestry sector. For thugs, usually Nardi gives a sum of around IDR 20,000 to IDR 100,000 every time he arrives. Every two days, police officers came to him for money. To meet these costs, Nardi must prepare a fee of around 10% of his total income. However, Nardi realized that they (the police, army, forestry) could become obstacles in the timber business so that inevitably he had to want to "work together".

> *"Within a year, we must prepare around 130 million for unexpected costs, for tribute to the police and forestry agency. This is beyond the cost of a hangover thug. The biggest is the police. The army also plays but not as big as the police"* (interview with Nardi, a sawmil businessman).

Cocoa Planting Program

Cocoa is a leading plantation commodity in Jayapura Regency. According to 2017 BPS data, total cocoa production in Jayapura reached 1,892.59 tons. The greatest potential for cocoa cultivation is in the Genyem region in the Grime Valley. The area is in the Nimbokrang, Nimboran, Nambluong and surrounding sub-districts. At present, there are around 2,036.73 hectares of cocoa plantation area spread across three study locations (BPS 2018).

History of the initial entry of cocoa plants began in 1950 by the Dutch government, even a survey was carried out in the 1930s. At that time the cocoa planting program was stopped due to the political situation that was heating up in Papua from 1950 to 1970. After that the cocoa planting program was resumed by the Indonesian government. In the early 1970s, cocoa production was massive until it touched the export market. However, the current condition of some cocoa planting locations, such as in Kampung Ombrob, Yenggu Baru, and Nimbokrang are no longer productive because the trees are attacked by pests and the age of the trees is no longer productive.

Looking for factors causing deforestation, from data analysis it was found that the cocoa planting program also contributed to the reduction of forest cover around the study site. Apart from the community's own will to plant cocoa, in 2006 the District Head's Decree No. 1 of 2006 concerning the Compulsory Movement for Cocoa Planting. In general, cocoa is planted around forest areas.

Interaction with Outside Community

Figure 65 Cocoa garden at the edge of the forest (left); a rotten cocoa fruit (right)

It is undeniable that the presence of outsiders or migrants exerts influence on indigenous Papuans around the Grime Valley. Changes in the pattern of earning a living have occurred in previously subsistence Papuan local communities, now beginning to lead to a commodity approach. The community around the study site currently needs cash. They use the cash to fulfill needs they cannot produce themselves such as school fees, electricity, kerosene and other needs.

Associated with forests, the use of timber forest products by the community today is no longer just to meet the needs of building materials, but has become a commodity. Local people began to know that wood has a high value for money after the entry of timber entrepreneurs who offered money to the community to mortgage their forests.

Many phenomena of Papuans pawning their forests to loggers just to get money. It was found mostly around the study area. Tens may even be hundreds of hectares of forest lost to be cut down by forest scrapers with the approval of the local community.

The potential for agrarian conflicts in Papua, especially in indigenous territories, is possible due to various new policies from the government which seem to be forced without considering various specific aspects at the location where the new policies will be implemented. For example, the land certification program is a small part of the Agrarian Reform and Social Forestry (RAPS) policy. Land certification, in the context of Papua, would be dangerous if it targeted individuals. Because, it has the potential to divide the indigenous communities into individuals.

In Ombrob Village, Nimboran District, it was found that there were potential horizontal conflicts between clans that escaped the attention of the national government when the government carried out land certification. The certification is carried out without deepening the local conditions. The issue of the status of land ownership and land tenure in Papua is not as simple as conditions in other places such as Java, which so far has often been a policy reference. Papuans already have a mechanism for regulating territory that is passed on through tradition. For example, the vast expanse of land / forest controlled by a particular tribe means that the tribe has the basic rights to the area. However, because the clan population is not too large when compared to the extent of territorial control, in some cases, tribal ancestors who have basic rights give us use rights to other clans and their descendants to be used. This was done with the agreement that the basic rights remained with the first tribe.

How can the potential for horizontal conflict be possible? As is the case in Ombrob, Bae clan, who is fighting for the division of villages and is struggling for certification of the land that they inhabit, has now received a certificate, but the status of the land that has been certified is still disputed by Wouw clan (the large clan in Ombrob). According Wouw clan, the land that has been certified by Bae clan is land owned by Wouw clan. The basic rights according to custom are with the Wouw clan while the Bae clan is only entitled to use. That is, the land is actually not worthy of being certified in the name of Bae clan.

The government certification program seems to be forced and pursue mere targets without any prior effort to understand how the existing tenure system in the village. Whereas the state understands that everywhere in Papua every indigenous community has certain uniqueness related to its tenure system, this uniqueness makes the government give special privileges in the form of special autonomy. If cases like this continue to be left by the state, it is likely that horizontal conflicts will explode. This has been exacerbated by existing and unquenched historical problems in Papua. The land certification policy may not be the solution needed by

the Ombrob indigenous people if they pay attention to the uniqueness of the tenure system. Naomi, director of the *Perkumpulan Terbatas untuk Pengkajian dan Pemberdayaan Masyarakat Adat* (PTPPMA or Limited Society for the Study and Empowerment of Indigenous Peoples) in an interview also doubted the certification policy. According to him, the recognition scheme might be more relevant because it would protect indigenous peoples.

Land certification in its various practices in the field is still a debate among academics and practitioners who work on agrarian issues. The debate was pursed in two ways, the first opinion was that certification would provide security for tenure of small communities from the possibility of seizure by big capital. While other opinions see it critically, they believe that the land certification program actually facilitates small communities regardless of sovereignty over their land. A piece of land certificate called a certificate in formal law in Indonesia, has an exchange rate guaranteed by the state. When the exchange value of the certificate which bears the value of the land is actualized by the owner, at that time the land has been commodified or become a commodity and loses other values, such as spiritual values, identity, kinship, history, culture and so on.

In the land market mechanism where land becomes a commodity, all values contained by the land have been destroyed except the exchange value. If it enters into this mechanism, indigenous peoples will lose relations with their land. Communities will easily relinquish land outside customary interests. Not only does the degradation of custom values suffer, but it also does not bring material benefits. An example of a case in Ombrob will explain the potential loss that may be suffered by indigenous peoples in relation to the relationship between the land certification program and the imbalance of indigenous Papuan knowledge.

Knowledge related to banking mechanisms is a new thing for some people in Ombrob village. This fragment of knowledge is also a new problem if it is linked to the possibility of making land as collateral for the loan of money or capital to the bank. There are assumptions that are developing among Papuans regarding land certificates that are pledged to banks. In an interview with one of the *iram* (indigenous leader) Waisimon, he considered that the certificate pledged to the Bank for the loan of money had nothing to do directly with the land contained in the certificate. In a sense, if you borrow money from a bank and cannot return the money to the bank, then what will be confiscated by the bank is a certificate, not land, and the land will still be theirs or customs.

This problem of knowledge might be a problem for most Papuans, if we are allowed to build the assumption that *iram* has problems in understanding collateral. If this is the case then what about other members of the indigenous community whose access to knowledge is more limited than the leader. From this case, it is clear that issues of knowledge and information related programs, banking mechanisms, and

legality are still problems that have not been resolved in Papua. Despite the fact, development programs that are not understandable by Papuans are remained forced. As a result of this knowledge and information gap, Papuans living in the villages have great potential to become victims. The slogan that states that native Papuan is the subject of development can be seen as a hoax. In fact, native Papuan is often the object of fraud in the process of promoting national development in eastern Indonesia. Encourage the improvement of the community's economy by providing certificates with the easy aim of getting loans from banks. On the other hand, it can plunge if people who borrow funds from banks are unable to repay debts. They will lose their land if they fail to pay credit.

Potential conflicts that are part of the agrarian problem are being strengthened at the research location, precisely in Nimbokrang I, Nimbokrang sub-district, between native Papuan and transmigrants. This conflict has a long historical root, since the transmigration program was implemented by the New Order Government in the 1980s. Many native Papuans explain that in the past their land was taken by the military force with the threat of a muzzle of weapons. There was no release of land in a good way, especially by involving the customary system that was in force at the time. At that time, they were forced to surrender their land to become a new settlement area for transmigrants. During the New Order era, the conflict was not very visible, but that did not mean they had forgotten how their land was seized.

The political situation had changed, the New Order collapsed in 1998. Since then Papuans have begun to express their political aspirations and various demands for injustice that they felt during the New Order government. One of their achievements was that the Indonesian government gave Papua special autonomy. In special autonomy, the state guarantees one of them related to the customary rights of the native Papuans. This customary right then becomes the basis for them to reclaim their land which was seized by the New Order, which is currently occupied by transmigrants for three generations. Three generations of transmigrants have built their social, cultural and life systems in the region. On the other hand, most of them have also been uprooted from their ancestral homeland (first generation).

Where this problem will end, it is difficult to see this problem with a simple perspective, both from the perspective of the native Papuans or from the perspective of the transmigrants. Papuans are not wrong with the argument that the traditional land that was seized with a muzzle of weapons is worth fighting for, as are transmigrants who are fighting for their lives as humans and their rights as civil society. The state must be present in this matter because the problem also came from the state in the New Order era. If this is not resolved soon, the conflict will become worse and potentially become a bloody conflict.

In a number of testimonies obtained in the field, in Arso, a transmigrant area often

causes physical violence, kills between transmigrants and native Papuans. Transmigrants, although as migrants, no longer feel any fear of threats from Papuans. They have even prepared themselves if physical contact is needed at any time, as well as native Papuan who still feel that they are masters of the land inhabited by transmigrants, feel their self-esteem is being held by migrants. If we review some of the bloody social conflicts that have occurred, conflicts often break out because both parties feel they have a balanced force, both feel it is important to maintain self-esteem, maintain identity. We can see the population of migrants in Papua especially Jayapura is increasing. At present they make up about a third of the population, with a centralized settlement pattern. All potential conflicts are large enough to be an alarm for the state to immediately act to overcome injustices that occur in Papua especially Jayapura. Because, if no immediate action is taken, horizontal conflict is always waiting for momentum or waiting for a game of political interest to trigger it.

4.3.3 The Potential of Oil Palm Threat

Not yet finished illegal logging, the forests around the Grime Valley will get more pressure from the planned oil palm plantation concessions. There are about four oil palm plantation companies that have stuck their nails in the Grime Valley and surrounding areas. The four companies are PT Kopermas Tangtey, PT Permata Nusa Mandiri, PT Rimba Matoa Lestari, and PT Lembah Grime Plantations. Current conditions, these companies are still in the process of licensing.

The oil palm plantation industry plan in the three study location districts covers a concession area of 10,831.28 hectares. The most extensive concession area is in the Nimbokrang District, which is 5,910.51 hectares, then Demta District with a concession area of 3,928.73 hectares. And the smallest one is in the Nimboran District which is 992.05 hectares. (Table 24)

Table 24 List of Oil Palm Plantations in 3 Study Location Districts

Sub-district	Company			
	PT Kopermas Tangtey (hectares)	**PT Lembah Grime Plantations (hectares)**	**PT Permata Nusa Mandiri (hectares)**	**PT Rimba Matoa Lestari (hectares)**
Demta		1,356.63		2,572.10
Nimbokrang	3,304.04		2,606.47	
Nimboran	9,92.05			

Source: FWI, 2019 overlayed permits with administrative areas

With this total area, the oil palm plantation industry will eliminate a quarter of the forest area in the three study sites. The results of the analysis of forest cover on the concession land, about 60% or 6406.17 hectares of the total area of the concession in the three districts of the study location are still in the form of natural forest. According to the function of the forest area, around 99% or about 10,698.10

hectares of the four companies' concession lands are in other utilization areas (APL) and the remaining approximately 133.18 hectares are in the Production Convertion Forest (HPK) area.

The oil palm plantation development plan will be potentially damaging the ecology of the forest as an ecosystem. The loss of forest cover will affect the lost of water sources. Then, it will eliminate the habitat of the animals that live in it. Even worse, the destruction of forests for Papuans, especially around the concession area, will eliminate their living space and livelihoods. Current conditions, the plantation industry plan is also unknown by the local community. The community has never received information or outreach about the oil palm plantation plan.

Figure 66 The map of concession of oil palm plantation companies

4.3.4 Side Effect of Ecotourism

Looking objectively, ecotourism has brought good things to the Village of Rhepang Muaif, such as increasing the diversity of native Papuans's livelihood strategies, opening access to the development of the economic potential of the community and helping them interact with the outside world without losing its identity.

However, it is undeniable that the positive impacts are also followed by negative impacts, which unfortunately are only borne by certain parties. In the case of ecotourism development, the negative impact was experienced by Fery Wauw, the owner of the basic rights of the area which was developed into a bird watching hill.

After the area became ecotourism area, Fery Wauw seemed to no longer have the right to access his own territory, because all access to hunting, farming and cutting down trees for development had been tabooed by the ecotourism development system developed by Alex Waisimon. The system that actually has a good purpose to reproduce the trees in the forest so that it returns to become a rainforest ecosystem that has high biodiversity. For this reason, the source of livelihood for Fery Wauw is limited. Without being able to access his territory, Fery Wauw currently can only depend on its small cattle farm. Ironically, when the land and all of its natural resources that are his right are in the plain sight, Fery Wauw just have not reached it

4.3.5 Fulfillment of "Ecotourism" Readiness and Conditions

Different case with Rhepang Muaif, another case happened in Ombrob village. The construction of an inn on a small hill in Ombrob village was not yet completed and the debate at the village meeting at night indicates one thing, that there are problems that have not yet been resolved. Based on the results of the analysis, the problem arises from the "insecurity" that attacks the village community which originated from the community's limited access to forests.

Ecotourism has forced the villagers to adjust to the new model of production, which is farming with a "no rolling" system and raising livestock. This means, the community must stop their hunting habits. In fact, hunting production activities have not only become a pattern of living, but also culture for the people in Ombrob Village. Villagers never hunt for the purpose of exploitation or pleasure alone, but truly based on need.

This situation is compounded by differences in the work ethic of Papuans and Javanese for example. So far, native Papuans have been spoiled by nature's abundant wealth, and subsistence life. As a result, Papuans are not accustomed to working every day, with certain hours of work, and certain targets. They live with the slogan "enough". When they have had enough, they will do many things besides production activities, such as socializing with neighbors.

Because of these conditions, the target of completing the construction of an inn in Ombrob village faces multiple challenges. Ecotourism should come with a system that accommodates local culture, and not then uprooting them from the culture they have been developing. If a rapid cultural transformation is needed in the process of developing ecotourism, the success of ecotourism will sacrifice many things.

4.3.6 The Impacts of Information Gap of Native Papuans

Information Closure of the Variety of Licences

Indigenous and local communities in any region in Indonesia, have one problem in common, which is the difficulty of accessing information regarding the presence of extractive industries in their areas. This is what makes possible tenure conflicts, both between communities and companies, and between communities and the government. Communities, in this case native Papuans, face multiple challenges to access information.

Unlike in other regions in Indonesia where the internet is already common and easy to obtain, native Papuans do not have that luxury. Signals are difficult to obtain, while internet access is almost impossible to find in the villages. Lack of access, coupled with a lack of knowledge makes it impossible for them in villages in Papua to obtain information about what and who is destroying and exploiting their natural resources. The absence of adequate information is an advantage for extractive industries to exploit natural resources without consent and observation from the people of Papua.

Loss of Local Knowledge & Ecological Conservation

Efforts to equalize education in Papua, without understanding how Papuan characters and identities have the potential to eliminate local knowledge. For example, the education literature in Papua does not include subjects and objects that exist in Papua and are commonly encountered by the native people. Instead, people are asked to understand objects or subjects that are far from their imagination, such as the necessity to learn things that are happening in Java, which are beyond their reach.

Knowledge about endemic and/or endangered animals is also lost with the national education system. While the potential for non-timber forest products is also not taught in schools. And parents feel no need to teach this, because sending their children to school means making the child have a different future from his parents. In other words, the lives of future generations are no longer related to natural resources or agrarian sources that exist in the natural world around them.

Loss of Food Source and Food Crisis

Rice subsidies in several villages in Nimboran keep the local people away from their local food sources, and make them dependent on food that they cannot even produce themselves. The staple food for Papuan is sago which they produce themselves. Now, the local food is threatened to be disappeared along with the procedures and work systems for its processing.

Changing people's food patterns does not only change that, but it also changes production patterns, changes culture, and changes the way native Papuan socializes with one another. Moreover, it will be also be followed by changes in food patterns of side dishes. If the *lilin* vegetable is suitable to be eaten with papeda, then if it is not suitable to be eaten with rice, it will be sought instead in the form of for example spinach and other vegetables.

At present, the third generation of the people in Ombrob village are no longer fond of eating papeda, because they prefer to eat rice, of course accompanied by side dishes that match rice.

