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Production and Power Structure in the Landscape of the Ulu Belu Geothermal Area, Indonesia

Winandriyo Kun Anggianto

Department of Human Geography
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Examiner: Anders Lund Hansen
Supervisor: Tomas Germundsson

Abstract

Recently, the Government of Indonesia has committed to intensifying geothermal development. In its event, geothermal development is part of global demands and national interests to reduce dependence on fossil fuels as commitments to respond the climate change. However, many geothermal areas in Indonesia are located in peripheral regions which populated with an established settlement of people. In the case of Ulu Belu, the development of geothermal areas must deal directly with the communities that already have their way of life. The community very much felt the direct economic and social impacts of the development of the Ulu Belu geothermal area. Still, at the same time, it may create new marginal groups. This marginalization is more prevalent when there are conflicts of interest between the developer and the community. This thesis sees the pattern of the development of the Ulu Belu geothermal area; there is a process that forms new power structure and symptoms of marginalization. However, the polarization that occurs does not linearly produce oppression. Assessing the degree of exercise of power to seek more balance in interest contestation is essential. Certain social efforts may also limit marginalization. In particular, the development of geothermal areas is very dependent on the context. Still, in the broader scope, the symptoms and patterns of social dynamics that occur can be perceived as general acknowledgement for further geothermal development.

Keywords: geothermal; peripheral area; landscape; political ecology; renewable energy; sustainability.

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Table of Contents

<i>Abstract</i>	2
Chapter 1: The Research Framework	7
Introduction.....	7
Energy Shift.....	7
The Case of Ulu Belu Geothermal Power Plant.....	10
Previous Research.....	13
Contribution of the Research.....	15
Research Problem.....	15
Analysis Structure	17
Theoretical Framework	21
<i>Production of Nature</i>	21
<i>Concept of Landscape</i>	23
<i>Degradation and Marginalization</i>	26
<i>Relevance and use of theories</i>	27
Methodology	28
<i>Grounded Theory</i>	28
Description of fieldwork	29
<i>Data Types and Sources</i>	29
<i>Observation</i>	29
<i>Literature</i>	29
<i>Description of the interviews</i>	29
<i>Location</i>	30
<i>Sampling</i>	30
<i>Limitation to the interviews</i>	31
<i>Coding of interviews</i>	31
<i>Categories and coding Description</i>	31
Chapter 2: Analysis	34
Analysis part 1: The Core Idea of Developing the Geothermal Area	34
<i>Developing Geothermal Power Plant: National Concern</i>	34
<i>People's Understanding of the Development of Ulu Belu Geothermal Area</i>	38
Analysis part 2: Power Posture in Ulu Belu	41
<i>Assessing Production of Nature and its impact on the Formation of Power</i>	41
<i>Effective Presence of Power</i>	43
<i>The Gap in the Interests Contestation</i>	46
Analysis part 3: Socio-economic impact and Exercise of Power	50
<i>Economic Gain or Sugarcoated Marginalization?</i>	50
<i>Finding the Intersection of Interests: Economic Interdependence and Shared Identity</i>	52
<i>Social Acceptance: Accessibility, Consolidation, and Cultural Intervention</i>	54
Chapter 3: Discussion and Conclusion	59
Discussion	59
<i>Public Participation</i>	59
<i>Policy implication</i>	60
Conclusion	61

<i>List of References</i>	64
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List of Pictures

<i>Picture 1. Ulu Belu Power Plant and its adjacent settlement.....</i>	11
<i>Picture 2. Food stalls in Ulu Belu</i>	41
<i>Picture 3. The main road and house accommodation</i>	45
<i>Picture 4. Geothermal Pipes and settlements are often adjacent</i>	47
<i>Picture 5. Semendo's traditional houses, as compared to Javanese-owned houses</i>	57

List of Figures

<i>Figure 1. Research model on Ulu Belu case, based on Korr's model</i>	19
<i>Figure 2. Indonesia's year-to-year oil production and consumption</i>	35
<i>Figure 3. Renewable power plant installed capacity 2018</i>	36
<i>Figure 4. The transcendency of interests in Ulu Belu geothermal area development</i>	40
<i>Figure 5. Process breakdown to find intersection of interests in Ulu Belu</i>	55
<i>Figure 6. Landscape formation in Ulu Belu</i>	61