4.4 An Over View: Findings of Problems in Other Areas of Papua

Aside from deepening studies in the three locations of Sorong, Aru and Jayapura as the main baseline, this study also conducted general assessments, which are in Nabire, Merauke, and Boven Digoel. The following are some of the main findings.

4.4.1 Nabire

Nabire district has a particularly complex environmental problem with the massive types of investment coming in this area ranging from logging concessions, large-scale plantations and mining. The arrival of this investment has a major impact on the condition of indigenous landowners and on the extent of natural forest cover. Cases of land grabbing, pollution to the destruction of natural forests are constantly being heard. Destruction that occurs in these natural forests has a major impact on the ecology and life of indigenous peoples as owners of areas whose lives depend on the forest itself.

The history of investment in Nabire and Jayapura began with the entry of various HPH licenses in the natural forests in those regions. Merbau is one type of wood that is hunted because the price is quite expensive on the market.

After HPH, oil palm permits come in areas that were previously given to HPH, and some others in natural forests that have not yet been licensed.. Almost all oil palm licenses in Nabire have problems with the community who own the area. One example that is happening right now is PT Nabire Baru with the Yerisiam people.

In addition to oil palm, a fairly large small-scale gold mining enters into community areas. This activity is suspected to not have official permission from the government. What is even more worrying is the lack of control over the use of mercury in these mines. In addition, there are many foreign workers who work at these mines.

Institutional Portrait and Main Issues in Nabire

From observations in Nabire, there were no civil society organizations (CSOs) that deal specifically with indigenous and environmental issues. Handling various

problems that occur is usually done by CSOs in Jayapura, Manokwari or Jakarta. The range of control and support that is too far away is one obstacle to quickly respond to various cases that occur in Nabire.

There are several institutions that are currently actively working in Nabire that work specifically on issues of food, health, and assistance to children. Some of these institutions include Primari, Trapesia, Love Papua, and Kompak.

Other institutions in Jakarta currently active in Nabire include Pusaka, Greenpeace, Walhi, FPP, Elsham. Most of them are concentrated in one region as is the case between the Yerisiam tribe and PT Nabire Baru. This region is a concentration of CSO work from Jayapura, Manokwari and Jakarta such as Walhi, Greenpeace, CRU, Pusaka, Elsham and FPP. Other problematic areas in Nabire, such as the Wate Tribe, which are facing HPH permits, PT Jati Darma Indah, illegal mining, exploration permit PT Pacific Mining Jaya and massive illegal logging targeting Merbau wood did not get the attention of CSOs.

Local CSOs such as Trapesia and Primari focus their work on public health issues, especially malaria and HIV/AIDS. It is generally recognized that there is a link between investment inflows and the spread of disease but no in-depth study has been carried out for this. One obstacle is that in these two CSOs, human resources who understand environmental issues are lacking so that work related to the environment cannot be done.

In addition to CSOs, other institutions that focus on issues related to indigenous peoples and the environment in Nabire are from the indonesian Christian Church (GKI) Klasis Nabire. The church is felt to have influence and strength in assisting and voicing various problems that occur so that church involvement is needed. Until now, the church's attitude and response to problems that occur is quite good with the existence of a division, namely JPIC (Justice of Peace and Integrity of Creation) which is tasked with assisting legal cases faced by the people. The JPIC Division in Nabire is temporarily focusing its work on monitoring and strengthening the community in Yerisiam regarding land issues and violations of rights by companies. In addition, within the GKI organization, the policies made are adjusted to the current condition of the community such as the themes of weekly sermons that raise cases that occur up to the recommendations taken at the Synod hearing on issues of the people and the environment. The current challenges facing the Church in Nabire are cases of human rights violations and separatist labels against people and institutions that have a lot to say about human rights in Papua so that as an independent organization, the Church must be observant in seeing the situation and conditions to address these problems.

Some things that become challenges in work related to environmental issues in Nabire are the lack of human resources in CSOs in Nabire. In addition, there is also

the role of military personnel in supporting and backing illegal activities so that there is a high risk of monitoring these areas. The separatist stamp is often used to divert the issue or with the aim of legalizing repressive attitudes from the military to the community or institutions that voice human rights and environmental issues, as well as the issue of involvement of customary institutions that support investment in forest destruction and others.

Forest Condition in Nabire

In general, the condition of forests in Nabire has experienced considerable pressure since the entry of extractive investments in this place. Oil palm plantations are one of the causes of forest clearing in large numbers. In Yerisiam alone, 37,000 hectares of community land, part of which is natural forest, was cleared for PT Nabire Baru. In the eastern part of Nabire, 28,817 hectares were released for PT Sawit Makmur Abadi. In addition, HPH operations have been carried out here for a long time since the 2000s. At present the HPH company which is still operating, PT. Jati Darma Indah (JDI) which produces log wood. Currently, PT JDI operates in the Wate Tribe area. In the Wate tribe area, in addition to HPHs, there is a massive gold mining. The activity is carried out at a location that has a forest area status. In addition, the use of chemicals such as mercury in gold extraction is not well controlled so that environmental pollution can occur, especially rivers which can then have an impact on people's life.

Figure 67 Palm oil plantation of PT Nabire Baru in indigenous territory of Yerisiam Gua clan in Nabire

Forest destruction in Nabire occurs not only due to incoming extractive investments. National programs such as the Trans Papua construction road connecting Wasur and Nabire become a means to accelerate the over-exploitation of timber forest products. Along the Wasur-Nabire road, it will be very easy to find merbau piles which are cut down and then collected close to the road lane so that they can be easily transported to Nabire. People often call it with wooden pads measuring 10 cm x 16 cm, 16 cm x 16 cm or 20 cm x 20 cm. these bearing logs are then transported to the sawmill which is around the Nabire city. According to

information from one resident in the Waturore sub-district of Yaur, since the opening of the Trans Papua road, the wood coming from the direction of Wasur to Nabire can reach 20 to 30 trucks a day.

Figure 68 Merbau woodpile in Nabire – Wasur road

From the field observations made around the Yaro sub-district to Yaur, there are several points of Merbau wood stacking place that has been shaped as a block / wood bearing with sizes ranging from 16 cm x 16 cm to 20 cm x 20 cm. This pile is right on the side of the highway as it passes from Yaur to Nabire. In some locations there are small tents where the chainsaw operators live, the majority of which are migrants. The mode used is similar to that which occurs in various places in Papua. The entrepreneurs buy from the community who have customary rights and then bring in chainsaw operators and loggers. After that the logs produced in the form of blocks are transported to the sawmill. One cubic of merbau is only valued at IDR 300,000 to IDR 500,000, and will be paid after the last sorting process at the sawmill.

Figure 69 Map of Merbau Stacking Locations in sub-district of Yaur - Yaro, Nabire

From field observations, there are approximately 12 points of merbau wood stacking place on the left and right side of the highway. Most of the points (nine

points) of all points are in Other Utilization Areas (APL) while the three points are in the Production Forest area. The number of observation points is the result of observation for two days. There may be more than 12 points of wood stacking place if observations are made over a long period of time. Thus, it can also be seen the amount of wood coming out of the forests along the Wasur - Nabire road.

About 15 Km from Nabire City, there is a log pond of PT JDI that is quite close to the newly built Nabire Airport. There are two guard posts at this company that are guarded by Brimob (Mobile Brigade) which is near the highway (at the point where the company's road meets the highway) and at the log pond entrance. Community access is very limited in this area, including when they want to enter a heavily guarded log pond and cross guard posts.

Figure 70 Pos of Mobile Brigade in the area of PT Jati Darma Indah and logpond PT Jati Darma Indah

4.4.2 Merauke and Boven Digoel

General Condition

Massive investment conditions in Papua are mostly found in Merauke Regency in the food and energy industrialization scheme. The MIFEE project is a form of investment which has an impact on Papuan ecology and the people, especially Marind and Anim people as indigenous communities of Merauke. The MIFEE project as a form of government policy in the President Susilo Bambang Yudhoyono era continues to the current administration in the form of an expansion of rice fields reaching 1.2 million hectares in the Kurik sub-district, Merauke. The area of land allocated to achieve these targets is very ambitious. Meanwhile, in the field many things become a problem when they want to answer the plan. One of the problems caused is that part of the allocated land is natural forest which is then converted to paddy field to realize the target.

Not only in Merauke district, in Boven Digoel district also the same thing is happening. Unequal tenure between indigenous people and investors causes an

imbalance in the mastery of production equipment. Oil palm plantations of large groups control hundreds of thousands of hectares of land in the Boven Digoel-Merauke district border area. Bupol, Muting and Asiki became areas known to the community because they were oil palm plantations in these two districts with various problems occurring.

In general, the condition of the forests in the southern region (Merauke and Boven Digoel in the south) has changed its function both for the construction of roads, infrastructure, printing rice fields and large-scale oil palm plantations. Forest conditions that are still quite good are in the northern part of Boven Digoel as in the areas of the Kombay and Koroway tribes and peat forests in the Mappi area. However, the condition of the forests that are still maintained in some parts of the area was once a concession for logging companies.

At present, the condition of natural forest destruction has begun to occur in the Koroway area when illegal gold mining activities began to massively enter the area, especially in areas along the river.

Institutional Condition and Main Issues

Merauke, in general, there are only a few institutions that are focus on environmental issues and indigenous peoples. The institutions that work actively in Merauke are WWF, the Silva Papua Lestari Association and SKP KAMe. In addition, there is also the Pusaka Foundation as an outside agency that is quite consistent working at the level of the site of the people of Merauke, especially on investment issues and the rights of indigenous peoples.

In the current condition, several things have become the priority work of institutions in Merauke, for example for policy advocacy (Regional Regulation on Indigenous Peoples, KLHS (strategic environmental assessment), RTRW (spatial planning), etc.), campaigning and mentoring at the site level for the community. The focus of the work area also includes Merauke and several surrounding districts.

Temporary policy advocacy was carried out by WWF Merauke specifically for the preparation of strategic environmental assesment and spatial planning in Merauke, Boven Digoel and Mappi districts. This is done because according to them the allocation of space for conservation and community is very small when compared to the allocation of space for actual cultivation as an entry point for natural resource-based investment. At Boven Digoel, WWF in collaboration with USAID in the Lestari program participated in the preparation of the SEA for district spacial plannings that were expected to allocate space for conservation and indigenous peoples. One of the things identified in the Lestari program is the identification of sacred areas according to adat in the villages. The same thing was done also in the Lestari project in Mappi Regency.

Indigenous people has become an important issue that needs to be supported by all parties. Until now, there has not been a single regulation in the districts of Merauke, Boven Digoel and Mappi that regulates the recognition and protection of indigenous peoples. One of the Silva Papua Lestari association working in the southern region of Papua, one of which is in the Boven Digoel district, it has been encouraging local regulations on indigenous peoples since 2016. One reason is about how massive the taking of customary lands belonging to the community by investment in the name of development while the indigenous people themselves as landowners are not legally given the opportunity to maintain and even negotiate fairly with investors who come. In addition, the condition of the forests in the southern part of Boven Digoel especially those bordering the Merauke district has been used up for oil palm plantations.

In the districts of Mappi, Asmat, Yahukimo, PSPL is conducting anthropological research in preparation to encourage the existence of local regulations on indigenous peoples in these districts. PSPL also temporarily promoted the existence of customary forests in the districts that were assisted. Eventhough, the concept of customary forest itself is still much debated, especially about the recognized areas and management models that can later be done. PSPL is one of the institutions that support customary forests.

SKP KAMe together with Pusaka provide assistance to communities affected by oil palm plantations, one of which is in the Elikobel district. In addition, participatory mapping was also carried out as part of the plan to propose customary villages.

Forest Portrait in the Southern Papua

From the CSOs and environmental activists in Merauke, it was known that news about MIFEE is no longer heard. Even so, investment activities that entered through the MIFEE program are still ongoing. The last activity carried out was the planned opening of 1.2 million hectares of paddy fields in the Kurik sub-district, Merauke. Some commodities which in the original MIFEE plan to be developed were in fact unsuccessful such as corn and sorghum. There is also information about development plan of paddy field of 350,000 hectares in Kurik sub-district by Medco Group.

In general, large areas of natural forest in the southern part of Papua have been cleared for oil palm plantations starting from Merauke (Bupul and Muting) and some of them in Boven Digoel (Asiki and surrounding areas). These natural forests have been damaged since decades ago when logging concessions were later replaced by oil palm plantation permits.

Forests that are still quite good are in the northern part of Boven Digoel such as the Kombai and Korowai areas. This is because in that region there are no companies operating / licensed.

Village of Uni, Bomakia sub-district became the area visited to see the condition of the forest and the people there. Uni village is part of the Kombai tribe which occupies the northern part of the Boven Digoel district. This village is also the assisted area of Silva Papua Lestari. A sago caterpillar party was done. This momentum then became a medium for bringing together indigenous peoples and the government. There are several things that are delivered by the community, including accelerating the recognition of customary forests and rejecting all kinds of investments that damage forests and indigenous territories.

The Kombai area had actually been entered by a logging company around the 1980s until the 1990s. There are two logging companies that have operated in this area, namely PT. Cenderawasih who picks up wood from the type of *ketapang* (beach almond) which grows only around the river. The wood is said to be made plywood even though there is no definitive information where the wood is taken. The compensation process from the company to timber owners is only in the form of a frying pan, ax or food such as rice for several trees in a certain diameter. The wood is cut down using an ax and then washed away through the river after it is accommodated around Boma village then it will be loaded with a large ship coming out of Bomakia. This activity was running for only about 3 years

In the southern part of Boven Digoel (northern part of Merauke), natural forests have been cleared to become large-scale oil palm plantations. The Bupul, Muting and Asiki regions are areas controlled by oil palm plantations from large groups of oil palm entrepreneurs in Indonesia such as Korindo.

Figure 71 Oil palm plantation of Korindo Group in Merauke

The area visited was Bupul village in the Elikobel District. This village is directly adjacent to the concession of PT Agrinusa Persada Mulia (PT APM) and Bupul Wildlife Reserve. PT APM started to open land since 2012 for land that has been compensated to the landowner's clan. According to the residents in the area that was cleared, there used to be a hunting ground, a sago hamlet and some sacred places and there was also a river flowing into the community settlement area.

According to information, the area cleared was a forest that had never been entered by a HPH company and only a small portion was used as a community garden. Those were really still primary forest.

Figure 72 Forest cover condition around Uni village as seen from the air

At the time of land clearing in 2012, wood from the clearing of fields or forests (land clearing) was only piled up on the edges between oil palm lanes and left to rot just like that without ever being used by the company. The reason people know is that there is no permit for timber management by the company.

After land clearing in 2012, there were no more activities to expand the company's area until around September 2017, the company again cleared forests in the northern part of the village of Bupul. These lands are also still good natural forests because the size of the harvested timber is quite in large quantities. Not long after, about three months after clearing the forest, the company then began to plant oil palm in the cleared area. From the land clearing, there are also piles of wood with a length of ± 4 meters) which are numbered on the base of the wood. It is not known exactly what the wood will be used for, whether it will be used in a company, stacked and then buried or taken out.

Figure 73 Wood stumps and debris from land clearing activity

From the field observation, it was also found that there were areas opened by the company that were actually outside the concession area. Forest clearing was carried out in 2017 and all of them have been planted with oil palm which is likely to be around six months old. The community also never knew whether the area was a concession area or not. This makes it difficult to control the company's activities. It is possible that the area cleared outside the concession area is around 400 hectares and immediately borders with community-owned plantations which are quite close to settlements.

The area outside the concession area is owned by the Wonijai clan who live in Bupul village. There are indications that the land clearing is not based on the clan land included in the concession area but based on the clan land that has been compensated. In addition, in one location within the concession area belonging to the Kamijai clan, the company had cleared land in 2017. In fact, according to the Kamijai Clan, the location was never given to the company. The land clearing process is carried out without the knowledge of the clan and the location has been planned to be planted with oil palm by the company. In order to prevent the company's activities on the land, the Kamijai clan conducts a blockade on their land.

The environmental impact that has been felt by the Bupul community is that river water becomes turbid. It happens when the forest cleared for oil palm plantations. Some people begin to stop consuming fish from the rivers that flow from the plantations. They are afraid of fertilizer and pesticide waste being dumped and entering the river.

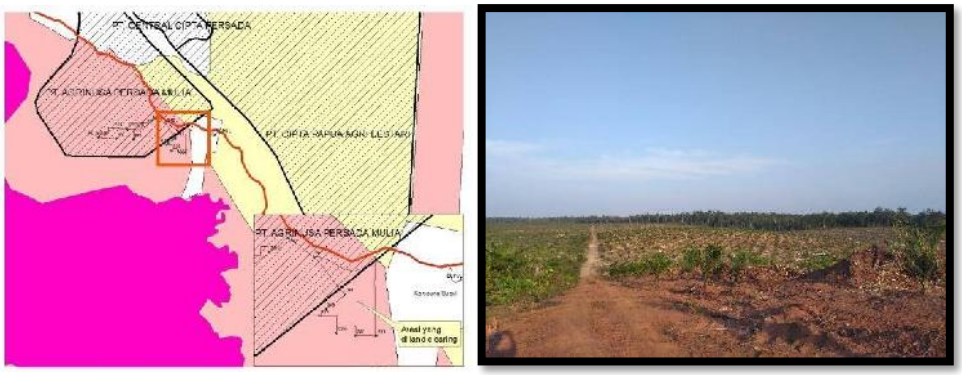


Figure 74 Forest and garden boundary and openned area outside the concession

4.5 Local Initiative of the Community in 3 Research Sites

In addition to the map of problems faced by the community, this study also wants to show a variety of local initiatives from the community. Initiatives from the community were carried out in order to respond, fight and restore their living

space ecosystems that damaged by the entry of expansion of oil palm plantations, land grabbing, sugar cane plantations, illegal logging, and other extractive industries. In addition to strengthening traditional systems and traditions, encouraging the recognition of indigenous territories through participatory mapping, raising awareness of saving forests at the clan level, various types of education, schools and cadre training. What is also interesting is the emergence of local ecotourism initiatives and the development of skills to equip community knowledge that can make their economy independent in the long run, in addition to being dependent on the forest and the natural surroundings. Although this is not a simple and easy thing to do.

4.5.1 Initiative of Community in Sorong

The emergence of local initiatives was born from the learning of the situation that had happened and is happening. The initiative means the emergence of awareness within indigenous peoples themselves to face all challenges now and in the future. If we want to draw it chronologically in time, the emergence of tenure issues has occurred since the Dutch colonial period.

In the 1920s, the Dutch colonial government formed a village in the Sorong City area. In the 1930s, the Dutch oil company Nederlands Nieuw-Guinea Petroleum Maatschappij (NNGPM) pioneered the drilling business in the Klamono area. The company gives "merit" to the customary owner in the form of 50 kilograms of rice and a German Mouser weapon. When NNGPM was taken over by Pertamina, then the clan of the customary owner demanded that land tenure be returned. Meanwhile, Pertamina is of the view that the "service fee" that was previously carried out by NNGPM is a relinquishment of ownership. The issue is still continuing and the customary owners are fighting for their rights (Isman, 2012: 100). In the 1970s, the government implemented a transmigration and agriculture program around the cities of Sorong and Aimas. In the 1990s, forest exploitation (HPH) by PT Intimpura moved to the southeast of Sorong City. In the 2000s continued the entry of oil palm companies. In the 2010s, the movements of Non-Governmental Organizations (NGOs) began to enter Malalilis Village.

Records of the presence of logging companies in the 1990s indicated that indigenous peoples have always been the ones who were disadvantaged. That is, those affected are those who are in it. They do not know the extent of their customary land and do not know what resources were in it. As a result, they got a replacement at a very low price. For example, as happened with Su clan who owns customary land in the Klayili area. When PT Intimpura entered in the 1990s, Su clan only received IDR 5 million for an unknown number of merbau trees. Protest efforts have been made to limit PT Intimpura's movements to result in Su's family members entering the jail. After the operation of PT Intimpura, the palm oil company PT HIP continued in the 2000s. The release of the customary right of Gilik

Klasafet clan covering an area of 420 hectares with a fee of IDR 8.5 million and a betel nut money of IDR 4 million. In the agreement to release the communal land with PT HIP, there was no information on how long the land was contracted, and the ownership status was not clear.

In the 2010s, several NGOs carried out activities to work to strengthen the rights of indigenous peoples through participatory mapping. The NGO's activities did not necessarily run smoothly. There is a suspicion that the participatory mapping will eventually harm the customary owner, as revealed by Oktovianus Ulala who tries to convince the public,

> *"These NGOs, they didn't come to take our wealth. They are on our side, helping us. Let us be in the front and them in the back. They can help us. They are also family anyway."*

Such situations made some indigenous people aware of the importance of participatory mapping. Evidence of ownership based on custom alone is not strong enough if it has to deal with a state that uses written law. It is not strong enough if you have to deal with the company that always plays a cunning strategy and good at playing words. They need the clarity of the clan customary maps that get recognition and guarantees from the state.

They need clarity of knowledge of the extent and what is on their customary land. Some indigenous peoples reflect on the problems that occurred in the past and are happening now. They try to anticipate problems in the future if there is a development program or a company that will enter the indigenous territory. Do not let the problem only appear when the company has entered and later will fight. However, without formal legal recognition of indigenous clan maps, they will surely suffer losses which will also be borne by their children and grandchildren later.

As far as field findings can be collected, local initiatives from indigenous peoples include awareness to undertake participatory mapping, awareness to revive traditional schools (*kambik*), awareness to conduct custom of *sasi* on customary land to maintain ecological balance, and awareness to expand knowledge by establishing a reading house. Some of these local initiatives have indeed grown from within indigenous peoples themselves for a better life in the future.

Initiative to Do Participatory Mapping

Discussion about customary land is sensitive and sacred, especially to outsiders who are not yet known. However, the situation does require to maintain customary land through a map. A resident of Malalilis village named Oktovianus Ulala has a strong initiative to participate in participatory mapping. At first, Okto followed and studied NGO activities in the village. Gradually he began to understand and realized how important it was to create a clan map to deal with problems that would occur in the future. Okto has also discussed it with other

members of the Ulala clan about the importance of making maps for the future of the next generation.

The results of an interview with Okto show that the retention of customary land from the entry of investments had been carried out by the elders of the Ulala clan. They realize that the natural resources in their customary land cannot be replaced by mere nominal money. Whatever the amount of material wealth, sooner or later it will definitely run out. Meanwhile, the natural resources in the customary land have supported the Ulala clan from generation to generation and still exist today.

How Ulala Clan Survives the Investment Attacks

In the 1990s, Ulala clan's land in the Sayosa area was about to be entered by a timber processing company which is PT Intimpura. At that time the clan customary elders were invited to meet with the company at the PT Intimpura office. The father of Oktovianus Ulala, named Edward Ulala, became the elder of the Ulala clan who met PT Intimpura at his office. The company tried to seduce Edward in all sorts of ways and even put 200 million rupiah on the table. "Sir, we want to be given just a little gap, I will give you 200 million," said person of PT Intimpura.

Edward, who never received formal education and was illiterate, then tried to survive, "*You have money, but I have the land, you have money 200 million rupiahs, nothing, that money is enough for you. I have children, three of them, I don't want to receive a single rupiah, then I will have all the wood gone, later in the future what would my children eat?*". Facing the hard defense of Mr. Edward, the company was again seduced*, "Can't you do this a little, later we will give you anything you want".*

Edward tried to find a way to immediately end the meeting. If he stayed in this office too long, this company will persuade him again later. For the sake of ending everything, Edward said, *"You have money, but I am not alone, I have a family, later you have money here first, then I will return just one or two weeks, then I'll tell the family first, meeting with family"*. *"That's what we've been waiting for then,"* the company responded. After Mr. Edward closed the office door, while walking back to the house, in his mind, he said goodbye forever to the company. Until now, the Ulala clan's customary land in Sayosa has never been entered by a company. Before Mr. Edward died, he always advised his children to maintain the Moi culture. Maintaining the natural resources that exist in the Ulala clan's land. It is these natural resources that continue to channel life-giving "milk" from childhood to the end of life. Edward continued to order to keep nature and warned his children not to allow the entry of the company.

Edward's message was so absorbed into the hearts of his children. Especially to Okto, even though he, his wife and children are now living in difficult conditions because they have experienced termination of work, two years ago from PT HIP.

Okto continues to have strong initiatives in maintaining Ulala clan's customary land by participating in participatory mapping. "*Anyway, any NGO, the important thing is I want to make a boundary map,*" Okto said.

Amid the reluctance of other customary landowners, Oktovianus Ulala continued to eagerly volunteer to participate in a participatory mapping. Okto has already discussed this matter with members of the Ulala clan that he wants to take part in participatory mapping. Okto cannot continually invite and make other customary landowners aware of participating in the participatory mapping because it is entirely the owner's right. Okto is worried that if he interferes with the rights of other landowners, it will cause problems. The obstacle that often occurs in the activities of NGOs conducting participatory mapping is that there is no agreement from all clan members.

Initiative to Revive Moi Clan's Education System (*Kambik*)

As explained earlier, the Moi culture does not teach the use of natural resources beyond subsistence needs. Violation of this matter will get the *honge* (customary sanctions) which is very hard. The following is the narrative of Ulimpa Dance,

> *"What steps taken by the customary council in the future to safeguard this, the answer is only one, if we go back to the original rules of the culture, rules that were standard since ancient times, "people who destroy our forests, kill him", if he wants to fight. The problem is if killing in honge, the government says that it is separatist, then goes to prison, those are the examples that appear ".*

With these harsh sanctions, the Moi Tribe predecessors never over-exploited the forest. The entry of Christianity in the early 19th century and the integration of Papua into the Unitary State of the Republic of Indonesia in 1969 had implications for the breakdown of these rules. Religion views that Moi culture is a thing that heretic, primitive and backward. Meanwhile, the Indonesian government views customary practices as separatist movement.

The climactic point occurred in the 1969s with the elimination of the *kambik* and *honge* by the Moi indigenous people themselves through the *sakmesan* activities (traditional peace ceremonies) held in the Makbon area. *Kambik* and *honge* are like two sides of a coin, if one of them is abolished, then the other side is also deleted. Vice versa, if the *kambik* is revived, then *honge* also applies. The elimination of the *honge* rule makes the customary elders of the customary landowners tend to over-exploit the forest because customary sanctions are no longer valid. It is precisely when the period of *kambik* and *honge* is still valid, which is seen as a "period of darkness", at that time the condition of the forest is still maintained and sustainable.

When the researchers asked Silas Kalami as the chairman of the Malamoi LMA, there was still hope ahead for the current forest conditions. "I hope that traditional education will be held soon," Silas answered. The traditional education of the Moi tribe is *kambik*. The revival of the *kambik* will be on the agenda for discussion in the closed *sabalo* (traditional session) which is planned to be held in November 2018 in Kalaben.

From Silas Kalami's explanation, the situation that requires (the urgency level) *kambik* is held again is the rampant sale of wood and land by customary owners. Modern religion is considered unable to provide answers to the challenges of the present age. The traditional elders of the *kambik* graduate as influential customary owners in the clan have actually committed a violation of customs. The pattern that often occurs is starting from the sale of wood which then continues with the sale of customary land. The orientation has changed, from what used to live from nature, and now is living from selling nature.

Those *kambik* graduates are seen as having committed "sins" and need to be purified again. With the reopening of the *kambik*, it is hoped that the traditional life of the Moi tribe can be regained in an orderly manner. The traditional elders who commit violations will be tried in a traditional house. It can even be subject to the most severe punishment, namely "cleaning" carried out by "nature".

On the other hand, Silas Kalami also realized that reviving of the *kambik* would face several obstacles. The different time and era, it is not possible to apply *honge* (traditional sanctions) like the times of the old customary elders. Adjustments are needed to the current situation. Church institutions are also expected not to judge the teachings of the Moi tradition as heresy, and primitive teachings. The government is also expected to not accuse traditional activities in the forest as separatist activities.

Iniative to Apply Customary ‘Sasi’ in the Forest

In Siwis Village, Dance Ulimpa is known as a "hard" person when it comes to environmental sustainability. The condition of the forests on the customary land that he has in the hilly section located east of Siwis village is still sustainable. He took the initiative to impose customary *sasi* on forest areas located in the hills. Considering that the position of the village is in a valley area, if the forests in the hills are damaged it will have a high potential for flood disasters. Especially when the rainy season arrives, the Warsumsum River, located northwest of Siwis village, often overflows.

Customary *sasi* (*egek*) is the customary prohibition to utilize an area that aims to protect it until a certain time limit. Areas that have been seized apply restrictions on hunting animals and taking forest products. To implement this rule, traditional

rituals must first be carried out to close the area. Likewise, rituals will also be held if they want to open an area that has been cleared.

Even though the people of Klaso sub-district managed to defend their land from PT Mega Mustika's oil palm plantation, Dance remained uneasy about the behavior of some of the people who did not love their own nature. The wood in the northwest of Siwis village has been cultivated by its traditional owners. Though in the past the area had been surrendered by traditional elders who had now died. There is no ritual to open *sasi*, but the forest has been used by its owner. Dance Ulimpa as the Head of the Kalaben Customary Council and also as the Head of the Klaso sub-district cannot do much because the right to use the forest is the authority of the customary owner.

Dance realizes, if the practice of forest destruction is still allowed, it will spread to the hills. Therefore, he took the initiative step to decorate the forest in the hills. As well as to increase the authority of the Moi custom by enforcing its rules. No matter the forest in the hills was no longer his customary land, Dance insisted on continuing to attach it. Even now he has been in conflict with the customary landowners in the hills that are not in line with his initiative. He explained, if the forests in the hilly areas were not cased, all the villages in this valley would later drown when the rainy season arrives.

When looking at the position of the forest in Siwis village geographically, its position plays an important role for saving the remaining forests in the northeastern part of Sorong City. If the scale is enlarged, the forests in Siwis play an important role for forest preservation in the northernmost Bioregion of West Papua. Learning from previous experience regarding the effects of "water ripples" and patterns of land sales, if oil companies are able to enter and rampant in customary sales, the impact will spread to the northeast.

Figure 75 The forest condition of Malak Gitili that will be in *sasi*.

Initiative to Establish a Reading House

The establishment of the reading house is a program of the Kalaben Traditional Council by mobilizing the youth of Siwis Village. The reading house building design is a typical traditional house of the Moi tribe whose overall materials come from nature. The book collection plan includes the knowledge of the Moi community in

utilizing and processing natural products such as weaving noken, cooking sago and other local skills. When the researchers observed the youth activities in the village, they were so enthusiastic about reading the newspaper even though the publication date had passed. The strong desire of young people to read, will also broaden their knowledge about the importance of preserving the forest.

Figure 76 Working together to build a reading house

4.5.2 Communities' Initiatives in Aru Islands

Public rejection of large-scale exploitation efforts appears almost in all corners of the Aru islands. This refusal is connected with the #SaveAru campaign movement initiative. This connection is very possible because the Aru community's kinship is very close, not only to the inhabitants of one island, but also between islands. As mentioned earlier, this rejection was due to the Aru community's awareness of their natural vulnerability in the form of islands and karst areas. In addition, the Aru community is also aware of major changes that will affect the social and cultural life that they have built for a long time. Even the disruption of their economic activities.

The #SaveAru movement gave an important lesson to the Aru community that with the connectedness of the movement and the expansion of the movement (up to the international level) it provided enough strength so that they were able to frustrate the large investment plans at that time. That is, the victory of the people is still possible if they are united. However, this victory is not the end of the struggle of the Aru people. Until now, large investments are still targeting Aru as a granary of capital accumulation. Solidarity as shown at #SaveAru movement needs to be maintained and even strengthened. If this solidarity collapses, the Aru people will become more vulnerable to outside interventions that threaten their living space.

In the process of struggle, in addition to the #SaveAru campaign movement, the Aru Community was also actively involved in the inquiry process carried out by National Comission on Human Rights. In this process they have the opportunity to show evidence and arguments to defend their living space.

In addition to nature and the economy, another threat that is no less important to anticipate, is the existence of horizontal conflicts within the community itself. Local knowledge about conflict resolution needs to be reawakened (other than legal channels) because it has proven to be effective and in accordance with the Aru community's trust. In addition, the reappearance of local knowledge on conflict management will also provide other alternatives for new generations who are not familiar with the tradition.

One of the causes of horizontal conflict is a misunderstanding regarding the boundaries of land tenure by the clans. This misunderstanding is further strengthened by the large capital that wants to enter Aru.Therefore, the problem of space boundaries is becoming increasingly sensitive. At the time of this research, some people suggested that participatory mapping be carried out by community regarding the use and arrangement of space by the Aru community, such as hunting locations, farming, and also including the location of traditions such as *tordauk*. The hope of this participatory mapping is to emphasize that the Aru community also has a spatial concept which may differ from the spatial concept of the government. So that the government or any party cannot arbitrarily determine the allotment of space on Aru earth without taking into account the knowledge of the Aru community. Spatial values cannot only be judged by economic values, but must be seen in terms of cultural, social, political, and even spiritual values of the Jargaria community.

4.5.3 Communities's Initiatives in Jayapura

The Development of Initiative of Tabo Group's Ecotourism

Tabo in local terms means mountains. This group is formed and named according to the characteristics of the ecosystem of the region, the hills. Tabo is one of the groups that Alex developed in the plan to create a new ecotourism location. This group is in the villages of Ombrob, Yenggu Baru and Singgri Way. Tourist attractions that will be developed at the Tabo location are views of the sunrise and sunset. In addition, seeing the endemic birds of Papua became the main attraction of ecotourism in the Tabo group and handicrafts made by the community also became a commodity to be sold to guests who came.

The plan to develop ecotourism in the future Tabo location is to build houses in the merbau tree. In addition, people began to curb their animals such as cows and pigs that roamed the village and began to organize and beautify the yard of the house with flowers. The current condition in the Tabo group has formed an ecotourism organizational structure in the form of a group leader, secretary and treasurer. The community began to hold meetings often and began to do community service to maintain people's enthusiasm about ecotourism. Community service is carried out every Thursday to clean up tourist sites that will be built accommodation. In

addition, surveys of bird watching locations have also been carried out and locations have been determined.

Figure 77 Situation in Ombrop Village, Jayapura

Development of Initiative of Ecotourism Waisinaway Group

Waisinaway is one of the groups that will be developed in Alex's plan to create new tourist sites. As the name implies, the Waisinaway group is on the coast in the village of Khamdera, Demta District north of Jayapura. Tourism developed in this coastal area, is a beach-based nature tourism. Local people call it the 'Pantai Seribu Cemara (Thousand fir beach)'.

As the name implies, the characteristics of the beach are overgrown with evergreen trees from the east to the west end. Tourist activities offered from this place are the baths in the mouth of the river which is very clear water. Then, birdwatching tours will also be developed at this place. However, the condition is still in the stage of surveying bird watching locations.

Alex's intervention regarding ecotourism to the people of Khamdera village is not new. Previously Khamdera village had made a tourism development. The initiation was encouraged by the Jayapura district government's program on tourism. At that time, the village of Khamdera was named a village that had tourism potential. So that in 2013, the village government made a development of a tourist location that was named a thousand pine beach tourism. Current conditions, a thousand

evergreen beach tourism has been opened to the public. Facilities that have been built include gazebos, toilets and residential buildings.

Figure 78 Situation in Khamdera village, Jayapura

Ecotourism of Bird of Paradise: Candle in the dark

History and Strategy

The condition of the forests in Nimbokrang and its surroundings has indeed been damaged. Illegal logging occurs openly and is carried out by migrants (timber entrepreneurs) with or without the consent of the forest owner (Papuans). In addition, oil palm plantation industry investment plans by several companies will put more pressure on the forests in Nimbokrang and surrounding areas. In the end it will add to ecological damage and greater loss of space and livelihoods for Papuans.

Alex Waisimon's concern about the condition of his hometown brought him back to his hometown in west Jayapura around the Grime Valley, namely Yenggu (now Yenggu Baru), Nimbokrang sub-district. Plus, he has committed to fulfill the promise given by his father, to go home and build a village. At that time around 2014, Alex returned to his hometown after almost 40 years of migrating out of Papua.

In addition, Alex also expressed his concern for the government which he considered was not in favor of the community, especially the local community. The government prefers to launch capital flows so that many things that are not

appropriate occur, such as the opening of oil palm plantations and logging. Though not necessarily that is needed and understood by the people of Papua. They (Papuans) seemed to have been deceived, the forest products were gone but they were still poor and had nothing.

"Never mind buying other things, we won't even have a bycicle, when the forest is gone"
(interview of Alex 05-102018)

Figure 79 Alex Waisimon

Departing from this, Alex initiated the idea to save the forests of his area. The idea was raised in the form of ecotourism as an economic alternative for Papuans so that Papuans do not need to sell their forests. Alex realized that Papuans do not have anything, do not have the competence to do business either in managing the trade economy / opening a shop or other fields. But Alex also emphasized that they were not left behind, but their economic style was different. Characteristics of the people who are still hunting and gathering so that forests are the source of livelihood for native Papuans. Why is forest-based ecotourism the alternative to Alex Waisimon? First, his background worked a lot in the field of tourism when he migrated for a long time, secondly, native Papuans in the research area has a cultural closeness to the forest, so that the cultural capital for forest-based ecotourism is relatively available, third and most important is the efforts to save the forest, where previously exploitation-based forest economies are changing to sustainable forest economies.

The Drama of Mad Forest Savior

Alex's efforts at the beginning of his return to the village, he tried to invite his family and siblings to no longer cut down the forest. His idea even got a negative response, considered crazy even expelled by his own family. He only lasted 4 months in the village and returned to Denpasar, Bali. But bounded by his father's promise as explained earlier, Alex finally decided to return to Jayapura, but not to his hometown, but in the village next to where his brother-in-law lived, in Rephang Muaif.

Alex's struggle to build ecotourism and invite people to preserve the forest can be said to start from the stigma of a madman by his own family. According to him, he deliberately hid behind the stigma of "crazy man" to secure himself, so that what he did was not considered a threat by most people, including timber entrepreneurs. For 1 ½ years Alex hid behind a crazy person. Of course, during the

1 ½ year journey he had done a lot like collecting wood from the forest to make buildings, explore bird watching points, and learn from Mr Jamil related to birdwatching tourism management. Alex's long struggle finally paid off with the establishment of ecotourism which is managed by the native Papuan who later became known Isyo Hills.

Box 2. Jamil, a birdwatching pioneer in Nimbokrang

Pak Jamil (Mr. Jamil) is what people call him. Jamil is a Javanese of Boyolali who has lived for almost 40 years in Nimbokrang I Village, Nimbokrang District. He and his wife used to join the Indonesian government's transmigration program in the early 1980s. Indirectly, Jamil inspired Alex to build a Birdwatching tour. Why? Because he was the one who started the birdwatching tour in Nimbokrang. He deserves to be called as a pioneer of Birdwatching tours because previously there was no one who did similar tours.

Jamil started the Birdwatching tour in Nimbokrang by chance. In early 1991, came an expedition team from British bird west who wanted to find sickle-bill birds (bird of paradise half-sickle) to the Nimbokrang Police Station. Initially the expedition team wanted to go to the Sarmi location to look for Sickle-bill birds. However, the police banned it because the conditions at that time were not safe (many OPM hordes). Incidentally, the police chief was acquainted with Jamil and knew that Jamil often entered the forest to look for birds. Then the police recommended the Birdwest expedition team to meet with Jamil.

After his meeting with Jamil, the Birdwest expedition team was very happy because they managed to find what they were looking for, the Sickle-bill bird. Jamil was impressed, even he secretly studied what the Caucasians were looking for. At that time, Jamil had asked for the book "Birds of New Guinea written by Bruce M. Beehler, Thane K. Pratt, and Dale A. Zimmerman" and binoculars belonging to one of the expedition teams. However, the person did not give him that day. He (Team West Bird) promised to return next year and gave what Jamil asked for.

The following year 1992, the Team from Birdwest came back to see Jamil. This time they came to bring new people. The team kept its promise to provide the binoculars and books that Jamil asked for. After the second arrival of the birdwest team, in the following year began many outsiders came to see Jamil to accompany him to look for birds. Finally up to now, Jamil's Birdwatching tour continues to run.

During the early birdwatching tour Jamil walked, he was accompanied by a Papuan named Dance Wouw. Dance Wouw was an expert at finding and hunting birds at that time. Dance ability becomes the spear of Jamil in delivering his guests to find and see birds. Dance as a guide in Birdwatching tours made by Jamil.

Then at the end of 2014, Alex joined Jamil on the Birdwatching tour. Alex joined thanks to his communication with Dance. Dance is a brother of Alex. Knowing that Dance often brings strangers (Caucasians) looking for birds, gives interest to Alex to learn it. So in the end Alex joined with Jamil. When he first joined, Alex worked as a driver to pick up guests

at the airport. After a few months later, he had become a guide. Only about four months Alex worked with Jamil, after that he opened his own Birdwatching tour.

Knowing that Alex opened Birdwatching tours, Jamil supported the efforts made by Alex. Although initially Jamil was disappointed because of business, he later realized that the efforts made by Alex were very important. According to him, the problem in Birdwatching tours in Nimbokrang now is the pressure of forest destruction which makes birds difficult to find. Jamil realizes that he does not have the power to overcome this problem. Efforts made by Alex by taking the ecotourism road Birdwatching, Jamil hopes Alex is the one who can overcome the problem (forest destruction). So in the end Jamil supports Alex's efforts in saving the forest.

Expanding and transmitting the idea of saving forests in 9 tribes

Plans to work with other tribes to get involved in saving the forest began to be carried out by Alex. There are around 9 tribes that he started to hold together to repeat his success in creating new ecotourism locations. The nine tribes are Wouw, Bay, Bano, Waipon, Waisimon, Demongkreng, Bernifu, Kekri and Tecuari. The nine tribes are scattered in several villages including Rephang Muaif village in Nimbokrang District, villages of Ombrob (Oyengsi), Yenggu Baru, Singgri, Benyom, in Nimboran District, and Tarpia village in Demta District.

Process of collaborating with several tribes was carried out through the indigenous leaders or in the Nambluong language called *Iram*. He always uses a narrative of traditional values to build an argument about the harmony of Papuans who should protect nature and forests. These values also animate the concept of ecotourism which he has in mind. In addition, Alex also brought examples of his success in building ecotourism as proof that he was able to build other tours. The method was considered successful because each tribe began enthusiastic to follow Alex's path.

Figure 80 Discussion with some elders about the development of ecotourism

The concept used in the development of new tourist sites, is divided based on the topography of each tribal region. There are three groups formed by Alex along with the indigenous leaders from each tribe involved, namely the hill group (Tabo), the valley group (Kethu), and the coastal group (Waisinaway). The Tabo group

consists of tribes living in the villages of Ombrob (Oyengsi), Yenggu Baru, and Singgri, which are Waisimon, Waipon, Bay, Bano, and Wouw. Then the Kethu group consisted of tribes in the village of Benyom, namely Demongkreng, Kekri and Tecuari. And the coastal group consists of the Bernifu tribe in the Tarpia village.

Alex's purpose was to get nine tribes involved in saving the forest and making ecotourism part of the effort to protect the tribal's indigenous territories. The nine tribes have 98,000 hectares of land rights. Administratively, the nine tribal areas are included in six villages in three districts which are Nimboran, Nimbokrang, and Demta Districts.

Alex Waisimon and his Ecotourism

After a year and a half Alex passed a painful journey to be willing to be called a crazy person. Finally now, he is enjoying the fruits of the hard work he has done to build Birdwatching Ecotourism. Currently, Alex already has a tourist spot that he named Isyo Hill Birdwatching. Now that place is famous. Many people from various countries come to see the birds of paradise. The latest news on the Isyo hill ecotourism area has been named a tourist charm destination on a national scale by the Indonesian tourism ministry.

Figure 81 *A cottage in Isyo Hill* (top left); gazebo (top right); process to build public kitchen (bottom left); tower for birdwatching (bottom right)

From the start, only a small building measuring 3 m x 4 m was his residence. Now, little by little he has built facilities to support his tour. In Isyo Hill, accommodation facilities are available in the form of lodging lodges. There are about three cottage buildings and a shared dining room. Each lodging lodge consists of 3 to 4 rooms.

Each room contains two beds along with mosquito nets, one wardrobe, one table and one bathroom. In addition to accommodation, tourist facilities have also been built. In some bird watching locations stands 15 to 20 meters high observation towers. The plan to make a natural school also began.

Alex's mission to save the forest around his residence is gradually being achieved. In 2018, the Isyo hill birdwatching ecotourism area was established as customary forest by the Jayapura districh head through the Jayapura District Head's Decree Number 188.4/150 Year 2018. The area was set at 19,000 hectares and was under the customary rights of the Wouw tribe/clan. Alex has determined the customary forest area as a form of protection of his forest area from the threat of illegal logging and concessions of oil palm plantations. He uses a customary forest scheme because it is considered in accordance with the characteristics of the people of Papua.

Local Tourism School: Cadre

In his efforts to raise the optimism of the village community to develop ecotourism from their natural potential, Alex Waisimon realizes that there are several obstacles that must be addressed immediately. Some of these obstacles are the detachment of indigenous cultures and languages that became the tribal identity of the native Papuans in the village area, they are not yet capable of speaking a foreign language, and lack the ability to serve the needs of a tourist service provider. Realizing this, Alex Waisimon initiated the establishment of a school which he called a tourism school.

The tourism school that is being built will help native Papuans, especially the younger generation in areas where ecotourism will be realized, to re-study their tribal language, while learning English as an international language, and also learn other things needed to realize the dream of ecotourism. In addition to forming cadres in the generation below him, Alex Waisimon did not want the younger generation to be shocked by the modernization brought by technology and ecotourism later. So that old rules and beliefs, especially those related to forest protection, can be upheld by the local people.

Mapping of indigenous territories and recognition through regional regulations (PERDA)

"There's no land in Papua which doesn't have owner."

The phrase is the beginning of the struggle of indigenous peoples in collaboration with several local and national civil society organizations to fight for recognition of their indigenous territories. During this time, the problems present in Papua in the form of extractive industries or land grabbing through transmigration, are well aware that their roots originate from the lack of knowledge or recognition from the government towards the native Papuans' indigenous territories. Although the

root of the problem is the top down government policy, but it has gone through sustainability, native Papuans together with civil society organizations are trying to fight back by consolidating to map their customary territories.

Figure 82 Map of the determination of the indigenous forest of Isyo hill ecotourism area

Given the native Papuans which consists of various clans with broad basic rights, it certainly requires long work, including works to resolve conflicts between clans. But the work has already begun with initial consolidation. The mapping of indigenous territories refers to the issuance of Special Regional Regulation of the Province of Papua Number 23 Year 2008 concerning the Customary Rights of Indigenous Peoples and Individual Rights of Indigenous Peoples of the Land. This recognition is important to protect the livelihoods of local people who are still very dependent on agrarian resources, especially land.

The development of local economic: Handycraft for Souvenirs

In Ombrob village, the location where ecotourism of observing endemic Papuan birds, does not only involve men for going in and out of the forest to take tourists or build lodging. Women are also involved, through the production of indigenous Papuan handicraft products, which is *noken*. *Noken* is made from tree bark taken from the forest, then colored with natural dyes, before weaving it into beautiful bags. This initiative was carried out by Papuan women to face the presence of tourists. With the production of *noken*, it is expected to strengthen the identity of native Papuans in the development of ecotourism.

It does not stop at Noken, a community from Wouw clan also manufactures carvings, hats, and various accessories using local materials. This activity was also highlighted by the local government by accommodating these products in the Customary Festival held in October 2018.

Recommendation 5 & Reflection

5.1 Recommendation at the local level

5.1.1 Sorong

From the data series presented in this research, it is clear that changes in forest conditions in the research locations are as a whole connected with changes that occur in the lives of indigenous peoples that live between the interconnectivity of the presence of investment and state. Therefore, this report seeks to see the regions relatively holistic and integrative. Historical literature data is strived to be relevant to the findings of the existing data in the field. While on the other hand, researchers are aware that this research is more focused on human relations with forests, and has not been too deeply touched on the dynamics that occur within the scope of state and private (investment).

However, researchers strongly believe that the results of this study tend to approach the argument stated by Boelaars (1986: 175), that changes in the way of life of the Papuan people do not show the same reaction in various other regions in Papua due to contact with modern world which is not concurrent and not the same. Generalizing changes in Papua will only simplify the problems and will cause fatal consequences. Another alternative understanding that is more adequate is to look at the typical and parallel reactions from other regions in Papua concerning issues: (1) changes in customary values, (2) the need to defend themselves, and (3) the search for identity.

These three problems raised to the surface through certain events. These three issues have interrelated and mutually reinforcing relevance. Strengthening and recognizing the identity of indigenous peoples is an effort to maintain customary ownership. Because in their territories that the indigenous peoples will continue to survive and exist.

changes in customary values of the Moi Kelim Community

Typical reactions involving changes in customary values, survival and identity are not problems that are independent. Each of these issues is interrelated. For example, about how the changes in customary values of indigenous peoples in their efforts to meet the needs of life, and how the changes in customary values of indigenous peoples in their efforts to bring up their traditional identity. In this study, researchers view changes in customary values as a very urgent issue concerning changes in forest conditions. In this issue, researchers do not ethically judge (justification). It is precisely the indigenous people themselves who emicly evaluate or self-criticize their own culture (native point of view).

Generally, the development in Papua only focus in physical development such as infrastructure. But, it never target the development of human resource. This affect in the readiness of human resources in facing the changing from outside world. The

impact is the unequal distribution of human resource development that lead to problems of changes in customary values.

As revealed by Dance Ulimpa as Head of the Moi Indigenous Council in Kalaben, the problems that occur in the Moi community are actually sourced from within. That means, there are internal dynamics that occur within the Moi people themselves. Even for investments that threaten the existence of the forest, Dance sees that it is the role of the customary landowners themselves, "*Now, how does this person get in, yes he must be through the owner there, the owner A*". What Dance said was actually proven in the Ulala clan in Sayosa. If the customary landowner himself is "harsh" about the entry of investments, then there will be no forest damage.

Whenever an NGO enters the Siwis village which encourages the establishment of a customary forest, Dance always shares his concern about the practices of destroying forest resources which are actually carried out by the customary landowner himself,

> *"Actually, many NGOs came here, what do you protect? You want to encourage customary forest and customary village, what do you protect? The NGOs protect us, but the children of Moi themselves that put so many traps, taking out the deer. The Children of Moi themselves that cut the forest. So, what do you want to protect? The question arises, same with this. So, the answer is we can protect the forest but this all back to the owner themselves".*

His true discomfort was shared with the hope of finding the best solution. As Head of the Customary Council, Dance's authority is not entitled to regulate the use of customary land by its owners. The Moi customary rules recognize that land use authority is in the hands of customary owners.

On the other hand, Dance felt ashamed to reveal that the destruction of the forest was actually done by the Moi people themselves. But Dance thinks that with this openness, the people of Moi will be able to fix themselves for a better future. As he said,

> *"Actually, it's a shame if I say this. That's right. But you aren't like other people, I dare to admit my flaws, my weakness. May we can learn from that, struggle to change this life. I am a kind of person who cannot hide something, because I think that with this kind of openness, you are doing your research and conveying what you are facing to me as a leader, whether as sub-district head or indigenous person, surely I will struggle to set my strategy. From earlier, I said, it's okay if the bottom is already damaged, but in the mountain, I can still hold it."*

Openness of Dance said the conditions are, in fact a manifestation of his love for the country and the culture of the Moi Tribe. As he said,

> *"The question is how many decades later, when we back to this forest, is it still there or not? Will the people here still be safe or not? So, I honestly speak, you have been struggling in that, I struggle with this. If one day I am old, then I die, my children, grandchildren, what will they face? We all will die, just how many years to come?"*

The occurrence of forest destruction by indigenous peoples itself not only occurred in the Moi Tribe, but also occurred in several other tribes in Papua. This also happened to Kanum and Marori peoples in Merauke. The following is ethnographic information written by Suryawan (2018: 153-154);

> *"The Kanum and Marori people create traditional wisdom in utilizing natural resources (sar), sacred or forbidden areas, or also animals and plants that play an important role in the survival of life. But the situation is slowly changing. The rapid use of natural resources results in uncontrolled exploitation. In the Wasur area, timber hunters use the services of local communities to cut through sacred wooden hamlets. Everything for money. Wasur people face difficult realities. They also need money to continue an increasingly consumptive life. "The money from selling wood to a contractor from the city is used up in a flash to buy necessities at stalls owned by migrants. The routine of life continues without change. "Gradually, over time, the environment of the Wasur people will be damaged and will be increasingly damaged"*

The same thing happened in Malalilis village. The owner allows timber businessman to enter his land. Based on information from the community, the timber workers have entered the forest as far as ± 10 kilometers to the north of Malalilis village. The customary owner himself allows the timber businessman to operate as far as he can. Every day there are 3-5 trucks carrying Merbau and Kuku woods. The owner sells directly to timber company at a price of IDR 600 thousand to IDR 800 thousand for Merbau wood, and IDR 500 thousand to IDR 700 thousand for Kuku wood. Not to mention the high reduction in Matoa wood for railroad boards that are not counted in nominal rupiah. The money from the sale of timber is not used to obtain added value, and instead used for the purchase of non-productive goods. This event is indeed very ironic when the moratorium on extractive industries is currently taking place, it is precisely the customary owners themselves who sell timber on a scale that is almost the same as the industrial scale. It only happens in one location of the customary owner, and not yet in other locations. Borrowing the term Muller (2013: 121), that the use of natural resource products that are not for continued productive activities is called an "anti-surplus" mentality. This characteristic of mentality also occurs in tribal communities in Africa.

The researchers realize that these recommendations are not the only solution that can overcome various forestry problems that occur in the research locations. From various meetings with local NGOs, researchers try to find alternatives to save the

remaining forests. It means that local NGOs' agendas that are already running, will henceforth be completed. In other words, if a local NGO has tried to solve a problem at a certain point, the researchers are trying to provide an alternative solution to the other problem.

From the local NGO's agendas in Papua, it seems that no one has highlighted the issue of changes in customary values. In fact, field data shows that customary landowners are the "last resort" for saving the remaining forests in Papua Bioregion. Is it a guarantee that when the customary ownership status has been formally legalized customary forest, the condition of the forest will remain sustainable? While on the other hand, the changes in customary values of the community is still characterized by direct utilization of natural resources, and not an advanced processing. As Giddens said (2000: 76), "there is no right without responsibility". Have indigenous peoples prepared themselves to be responsible for the legality of rights that they will later acquire?

The results of this study provide a very valuable understanding, that the struggle for recognition of indigenous peoples and their customary territories will eventually produce a new chain of problems for changing forest conditions if they ignore mental issues. When a customary forest has been legally recognized, is that a guarantee that the indigenous community does not over exploit or sell their rights? Will it actually backfire to perpetuate the destruction of forests that are legitimized by customary ownership. The goal of the recognition of indigenous and tribal peoples is to create the broadest opportunities for democracy, active participation and self-actualization. Do indigenous peoples have democratic, participating and actualizing initiatives that concretely want to be realized?

Starting from the results of the study, then as an effort to save the remaining forests in Papua Bioregion, the researchers submitted program recommendations, which is how to realize indigenous peoples who have a non-timber-based independent economic capacity. But these recommendations must be preceded by a precondition of changes in customary values readiness. To realize that recommendations, further researches are needed on:

1. Deepening the problem of economic changes in customary values.
2. Mapping of independent initiatives from indigenous peoples to realize an independent-productive business
3. Mapping of program target actors
4. Mapping the potential of independent-productive businesses
5. Mapping the strategic location of program targets

5.1.2 Aru Islands

Aru Islands Ecosystem is still relatively good, there are still many natural resources that have not been exploited. But these conditions are not without changes at all. changes that can lead to destruction. Symptoms of damaging ecosystem began to appear at least since the 1980s when large capital came to this region. This large capital continues to arrive until now, even more and even with greater value. Considering the condition of the Aru Islands that is quite vulnerable, there is a need of strict restrestrictions in exploiting the natural wealth of the region, both sea and the land. Decreasing forest cover over the year, the disappearance of the population of animals in Aru, the depletion of marine resources, and the destruction of the entire ecosystem, if it exceeds the limits of nature's ability to tolerate it will cause disasters for the Aru people. This damage is not only caused by the lifestyle of the Aru people, but it can also be caused by government policies, or the arrival of large investments that have a large exploitation power

Because of these conditions, the issuance of permits for large capital needs serious attention. This attention is not only for the natural conditions, but also for the sustainability of the Aru community as a whole. The reaction of the Aru community in the #SaveAru movement is a manifestation of the high level of supervision by the Aru community regarding their homes. Until now, some Aru people still hold to their knowledge which teaches them to live in harmony with nature and their fellow humans. This is illustrated, for example, by their agrarian system which regulates joint ownership. This ownership is not exclusive, but also open to migrants who live there to use nature together. Determination of forest exploitation limits only for basic needs is a form of efforts to maintain the balance of carrying capacity and natural capacity.

However, the procedure for living like that also began to shift. This shift leads to a capitalistic lifestyle that is anti with those limits. The result of this shift is that there are now people who do not have their own means of production, so they have to work for others as laborers with wages. This can be seen clearly when comparing the economy of "sea" and "land". Of course, change is a necessity that cannot be stopped. However, every change needs to be assessed and evaluated on an ongoing basis. Changes that occur in Aru are also not independent changes. These changes are also influenced by changes that are so powerful outside Aru, which are slowly begin to affect the Aru community. This inevitable change needs attention and the level of change is assessed so that the community can determine what adaptation forms are most appropriate to do. If not, then all the wealth in Aru will be gone just like that without the rest. Wealth in the form of knowledge, family, nature, etc. owned by the Aru community will become mere memories in the future.

This research still has many limitations. Excavations for both land and sea conditions are still far from representing Aru as a whole. Therefore, it is necessary for the next opportunity to make some improvements, including:

1. Find some other locations as a comparison for socio-economic studies of people who represent the mainland
2. The need for more in-depth research, especially for coastal and marine areas
3. Search of all types of commodities in the Aru Islands, both sea and land

5.1.3 Jayapura

"Of course, returning home from the rain of stone to gold has many twists, challenges, obstacles, families, and relatives who don't understand, especially about ecotourism." Alex.

According to Alex, ecotourism is a new thing for the people of Papua. The concept of ecotourism is also not widely known by the public. It is not uncommon for him to objected and rejected when he was trying to invite people (Papuans) to get involved in ecotourism. According to him, it is normal and understandable. However, Alex dedicate himself to continue inviting people to follow his example.

Figure 83 Building construction of natural school

Then in his journey, the efforts made by Alex also did not always run smoothly. According to developments, there is one tribe (clan) who withdrew from getting involved again in the ecotourism idea of Alex. According to him, it was caused by external intervention related to money from parties who were not happy with Alex. To the extent, there area pressure from industry and wood scrapers to him. Alex admitted that there were parties who were not happy with him because of his efforts in saving the forest.

Behind all the challenges he faces, Alex has big dreams related to what he is doing right now. First, he hopes that when his place (Isyo Hill) becomes an example for anyone of the nation's children, especially for the people of Papua in order to be able to confidently make similar works in their respective regions. Then the second, his ambition to invite nine tribes to be involved in saving the forest and create a new ecotourism location will gradually be realized. Finally, Alex's plan to bring Papuans back to their traditional culture will be realized through the nature school

that he built. The nature school planned by Alex is a place for learning for Papuans to learn more about their culture and language. In the concept, Alex emphasizes language and culture education.

Learning Space

Alex Waisimon is a native Papuan who has a dream to advance the indigenous people of Papua, by utilizing the natural resources contained in the Land of Papua, without exploiting it. The ecotourism worked on by Alex is expected to be able to realize this dream, by embracing indigenous peoples in nine tribes in Papua, and making them aware of the wealth of natural resources owned in their respective regions.

By choosing to start building ecotourism in three regions with three different types of topography, Alex hopes that the three regions can represent the mountainous, terrestrial and oceanic regions in Papua, each of which has a wealth of different natural resources. Although it has not been developed holistically as a mutually sustainable entity, Alex hopes that from the three regions, the spirit of advancing the community and region through ecotourism will spread throughout Papua. So that native Papuans have an awareness of the natural resources owned, and can increase the knowledge and abilities that enable them to manage these assets independently.

As a native, Alex Waisimon has great potential to move his efforts towards his dreams about the future of his people. Alex as an individual also has sufficient capital, because he is a native, has more advanced and diverse knowledge because he has tasted life outside Papua, and has a good network of community institutions and qualified government to help him. With the capital he has, the foresight, and the nature of being a hard worker that is maintained, the ecotourism developed by Alex has great potential to survive and develop well.

Based on an interview with Alex, things that became a challenge came from indigenous Papuans, the tribes that Alex wanted to move forward. These challenges are in the form of habits and culture that are inherent in Papuans. Papuans are accustomed to "living for today". That is, when the native feels that the hunted or harvested products are able to meet the needs of the family, then that is considered sufficient. During this time the native Papuan still believes that natural resources in their area will always be able to meet the needs, so there is no shadow that in the future there is a possibility that the natural resources are exhausted or insufficient.

Especially in Ombrob village which has a mountainous topography, it is inconceivable to the people there that one day the forest where they grow their garden, get their daily water source, and where they collect forest products, can be exhausted. Before Alex entered, there was no awareness that the birds of

paradise, cassowaries and mambruk that were usually hunted by the community would one day become extinct. The fact that natural resources, especially forest resources in Ombrob village are still able to meet the needs of the community, reinforces the community's belief that conservation of natural resources is not yet needed.

The understanding embedded in the thinking of the people of Kampung Ombrob also represents the understanding of the nine tribes that Alex is trying to embrace. That in the end became a challenge for Alex. Evidently, when in the beginning trying to build ecotourism, Alex experienced rejection because of the lack of trust from his own tribe. The tribes invited by Alex at that time felt that what Alex was doing was a crazy act (because it might not be in line with the logic of people's thinking). The rejection became a lesson for Alex that to build trust from his tribe, then what was needed was to prove.

His strong determination to prove the truth believed to lead Alex succeeded in realizing ecotourism in one village (Rhepang Muaif), followed by the will and trust from other villages and tribes. This has been a good learning process for Alex and his ecotourism team, on how to approach the community to build trust in the ecotourism business. As well as building native Papuan's awareness about the natural resources owned, the threats to the natural resources, and how the native papuan recognizes the potential they have to be developed in developing ecotourism.

At this stage, it is the task of Alex Waisimon to carry the burden of responsibility to ensure that the future process of ecotourism development does not eliminate the native Papuan. This certainty is needed so that the realization of ecotourism can not only guarantee ecological preservation, but also social justice for the people of Papua who live in it. Therefore, it is important to assume that humans are part of the unity of the ecosystem.

There are several conditions that must be met to ensure this, the first is analyzing the potential of the area to be built ecotourism, so that the development of ecotourism is no longer trying to create something new, but is already at the stage of developing the potential that the region already has. The first requirement has been applied by Alex Waisimon by establishing the Rhepang Muaif region as a bird watching ecotourism, due to the potential biodiversity of birds in the region.

The second condition is that the native Papuan must be implanted with various knowledge about how to manage ecotourism well. Such knowledge can be in the form of foreign language knowledge, knowledge of how to deal with tourists who are foreigners, and especially knowledge about the natural resources they have. Knowledge about natural resources is already owned by the community, but developing this knowledge by adding important scientific elements is needed. This

second requirement has also been instilled slowly by Alex through evening gatherings with elders in the village and school that is being built by Alex. At the school, it is hoped that the native can learn many things, although at this time Alex is still focusing so that the people who come there can learn local and foreign languages first.

While the third requirement is the challenge of changing the native Papuan's dependency on instant money generated through selling wood or selling endemic endangered species such as birds of paradise and cassowaries. If Alex succeeds in overcoming this challenge, then inviting the community to build ecotourism together is not a difficult thing to do.

Alex's effort to build ecotourism based on natural resources and local Papuan human resources, looks to help preserve ecologically and build social justice in Papua. If the ecotourism can get support from the central government, regional governments, and civil society organizations, then saving natural forests in Papua, especially in the three districts where the research is located, is not impossible to realize.

Forest degradation in the Grime Valley region, especially in the three areas that were the locations of the examination in the study, has not yet occurred massively but that does not mean the condition of the forest will be fine if there is no more effort to protect it. Later in the search for researchers, forest of the Grime valley is still a target of illegal loggers and is threatened by large capitals engaged in the oil palm plantation industry.

The wealth of agrarian resources in the Grime Valley is like a double-edged knife, one side has the potential to prosper the citizens, on the other hand it will attract large capital interests where ecological disasters occur and are usually followed by social ecological disasters. The experience of social ecological disasters that occurred due to the presence of big capital has penetrated other regions in Papua. The incident prompted a small group of local people to overcome it by pioneering ecotourism as an alternative economy for local residents with their knowledge tools. Nature or forest ecotourism such as bird monitoring is considered closer to the traditions of local communities rather than being part of the extractive industry.

Forest-based tourism as explained before is not without risk. Although this research did not find any risks that became an excess of ecotourism activities, based on the findings so far, some reflections have emerged, namely: (1) Ecotourism also has the potential to change the habits of people who normally hunt and garden. This means that ecotourism activities also change the culture and relationships of indigenous peoples towards and with forests. (2) Ecotourism has the potential to keep the community away from the forest. (3) Minimizing the

diversity of food of local people. (4) Alex with a spirit of "revenge" on the progress of transmigrants, tried to encourage the progress of indigenous people in the same ways as transmigrants, even though the methods carried out by transmigrants were not in accordance with the indigenous people.

Alex in many forums emphasized and realized that native Papuan is not like Javanese (farming, selling). The efforts made by Papuans are only to fulfill their daily needs. On the other hand, the globalization factor causes the people to be dragged along with the times (need money). On the other hand, native Papuan does not yet have competence and is not ready to follow changes. So what happens is that they actually sell or pawn their land to get money quickly.

However, it can be emphasized that the initiative and the forest rescue movement by Alex have been proven to have positive impacts, including: (1) providing an economic alternative to native Papuan's knowledge of its natural potential; (2) Preventing and curbing deforestation; (3) Open an investment tap; (4) Shifting people's culture from on farm to non farm.

Then the important things that can be recommendations for future studies in Jayapura are:

1. Deepening researches related to the advantages and disadvantages of ecotourism for the socio-ecological rescue of people's living space in Nimbokrang and Jayapura in the long run.
2. Advocacy agenda as a strengthening towards the government's legal recognition of customary forests that can be managed together for the collective interests of the clan.
3. The development of businesses and similar initiatives, for the purpose of aligning the values of saving forests and living space with goals that have profits, benefits, or economic benefits. Because, so far both of them have been "binary opposition" in contrast. If saving forests is always conservatory, and if the business is of an economic dimension it is often considered to have no value and purpose for conservation or saving the forest. Alex Waisimon's practice shows that the purpose of forest conservation a can coincide with the economic benefits.

5.2 Recommendations for National and Regional Policies

1. **Paradigmatic correction of development policies in the Papua Bioregion**

   The axis of the root of the policy problem in Papua is the result of the dominant character of developmentalism based on economic growth and extractives on agrarian and other natural resources. Natural resources are still considered as direct economic assets and commodified assets for the mere service of national and global markets. On the other hand, the formation of regulations and policies still has the problem of politic of ignorance). The

choice of the type and form of development policy that is still dominant is top down and ignores all dimensions of locality. It is arranged "unilaterally" with the assumption that the government "knows best" what the people want. Policies are compiled and decided by planners and policy makers behind the government desks both central and regional, and have not seriously considered the empirical situation and the voice of "needs from below". In the end, the community was created as a group of 'viewers' of the development. This development approach model eventually gave birth to many human rights violations. It is because for the purpose that has been planned, and in general without any agreement from the local community, then everything can be done so that the development target is achieved. The commonly used method is to use a security approach with violence. Therefore, it is important that there is an affirmation from the government to restore the position of the Papuan people as the main subject of development, not merely the object and audience of all development policy objectives.

2. **Strengthening policies and regulations for the preservation and sustainability of the forest ecosystem and human living space of the Papua Bioregion.**

   Rearrangement, audits, corrections, revocation of permits or concessions, and moratorium are needed. For this reason, the government needs to make other solutive policy breakthroughs to stop various extractive and exploitative industrial practices in the Papua Bioregion. From the results of this preliminary study, it is important to have corrections related to expansion of plantations (palm oil), mining (minerals and coal), illegal timber industry (illegal logging), illegal fish industry, large-scale livestock breeding, and expansion of infrastructure development which is proven to ignore the values and principles of conservation and social-ecological sustainability in Papua Bioregion. The will of both the government and other international donor agencies to improve the lives of people and nature in the Papua Bioregion, according to the results of this study are not automatically aligned with its practices and empirical evidence. Imbalance of power relations (relations of power) and wide gaps between the owners of political power (political elites) and large investors with indigenous and local communities at various scales such as education, knowledge, access to information, skills and technology. The presence of various extractive industries with the support and legitimacy of the authorities and large capital actually exacerbates the situation of structural inequality that has been going on for generations. This does not only cause ecological damage, but also further exacerbates the relational and structural poverty of the people in the Papua Bioregion. Therefore, a comprehensive correction of the political policies of natural and human

resources in the Papua Bioregion is needed to prevent and stop further damage to living space.

3. **Strengthening and prioritizing the implementation of the Regional Autonomy and PERDASUS (Special Regional Regulation) policies in the Papua Bioregion.**

   The government has granted Papua special autonomy status, but up to now it has not also issued derivative regulations so that the special autonomy law can be implemented. Mainly related to the main clauses on aspects of recognition, protection, salvage and recovery of knowledge systems, wisdom (including spatial knowledge), customary or local, along with the local and traditional economic wealth of communities in the Papua Bioregion. The results of this study show that the lack of recognition and protection of the local knowledge and wisdom system causes development policies to often hit the corridors of local cultural values and traditions. This condition triggers protests, rejection, and embers of social-agrarian conflict (latent and manifest) at many points of the Papua Bioregion. On the other hand, the reflection of this study also shows that development has a 'know-how' character on the condition of the Papua Bioregion so that it breeds failures of the development project. In the short term, the project can run, but in the long run, it creates further problems that are far greater both socio-economically and ecologically. Therefore, seriousness of affirmative action policies based on existing regional regulations are needed to prioritize the system of local people's knowledge and wisdom as the basis for political, economic and ecological development policies in the Papua Bioregion.

4. **Harmony and integration of 'one data' policy on forests and people in the Papua Bioregion.**

   One of the findings of this study is that the damage caused by the absence of authoritative and reliable data that can be referenced together by all interested parties (central-regional government, academics, civil society, local communities, international institutions, etc.) related to the condition of forests and people of Papua. At present, each party has its own data center which is often 'exclusive' and some of it is closed. As a result, various development programs and policies are trapped in the 'sectoralism' model, which is not integrated, not complementary, and runs independently. Each institution claims its own "truth" data to be used as a valid foundation of development. Coupled with the politics of information asymmetry developed by various parties which in the end would distort, cover up, even mislead and manipulate the conditions that actually occur at the site level. The result of all this is that the information entering and leaving Papua varies according to the needs and interests of the respective political economy, including the

problems of the forests and the people. Thus, it is increasingly necessary that a central, shared policy that is trustworthy, authoritative and can be referred to by all parties who wish to develop and improve conditions in the Papua Bioregion, particularly the issue of forests and people.

5. **Strengthening substantive justice policies in law enforcement**

As a state of law, law enforcement is an important pillar for the development policies that can be aligned with the objectives of social justice for all Indonesian people. The findings of this study indicate that there are still conflicts of interest and favoritism. It is only procedural in law enforcement in the Papua Bioregion. There are many violations of law committed by the law holders, such as the case of the involvement of the Navy in development plans in the Aru Islands, and some 'unscrupulous' police and army groups in the practice of plantation (oil palm) and mining concessions in Papua and West Papua. In general, the law is blunt up and sharp down if the cases that arise to the legal domain. If there is any action, it is generally still in the form of procedural law enforcement, ethical violations, normative sanctions, and manipulative judicial settlements. In fact, seeing the increasingly massive destruction and threat of the extinction of the Papua Bioregion's natural forests and the deterioration of humans under structural agrarian conflicts, nothing but "the state must be present" is marked by, among others, the courage to enforce substantive and indiscriminate law enforcement. Without the impact of deterrent aspects and substantive justice, on the basis of the mandate of the 1945 Constitution, article 33, many repetitive law violations become increasingly complex.

5.3 Recommendations for Further Researches

1. **Expansion of the study baseline location to enrich data representation.**

Limitations in this study are the number of locations that can be reached in relation to time, number of researchers, and other factors, in the first year. To get a bigger, more comprehensive picture of forests and people in the Papua Bioregion, further research is needed to complete the baseline data to be more representative of Papua Bioregion. Some locations with consideration of ecological landscape units that have not been reached include the highland areas (up land), valleys, and river/lake/swamp ecosystems. Based on the threat category of forest and human destruction in the Papua Bioregion, studies on the threats of various mining expansion and infrastructure development are still not reachable at this initial stage. This is because the diversity of the initial study locations mostly represents the threat of expansion of oil palm plantations, sugar cane, illegal logging, and the timber industry, and plans for large-scale cattle farming.

2. **Further research to deepen the results of the baseline study.**

   One of the limits of baseline research is the issue of depth. The purpose of the baseline study is to get an "overview" or the big picture of the current conditions of the study topics and problems. The site selection argument is more focused on considering the dimensions of "representation" so that research objectives can be achieved. As a result, the matter of depth of the results is the next consideration. For this reason, the baseline results of this study need to be continued with in-depth research, especially in-depth studies on the relationships and dynamics of natural forest and its people . This is to get a more complete portrait of: (a) what ever existed, (b) what has been lost or destroyed, and (c) what might be restored or reconstructed to restore the relationship of forests or nature with humans to be more equitable and sustainable. For the purpose of in-depth research like this, it would be more appropriate if using an anthropological approach, especially the traditional ethnographic method. The ethnographic approach makes it possible to capture local wealth at the micro level to read and to generalize at the macro level.

3. **Further research on the socio-economic and ecological potential in the Papua Bioregion.**

   One way to show the variety of damage and destruction of forest and human living space in the Papua Bioregion is research on what potentials currently exist in human civilization in Papua. Ranging from issues of local knowledge (wisdom), tradition, culture, custom, economics, to the ecological potential that inherent in the history of forests and the people. The old economic valuation approach can be combined with a variety of other approaches that can complement its shortcomings, for example Participatory Poverty Assessment (PPA), land tenure issues, gender equality perspective, political-agrarian ecology, etc. With this kind of research, it can be calculated more precisely the consequences and impacts of policies from local, national and global development programs that contribute to the destruction of the natural forest and its people. At the same time, it can be a basis for the promotion of alternative development that might be done based on the locality of communities and natural forests without destroying what is good from socio-economic and ecological wealth in the Papua Bioregion.

4. **Further research on the development of other topics in the Papua Bioregion.**

   What happens in forests and people in the Papua Bioregion cannot be understood as a problem in the social and environmental sectors alone. However, it is very likely related to other issues that have contributed to the multi-dimensional damage and impact in various aspects of human life in the

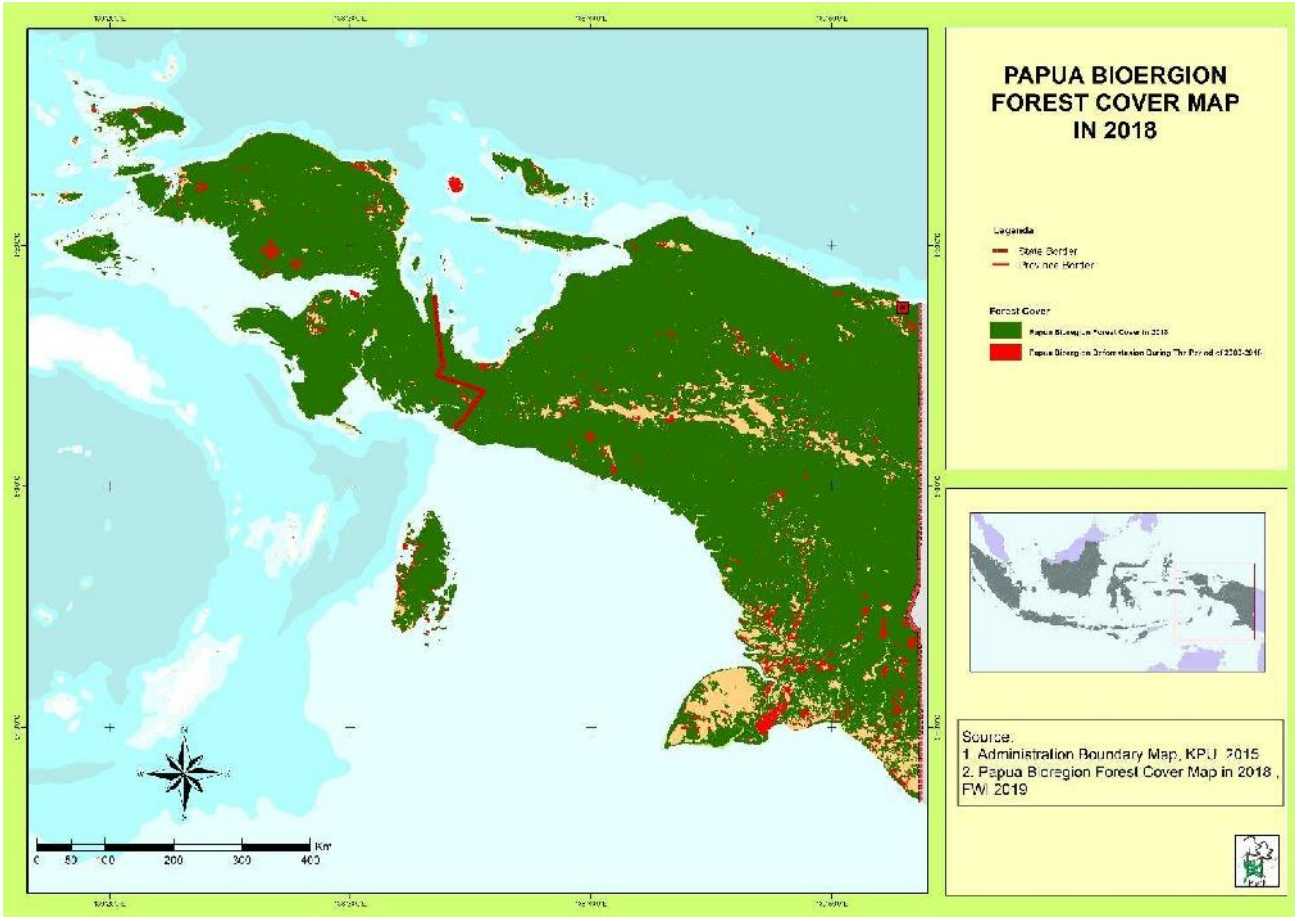
Papua Bioregion. Therefore, further research is needed. A research that portrays the development agenda in Papua which in the short and long term will become a development trend in many regions of Indonesia. For example, related to the topic of infrastructure development, the development of new cities, special economic zones, industrial zones, tourism areas, and others. These development topics are very likely to be present in the Papua Bioregion in the future. Such research will help a more comprehensive understanding related to the political economy of forests and people.

5. **Development of research on the politics of global forest policies and the people**

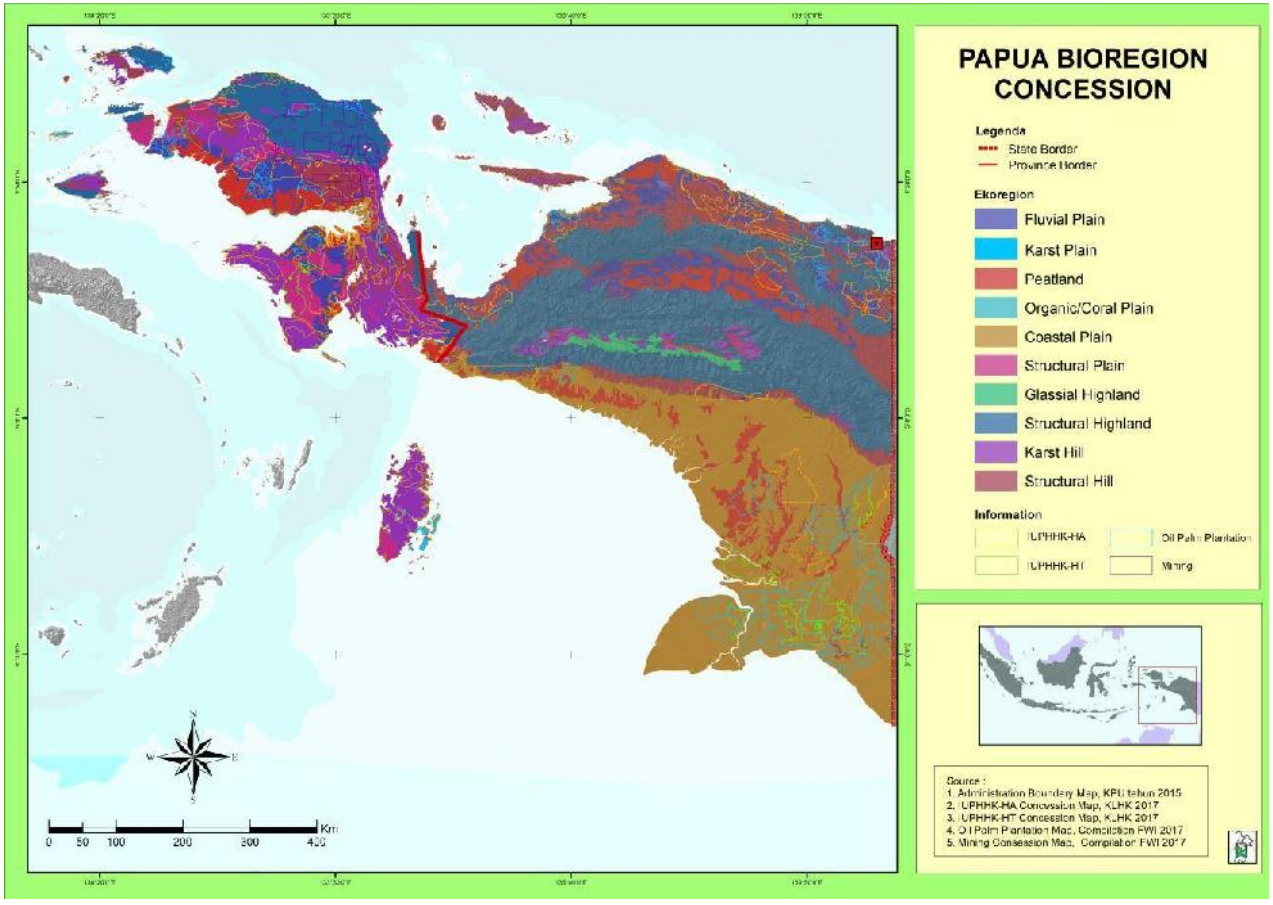
What is happening in Indonesia cannot be separated from the dynamics of economic and political policies at the global level. The case of the MIFEE mega-project in Merauke, for example, is evidence of how the issue of food and energy security as well as the derivation of problems from climate change seem to be a 'necessity' of all countries in the world, including in Indonesia. The green development policy agenda, whose derivatives were adopted, became the green province agenda which began to grow in many regions of Indonesia. West Papua is no exception. The development model with the jargon of "green development" in global discourse has now become the main stream of development in various countries. In addition, the results of the dredging of forest resource oligarchies in the Papua Bioregion, in the form of wood, palm oil, gold, nickel, coal, fish, minerals and others, also form part of the struggle for and contestation of global commodity business interests. Therefore, this global policy political research is also a way to better understand how national and local policies in Indonesia are carried out, and who benefitted from these. The index includes global policy relations with development projects in the Papua Bioregion.

APPENDIX

Appendix 1. Map of Forest Cover in 2018 and Deforestation in the period of 2000 to 2018 in Papua Bioregion



Appendix 2. The Map of Licensing Areas (IUPHHK-HA, IUPHHK-HT Oil Palm Plantation, and Mining)



Appendix 3. Forest Conditions in 2018 and Deforestation in period of 2000 to 2018 by Regency

Province/regency	Non forest	Deforestation 2000-2018	Forest cover 2018	Land area
Papua	**5,146,478**	**1,646,057**	**24,419,370**	**31,211,905**
ASMAT	198,815	72,508	2,216,286	2,487,609
BIAK NUMFOR	53,260	38,260	132,664	224,184
BOVEN DIGOEL	141,079	107,142	2,094,431	2,342,652
DEIYAI	17,434	8,857	154,341	180,632
DOGIYAI	60,673	29,039	374,752	464,464
INTAN JAYA	21,946	38,349	403,025	463,320
JAYAPURA	85,641	32,084	1,307,847	1,425,572
JAYAWIJAYA	142,450	10,476	110,757	263,682
KEEROM	37,814	33,392	836,852	908,058
KEPULAUAN YAPEN	36,168	6,281	199,438	241,887
KOTA JAYAPURA	16,289	9,297	49,925	75,511
LANNY JAYA	185,790	24,774	158,088	368,653
MAMBERAMO RAYA	167,369	82,274	2,638,196	2,887,840
MAMBERAMO TENGAH	38,400	17,800	252,466	308,666
MAPPI	683,222	291,730	1,544,426	2,519,378
MERAUKE	2,126,220	403,370	1,860,535	4,390,125
MIMIKA	121,223	98,627	1,551,941	1,771,792
NABIRE	61,319	49,585	1,082,983	1,193,887
NDUGA	56,910	10,369	629,956	697,235
PANIAI	106,022	27,964	321,900	455,887
PEGUNUNGAN BINTANG	167,741	45,088	1,315,808	1,528,637
PUNCAK	141,800	41,830	612,939	796,569
PUNCAK JAYA	51,349	15,830	374,789	441,969
SARMI	45,170	45,443	1,311,832	1,402,445
SUPIORI	6,495	714	59,285	66,494
TOLIKARA	58,943	9,575	295,881	364,399
WAROPEN	12,018	9,970	1,056,545	1,078,533
YAHUKIMO	265,181	65,745	1,130,549	1,461,475
YALIMO	39,737	19,684	340,931	400,352
West Papua	**475,869**	**362,082**	**7,935,545**	**8,773,495**
FAK FAK	81,668	24,451	978,644	1,084,763

KOTA SORONG	9,815	3,717	15,795	29,327
KAIMANA	30,009	23,474	1,384,042	1,437,525
MANOKWARI	116,698	68,355	563,391	748,445
MAYBRAT	42,461	12,489	273,400	328,349
RAJA AMPAT	44,443	24,344	634,373	703,160
SORONG	40,455	49,566	735,779	825,800
SORONG SELATAN	20,667	44,930	477,104	542,700
TAMBRAUW	35,749	35,371	1,009,022	1,080,141
TELUK BINTUNI	53,904	75,385	1,863,996	1,993,284
TELUK WONDAMA	12,118	5,542	586,389	604,049
Maluku	**105,346**	**91,019**	**611,477**	**807,843**
KEPULAUAN ARU	105,346	91,019	611,477	807,843
Total	**5,739,811**	**2,104,699**	**33,552,781**	**41,397,292**

Appendix 4. Distribution and Area of Permit Types by Regency in Papua Bioregion

Province/ regency	IUPHHK-HA	IUPHHK-HT	Oil palm plantation	Mining	Overlapping area	Land area
Papua	**2,817,219**	**947,731**	**2,686,614**	**4,088,502**	**1,153,320**	**31,211,905**
ASMAT	19,361		24,364	1,761	**857**	2,487,609
BIAK NUMFOR					-	224,184
BOVEN DIGOEL	305,652	109,810	380,700	76,951	24,023	2,342,652
DEIYAI				9,777	-	180,632
DOGIYAI	2,981			175,740	40	464,464
INTAN JAYA				122,875	-	463,320
JAYAPURA	232,178		154,501	131,511	63,802	1,425,572
JAYAWIJAYA				220	-	263,682
KEEROM	351,642		48,045	151,531	14,632	908,058
KEPULAUAN YAPEN			545		-	241,887
KOTA JAYAPURA	46,402		8,367		8,367	75,511
LANNY JAYA					-	368,653
MAMBERAMO RAYA	10,827			760,214	1,858	2,887,840
MAMBERAMO TENGAH					-	308,666
MAPPI	393,434	189,395	391,382		23,087	2,519,378
MERAUKE	84,116	648,526	1,496,194		276,421	4,390,125
MIMIKA	266,240		90,742	478,530	187,143	1,771,792
NABIRE	177,764			347,117	60,471	1,193,887
NDUGA	91,801			7,066	4,328	697,235
PANIAI				196,701	-	455,887
PEGUNUNGAN BINTANG				198,739	-	1,528,637
PUNCAK				191,285	-	796,569
PUNCAK JAYA				70,253	-	441,969
SARMI	700,402		40,682	633,262	431,721	1,402,445
SUPIORI				1,375	-	66,494
TOLIKARA				10,032	-	364,399

WAROPEN	102,494		51,092	223,736	30,121	1,078,533
YAHUKIMO	31,924			295,141	26,450	1,461,475
YALIMO				4,687	-	400,352
Papua Barat	**3,369,911**	**249,359**	**428,638**	**2,559,125**	**1,345,227**	**8,773,495**
FAK FAK	726,442	218,944	37,436	354,184	432,441	1,084,763
KOTA SORONG	28,690			13,138	13,075	29,327
KAIMANA	600,858			19,599	7,014	1,437,525
MANOKWARI	76,558		24,679	419,803	71,370	748,445
MAYBRAT	112,744		11,011	4,357	3,622	328,349
RAJA AMPAT			56,090	93,669	15,526	703,160
SORONG	398,437		92,079	155,210	88,544	825,800
SORONG SELATAN	66,895		46,102		10	542,700
TAMBRAUW	127,774		42,861	512,471	62,775	1,080,141
TELUK BINTUNI	945,417	30,415	109,643	665,144	489,175	1,993,284
TELUK WONDAMA	286,096		8,736	321,550	161,674	604,049
Maluku	**54,784**				**54,784**	**807,843**
KEPULAUAN ARU	54,784				54,784	807,843
Total	**6,241,914**	**1,197,090**	**3,115,252**	**6,647,627**	2,553,332	**41,397,292**

Appendix 5. Distribution of Permit Types Based on Ecoregions in the Papua Bioregion

Ekoregion	Overlaping	Logging Concession	Timber Plantation	Palm Oil	Mining	Total Area
Fluvial Plain	313.976	859.838	29.719	369.046	713.574	3.637.230
Peatland	46.264	329.140	54.792	228.569	221.053	3.529.294
Karst Plain	-					38.289
Organic/Coral Plain	168	7		161	169	19.571
Coastal Plain	402.681	931.175	921.834	2.229.326	191.543	12.024.002
Structural Plain	415.312	791.183	191.578	76.734	355.705	1.345.646
Glacial Mountain	-				104.562	330.348
Structural Mountain	256.665	670.798		73.688	3.317.837	12.107.127
Karst Hill	190.278	1.057.158	457	41.307	374.572	3.619.341
Structural Hill	904.036	1.687.188	0	99.300	1.442.756	5.099.480
No Data	841	5.928	1.411	4.128	12.851	351.678
Grand Total	**2.530.220**	**6.332.416**	**1.199.791**	**3.122.258**	**6.734.622**	**42.102.006**

Appendix 6. The Interactive Trading Phase in Papua from the 14th to 20th centuries AD

Trading Phase	Commodities		Traders from outside Papua
	Export	Import	
The emergence of satellite ports at 14th to 16th centuries AD	• Bird of paradise • Slave • Masoi wood • Nutmeg	• Earthenware • Ceramics • Beads • Iron equipments • East cloth	• Maluku (the islands of Seram, Banda, and Bacan) • Java • Makassar • Arab / Hadhramaut • Europe
The development of local industry and barter market spots in 17th to 18th centuries	• Bird of paradise • Masoi tree • Slave • Nutmeg • Pearl • Shark fin • Sea cucumber	• Earthenware • Ceramics • Beads • Iron tools • East cloth • Weaponry • Iron ore	• Maluku • Java • Malay • Makassar • Arab / Hadhramaut • Europe
The development of trade synergy in 19th and 20th centuries	• Bird of paradise • Masoi wood • Slave • Nutmeg • Pearl • Shark fin • Sea cucumber • Sandalwood • Dammar • Crocodile skin • Agarwood • Copra • Rattan	• Earthenware • Ceramics • Beads • Iron tools • Weaponry • Iron ore • East cloth	• Maluku • Java • Malay • Bugis • Nusa Tenggara • China • Europe

* This table is the result of an analysis of M. Irfan Mahmud's thesis entitled "Komoditas dan Dinamika Perdagangan di Papua Masa Sejarah (Commodities and Trade Dynamics in Historical Papua)" (2014).

Appendix 7. Production of the community of Southern Aru Islands

Copra		daily (Kg)	income	weekly (Kg)	income	monthly (Kg)	income	Yearly
	Large garden	14	IDR 50,000	100	IDR 350,000	400	IDR 1,400,000	IDR 16,800,000
	Small garden	7	IDR 25,000	50	IDR 175,000	200	IDR 700,000	IDR 8,400,000
Tumang		daily	income	weekly	income	Monthly	Income	Yearly
	Focus	4	IDR 257,000	30	IDR 1,800,000	120	IDR 7,200,000	IDR 86,400,000
	Not focus	3	IDR 171,000	20	IDR 1,200,000	80	IDR 4,800,000	IDR 57,600,000
Sofi (liquor)		Daily (bottle)	income	Weekly (bottle)	income	Monthly (bottle)	Income	Yearly
	Lucky	10	IDR 500,000	70	IDR 3,500,000	280	IDR 14,000,000	IDR 168,000,000
	Not lucky	3	IDR 150,000	21	IDR 1,050,000	84	IDR 4,200,000	IDR 50,400,000
The average of ideal monthly production for each family				Collected	Price	Total		
			copra (kg)	300	3,500	1,050,000		
			Tumang	40	60,000	2,400,000		
						3,450,000		

Lampiran 8. Consumption rate of Community of Marfenfen Villange

3 family members						6 family members					
	usage	day	week	month	Year		usage	day	week	month	Year
Cooking oil	15,000	2,142	15,000	60,000	720,000	Cooking oil	30,000	4,285	30,000	120,000	1,440,000
Salt	3,000	428	3,000	12,000	144,000	Salt	6,000	857	6,000	24,000	288,000
Sugar	10,000	2,500	17,500	70,000	840,000	Sugar	30,000	7,500	52,500	210,000	2,520,000
Soy sauce	1,000	7,000	49,000	196,000	2,352,000	Soy sauce	1,000	7,000	49,000	196,000	2,352,000
Betel and areca nuts	2,000	2,000	14,000	56,000	672,000	Betel and areca nuts	4,000	4,000	28,000	112,000	1,344,000
Garlic and shallot	5,000	357	2,500	10,000	120,000	Garlic and shallot	10,000	714	5,000	20,000	240,000
Rice	15,000	15,000	105,000	420,000	5,040,000	Rice	15,000	15,000	105,000	420,000	5,040,000
Coffee	15,000	2,142	15,000	60,000	720,000	Coffee	15,000	2,142	15,000	60,000	720,000
Wheat flour	15,000	1,071	7,500	30,000	360,000	Wheat flour	25,000	1,785	12,500	50,000	600,000
Children's snacks	2,000	2,000	14,000	56,000	672,000	Children's snacks	2,000	2,000	14,000	56,000	672,000
Detergent	6,000	6,000	42,000	168,000	2,016,000	Detergent	12,000	1,714	12,000	48,000	576,000
Lamp					10,000	Lamp					10,000
Electricity				50,000	600,000	Electricity				50,000	600,000
Cigarette	10,000	10,000	70,000	280,000	3,360,000	Cigarette	10,000	10,000	70,000	280,000	3,360,000
Sopi (liquor)				200,000	2,400,000	Sopi (liquor)				200,000	2,400,000
Total				1,668,000	20,026,000	Total				1,846,000	22,162,000

Appendix 9. The division of roles in agricultural activities between men and women

Process	Roles		
	Men	Women	Men and Women
Selecting a forest location	V		
Inviting family member in opening the garden with an area more than 1 hectares	V		
Cutting the smaller trees with axe or machete			V
Cutting the medium size trees with axe or machete			V
Cutting the big trees with axe or chainsaw			V
Leaving the land for a month while waiting for dry season			
Burn the land			V
Wait for a day			
Make planting holes			V
Planting corn in the holes			V
Scattering spinach seeds			V
Scattering mustard seeds			V
Scattering chili seeds			V
Waiting for a month			V
Planting bananas			V
Planting taro			V
Planting sweet potato			V
Planting cassava			V
Weeding the land			V
Spinach harvesting			V
Mustard harvesting			V
Corn harvesting			V
Preparing seeds of spinach, mustard, and corn			V
Taking home the seeds and drying under the sun			V
Bring the harvest to the market		v	
Selling the harvest to the market		v	
Keeping the money		v	
Planting fruit trees like jackfruit, areca nut, mango, durian, vanilla, and others			V
Light a big fire around the landfarm to keep the plants from wild boars	V		
Keeping the land at night from wild boars	V		
Harvesting			V
Bring the harvest of taro, sweet potato, and cassava		v	
Selling the harvest to the market		v	
Keeping the money		v	
The leaves of taro, sweet potato, and cassave are let alone to be new plants (natural propagation)			V
Become a fixed garden			
Leave the garden			
Openning new garden			

Appendix 10. The role division in sago production activities between men and women

Process	Roles		
	Men	Women	Men and Women
Selection on flowering sago or ready for harvest sago	v		
Clean the outer layer of the underneath sago	v		
Cutting the sago palms	v		
Debarking sago	v		
Cutting the sago into 1 meter long by axe	v		
Extracting sago			V
taking the sago pulp			V
Preparing sago fronds or *nibun* fronds as pad for kneading sago		V	
Preparing young flower bunches of coconut to knead the sago		V	
Choose a place near the water to knead sago or dig a pond for the water container			V
Kneading sago		V	
Changing water up to 5 times untill the water clear		v	
Throw away the sago pulp		v	
Wait for half an hour for sedimentation process, until the water in the container becomes clear		v	
Empty the water		v	
Taking the sago starch		v	
Filling the sago starch into *noken* bags			V
Taking the bags home			v
Working for 1 to 2 weeks for processing a sago tree			
Production up to 5 to 15 sacks			
Keeping 2 or 3 sacks of sago for family consumption		v	
Bring the rest with *noken* bags to the market for sale		v	
Cutting the sago into 20 – 30 parts		v	
Selling for IDR 10 thousand to 20 thousand		v	
Bring home the money from the sales		v	
Saving the money		v	

Appendix 11. Empirical Relevance of Changes in Forest Condition in Siwis and Malailis Villages, Sorong District

Empirical events	Indigenous Community	State	Private	Changes in forest condition
Release of customary land of Lukas Gilik	• Insistence from the nearest customary right owners who have released their rights	• The recognition of the Sorong district head on the signatures of the indigenous elders who have the strongest influence to right ownership	• Pressures and manipulative strategy to get signs from customary right holder	• Forest lost of 420 hectares
The release of Alex Klasibin's customary right	• Changes in view of land, which view land as a tool to improve welfare	• The recognition of the Sorong district head on the signature of the customary elders of the sub-clan of the customary landlord who has the most influence on the ownership of the customary	• Manipulative strategy to get the signatures of the customary right holders	• Forest loss of 400 hectares
Timber selling by customary right holders	• Individual ownership rights and absence of reprimands from customary leaders in sub-clan • The weakening of custormay law	• The development of the trans-papua highway	• The demand for high investment requires facilities and infrastructure	• Some trees are loss from the forest, like Merbau, Kuku, and Matoa
Hunted animals	• Individual ownership	• The development of	• The demand for high	• Decreased number of

selling from the forest	rights and absence of reprimands from customary leaders in sub-clan • The weakening of custormay law	trans-Papua highway	investment requires facilities and infrastructure	forest wildlife
Village expantion	• The aspirations of indigenous peoples to return to their lands	• Village budget	• Services of home construction contractor	• Land clearing for settlement area • Timber logging for house material
The establishment of custamary council of Kalaben	• Customary leaders to enforce customary law • Disciplin toward family member of the sub-clan not to sell timber in their customary land	• Customary leader who is also a distric head of Klaso • The recognition of regent on the customary ownership in sub-clan	• The oil palm company will enter Klaso sub-district	• There's no land clearing for oil plam plantation • There's no over logging and over hunting in the Forest around Siwis village

Appendix 12 Fifteen Districts in Papua Bioregion with High Rate of Deforestation

District	Natural Forest 2013 (hectare)	Natural Forest 2018 (Hectare)	Deforestation 2013 to 2018 (Hectare)	Deforestation rate (hectare/year)
MERAUKE	2,112,166	1,860,933	**251,233**	50.247
MAPPI	1,621,247	1,544,533	**76,713**	15.343
MANOKWARI	2,026,374	1,962,376	**63,998**	12.800
Kepulauan Aru	662,090	605,795	56,295	11.259
MIMIKA	1,606,997	1,556,295	**50,703**	10.141
SORONG SELATAN	525,136	482,940	**42.196**	8.439
TELUK BINTUNI	2.143.260	2.102.588	**40.672**	8.134
BOVEN DIGOEL	2.149.620	2.113.314	**36.307**	7.261
ASMAT	2.248.034	2.217.176	**30,859**	6.172
YAHUKIMO	1,160,754	1,130,567	**30,188**	6.038
SORONG	783,027	758,779	**24,247**	4.849
NABIRE	1,108,246	1,084,810	**23,435**	4.687
FAKFAK	1,006,415	986,420	**19,995**	3.999
PEGUNUNGAN BINTANG	1,335,498	1,315,766	**19,732**	3.946
RAJA AMPAT	638,059	622,478	**15,581**	3.116

Appendix 13. Glossary of Moi Kelim Language

(A)

Abatara	: wild mango
Aboker	: wild guava

(B)

Ba Ek	: wild boar
Baisan	: chili
Baty	: pumpkin
Bia	: wind instrument made from shells
Biswook	: palm grass for vegetable
Bore	: fish poison made from roots.
Boswesen	: A warehore to store Agathis which also used as a barter place
Bsi	: sugar cane

(D)

Dii	: *malas* wood

(E)

Egek	: Indigenous rules to protect natural resource area
Eges	: land
Eges Momberi	: the right of granting land to those who have rendered merit and respect while assisting in a war
Eges Fmun	: Ownership right from father line that usually granted based on bloodline, or ownership right based on the history of the owner presence

(F)

Fidoi	: a certain degree of expertise from a *kambik* graduate
Fulus	: indigenous social status for Moi woman who has knowledge and skill after attended indigenous education in the family.
Fun Nah	: the highest God in the indigenous religion of Moi tribe.
Funuk	: filter

(G)

Gi Iwa	: sago hamlet, a place with a lot of sago groves

(H)

Honge	: Penalty for violation of indigenous law or rules

(I)

Ifin	: place for the big trees
Ifiok	: sago fronds used to knead the sago
Ipha	: sago tree
Ineem	: lemongrass, galangal, turmeric
Iing gruu	: big taro plant
Iphaas	: corn
Iwa	: sago tree

(K)

Kaalk	: Mat tree / tree used as mat material
Kaleng Kla	: percussion instrument like gong
Kama	: roof boat
Kambik	: Indigenous education system in Moi Tribe
Kamfabe	: The stage in marriage ceremony by holding proposal along with commitment
Kamsakwa	: the stage in marriage ceremony by handing over the first dowry
Kelembele / Kelbel	: Cassowary

Kelnain : the place for bird of paradise
Kelng Buok : bird of paradise
Kelng Mangkriok : burung Maleo
Kelng Mulk : Crown pigeon
Kelng Salah : parrot
Kelng Wareen : wild chicken
Kelng Wuro : Nuru bird
Khaas : bamboo
Kibhi : bamboo raft
Kibik : rattan
Kiib : Edible Hibiscus
Kilimangae : certain title for *kambik* graduate
Kisaalk : rattan
Kisik : gardening place
Kmaben : the highest level in *kambik* education system
Kofok : a sacred place based on local spatial planning of Moi tribe
Kuwok : noken, or a woven bag made from leaves or bark used to carry goods
Kuwos : general place based on local spatial planning of Moi tribe

(L)

Labaam : pineapple
Labosa : axe
Laga Tulus : dammar / agathis tree
Li : sago
Libla Salek : the stage in marriage ceremony by handing over second dowry
Lemek : tool for knocking sago
Loung : langsat fruit

(M)

Mabirlas : *gohi*, a kind of vegetable
Malafon : mountain
Marubak : sweet leaf bush/ star gooseberry
Mawok : land kangaroo
Mayung : chameleon
Meitakyim : orphan
Misbak Semin : ritual in a marriage ceremony
Mook : spinach
Mukmili : Moi people's belief to Jesus Christ as God's son
Muuk : palm tree
Muwe : the highest God in Moi's indigenous religion / ancestral spirit

(N)

Nabalyu : Moi people's belief to the existence of God who created human and their indigenous lands.
Nedla : literally means a man, but it is an indigenous status means a man who has graduated from *kambik*.
Nelagi : literally means woman, but it is an indigenous status means a man who has not graduated from *kambik*, also called as *nelagi*Neulig : landowner
Neyage : village settlement

(O)

Ofulah : the indigenous leader of Moi who has graduated from *kambik*
Ofun : dog
Ou Kamtamus : Merbau tree

Omaha : marriage system in Moi community
Ooo : banana plant
Oun : big shell
Ou Yumuk : Kuku tree

(S)

Sabasafan : an introduction by telling about each other family lineage to find out the kinship closeness
Sangkoras : kale
Sawiyek : an iron spearhead
Sba : Suren toon tree
Sbak : cigarette
Simin : marriage party
Singgelek : machete
Siyen : Gagar tree
Somala : the right to surrender indigenous land to outsiders because the area is no longer safe
Soung : tree cangaroo or bear cuscus
Sowa Sowa : common water monitor lizard
Sphingeles : komodo dragon
Subey : land utilization right given to foster child, or land utilization right given to someone who got permit from the right owner (*neulig*)
Su Khban : landownership right for a daughter if she continues to live in her indigenous land, or landownership right to "anak piara" or foster child.
Sukmin : great master graduated from *untlan* and *kmaben*
Swaals : cempedak
Swili : the swamp Nibon tree

(T)

Tebe baal : sweet potato leaves, vegetable
Tebe yuuk : *Kasbi* plant
Teges te Moi : the transfer right of landownership
Thipi : Nibon tree, a kind of palm tree
Tritoun : wind instrument made from *oun*
Tulukma : the title for *ulibi* graduate

(U)

Ubgun Sho : black and white snake
Ulibi : the basic level of *kambik* education
Unsmas : the title for *ulibi* graduate
Unsula : the title for *ulibi* graduate
Untlan : the highest level in *kambik* education

(W)

Wariek : Great Master who graduated from *untlan* and *kmaben*
Woti : the right to give land to someone who has contributed in a war

(Y)

Yik : peatland

Lampiran 14. The Song from Marafefen, Aru Islands

Galalou
Galalou sungaiku yang ku cinta
Panoramamu memikat hatiku
Alammu sungu indah
mempesona di relung hatiku
Disepanjang masa

Reff :
Biar aku jauh dirantau
Namun selalu ku kenang
Biar tapele gunung dan
tanjung
Kau tak pernah kulupakan
Galalaou kau selalu di hatiku
Biar jaujau di tanah orang
Namun kau selalu ku kenang
Galalou kau selalu
Dihatiku

Galalou sungaiku yang
terindah
Airnya mengalir sampai jauh
Bertaburan bebatuan
Di tepian sungaina abadi
Di sepanjang masa

Marafenfen Tanah Leluhur
Marafenfen itu negeriku
Tempat aku dilahirkan
Disana kudibuai dan
dibesarkan ayah bunda
Marafenfen kau di hatiku

Reff :
Bila kukenang
Akan masa yang silam
Nan jauh disana
Sioh mama e…..
Saat itu kumpul bersama
Bila ku ingat
Akan masa kecilku bermain
disana
Sioh mama e…..
Mari gendong
Gendong beta bawa pulang
e….
Pulang kekampung
Tanah leluhurku

Marafenfen negeri idamanku
Banyak sungguh tempat yang
kutemu
Hanya satu yang kudamba
Hanya satu yang mempesona
Direlung hatiku
Marafenfen membuat aku
terpana

Pesona Gaelagoy ra

Sayup terdengar dari kejauhan
Suara burung bersahutan
Menyongsong fajar
Kuteringat pesona kekayaan
alam
Gaelagoy ra
Yang jauh disana

Tanah pusaka yang kaya
Anugerah tuhan bagi kami
Mari jaga dan lestarikan
Demi anak cucu

Reff :
Cendrawasih burung surge
Yang elok rupawan
Mutiara permata laut

Yang indah

Lola teridang juga
Di midar jurin
Sarang burung walet

Bertebaran disana
Sungguh kaya tanahku
Gaelagoy ra
Tanah leluhur yang kaya
Yang takan muda kulupakan

Mari…. Marilah
Mari…. Marilah
Anak anak negeri
Mari….. marilah mangar gair
Jaga dan rawat
Tanah leluhur kaya
Siang dan malam

Taran Jar Ngarin Ei Tit Uk-Uk

Kutor kulai kem meparong
Jel ja kaka mima katabagul
Taran jar ngarin on ta pei
Papa demdemur imaka ulmai o
One jom ka ida nou nou
Aka tup ia imaka tup ia

Guga urlima je ursia
Seta taparong tapo
Sera ot e
Tadoi sida garia nen
Peri rirar o
Imaka bulemlem
One jom ka ida sinir
Bana tup ia imaka tupia

Coba la carila

Coba la carila
Sepanjang sungai galagoe
Dimanakah negeriku
Yang kucinta dan kusangai
Gartit dan garaboka
Peragair dan garlolia
Disitu mengalir sungai ku
Galalou selamat bertemu

Garlolia ka garlolia
Sekali nam susah Akajertirga
Loloware kama me sekolah
May peragair maron kamaito
Maron kamaito

Kama mainata mo terlambatu
Om om orang kaya akatabai bai
Igoyar kama
kama maratuka
may kola kola
maina jeje maina jeje

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RESEARCHERS

Eko Cahyono (echo)

Cahyono is 42 years old, a graduate of the Master of Sociology from Postgraduate program of Bogor Agricultural University. He is the Executive Director of the Sajogyo Institute for the period 2015 to 2018. He is also an assistant of lecturer in the Division of Agrarian and Population Studies, Department of Science, Communication and Community Development, Faculty of Human Ecology, Bogor Agricultural University. In this research, he acted as a Research Coordinator for the making of the Papua Bioregion forest and human baseline study. He worked together with the program coordinator, ensuring the design, methodology, and results of the baseline study are in line with the empirical facts in the field. Thus, the objectives of the research can be achieved, which are to present the complete updated information and data about forests, natural resources, and people in Papua that can contribute to more equitable socio-economic and ecological changes.

Danial Dian Prawardani

Prawardani has just recently graduated from Gajahmada University, as a Master of science and Doctor of Management. In this research, Prawardani acted as a researcher for Moi Kelim tribe in Siwis village of Klasouw district, and Malalilis village of Klayili district. He has the main task to ensure the fulfillment of field data to answer research questions, and synthesizing the data found in the report.

Ahmad Hamdani (Iham)

Iham is 31 years old, graduated from the Department of Land Resource Management, Faculty of Agriculture, Bogor Agricultural University. Iham serves as a researcher at the Sajogyo Institute since 2015. Together with FWI, he involved as researcher in the making of the study baseline of Papua bioregion's forest and people. He was assigned to make the Aru Islands baseline.

Maksum Syam

Syam was born in Sinjai, South Sulawesi, November 10th 1985. He was graduated from post-graduated program in University of Indonesia. Syam was activist in pro-democracy movement during his time as student. He is currently the coordinator of the program development center at the Sajogyo Institute, heavily involved in the research and studies on agrarian, rural and poverty issues as well as in the study of social movements. In the research carried out by FWI, he served as a researcher to explore the forest issues and the ongoing ecological social crisis in Jayapura district.

Akbar Habibie.

Habibie was born in Bandung, West Java, on August 24th 1995. He was graduated from the Department of Marine Science and Technology of Bogor Agricultural University. He joined the field observation team in a study to explore the socio-economic issues in a coastal and marine areas in Aru Islands, as the data collection for baseline study accomodated by FWI.

Albert Ngingi (Abe)

Abe is 32-year-old male, graduated from Soil Science at Pattimura University, Ambon. Abe involved in social and environmental work since he was on campus. He then focused on indigenous and environmental issues since joining AMAN North Maluku from 2013 to 2016. He assists several institutions on the same issues especially in the North Maluku region, such as in participatory mapping. In 2018, became the regional coordinator in the FWI for the forest and human study activities of the Papua Bioregion which ensured the establishment of networks with local institutions in Papua and indigenous communities in the study area

Aryo Adhi Condro

Aryo Adhi Condro. Condro is a bachelor of Science in Applied Meteorology. During his undergraduate program, he researched about the dynamics of peat hydrology using a 3D model in the HCV (High Conservation Value) area in a palm oil consession in Ketapang, West Kalimantan. Condro had the opportunity to learn about Google tools at Google's headquarters in California, US, representing Forest Watch Indonesia. Currently, Condro is pursuing his Masters and Doctoral degrees in the Tropical Biodiversity Conservation program at Bogor Agricultural University through the Master of Education Towards Doctoral Scholarship Program for Excellence Undergraduate (PMDSU). In the graduate program, the author examines the importance of primate conservation in the world, especially in Indonesia. The author also had the opportunity to present the world's primate conservation at the International Society for Ecological Modeling in Salzburg, Austria. In the Papua Bioregion Study, Condro contributes to analysis of spatial and changes in land and natural forests in Papua Bioregion in several government regimes so that future policy directions can be projected for Bioregions.

Amalya Reza Oktaviani

Amalya Reza Oktaviani. Oktaviani was born in Surabaya 28 years ago. Graduated from the Department of Plant Protection, Faculty of Agriculture, Bogor Agricultural University. She is an activist of Forest Watch Indonesia since 2015. Oktaviani likes to write short stories in her spare time and she is interested in working on gender issues. In this research carried out by FWI, she involved as a research assistant to explore the issues of forest and socio-ecological crisis in Jayapura district.

Ars "Slash" Erwanto

Male, was graduate from Airlangga University on Antropology. As enumerator in the filed and data management on finding in Siwis and Malalilis Villages. in addition, it also ensures data synthesis and report writing in accordance with agreed research principles.

Aziz Fardhani Jaya

Male 24 years who is familiarly called Karat. He is a graduate of Fisheries at Bogor Agricultural University. Since 2016, he has been actively involved in research on karst and cave conservation issues with the Indonesian Speleological Society (ISS). One of them was involved in making a book entitled Karst Portrait of the Aru Islands, Maluku by Forest Watch Indonesia (FWI) in 2016. In making this baseline, he helped as a Research Assistant for Jayapura and surrounding areas To see and to learn directly in the field about how the condition of the forest and people in Jayapura and its dynamic is a great learning experience for him. Moreover, this learning process can present complete and reflective information about the current socioeconomic and ecological changes in Papuan society.

Fikrunnia Adi Prasojo

Prasojo is 23-year-old man who is commonly called Ciba. He is a graduate of Biology at Bogor Agricultural University. During college since 2014, he was actively learning research on issues of animal conservation, karst areas and socioeconomic issues from indigenous peoples with Lawalata IPB, FWI, TNC, YIAR, LATIN & Sajogyo Institute. In making this baseline, he acts as a Research Assistant for the Aru Islands, Maluku and surrounding areas. To see and to dive right into the field to learn how the condition of forest and socioeconomic portraits of the people in the Aru Islands is a great experience for him. This experience can be a lesson learned for him to be able to present information about the state of the forest, natural resource and human portrait in Papua


"As Many as Four Football Picthes
of Indonesian Forests are Lost in Every Minute"
LESS FOREST MORE DISASTER
NO FOREST NO HAPPINESS
#SudahCukup

Sajogyo