List of Annexes

<i>Annex 1. Transcript of interview with April, local midwife</i>	69
<i>Annex 2. Transcript of interview with Senior Analyst PGE</i>	73
<i>Annex 3. Transcript of interview with Supervisor External Relations PGE Ulu Belu</i>	77
<i>Annex 4. Transcript of interview with Taufik, PGE security and local farmer</i>	80
<i>Annex 5. Transcript of interview with Deki, local farmer</i>	82
<i>Annex 6. Transcript of interview with Herman, local farmer</i>	83
<i>Annex 7. Transcript of interview with Iqrunnasi, Head of Muara Dua Village</i>	84
<i>Annex 8. Transcript of interview with Community Development Officer</i>	88
<i>Annex 9. Transcript of interview with Anthropologist, Lampung University</i>	91
<i>Annex 10. Coding of Interview and categories</i>	93

List of Map

<i>Map 1. The power plant and its surrounding environment.....</i>	12
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List of Table

<i>Table 1. Analysis and theories application</i>	20
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List of Abbreviations

CSR	Corporate Social Responsibility
DEN	Dewan Energi Nasional (National Energy Council)
ESDM	Kementerian Energi dan Sumber Daya Mineral (Energy and Mineral Ministry)
GPP	Geothermal Power Plant
GW	Gigawatt
MW	Megawatt
OPEC	Organization of Petroleum Exporting Countries
PGE	Pertamina Geothermal Energy
PLN	Perusahaan Listrik Negara (National Electricity Company)
PNOC	Philippines National Oil Company
SOE	State-owned Enterprise
WAE	Working Area of Exploitation

Chapter 1: The Research Framework

Introduction

The development of renewable energy is becoming one of the highlights of energy projections in Indonesia. Dependence on fossil resources for decades -without concrete efforts to solve it- has resulted in environmental degradation. Later, this condition pushed Indonesia to be more active in optimizing renewable energy.

Geothermal energy is one of the renewable energies in Indonesia, and its development sometimes faces obstacles because it has to deal with the interests of people in the peripheral area. This obstacle can be understood because the development of geothermal areas generally does not conform to the livelihoods and habits of the people. In practice, there are many clashes with the community which hinder the development of geothermal areas. Complaints from geothermal operations, environmental damage, or contact with the culture of the place often become problems that arise from the development of geothermal areas.

Seeing that in the future geothermal will play an essential role in renewables, developers must be aware of the circumference they may face in developing geothermal areas. The symptoms presented from the development of geothermal must be put in the equation, and one must ethically understand that balance in interest contestation is important.

Energy Shift

The oil boom in the decade of the 70s and 80s has transformed Indonesia into one of the leading oil producers. During that time, Indonesia saw a vast surplus of oil production, with the highest record of 1.7 million barrels per day in 1977 and 1991. Indonesia was also a member Organization of Petroleum Exporting Countries (OPEC). However, since 2003 oil production has declined, and for the first time, Indonesia saw a deficit in oil production that continues until today. The decline of oil production and change of paradigm to prioritize renewable energy becomes an impetus for the development of specially managed geothermal energy.

In Indonesia, energy development is always associated with fossil extraction. This is reflected in the national energy mix, which is still dominated by fossil energy sources, such as petroleum,

coal, and gas. In Indonesia, fossil resources account for 96% of the energy mix (DEN, 2014). Renewable energy development is still considered alternative, despite major drawbacks from fossil energy exploration such as environmental issues at the time of mining, high carbon production when used, and fluctuations in global market prices. Indonesia currently can only produce 690,000 barrels of oil per day and must import at least 44% of its oil needs from abroad (DEN, 2016).

The use of fossil energy sources is still high in Indonesia, mainly due to the production of fossil energy sources, especially coal and gas, which are still very productive. Fossil energy sources such as coal, even today, are also one of the primary export commodities. Indonesia consumed 115 million tons of coal in 2018, with a 10-percent increase per year since 2014. In the same year, Indonesia is also exporting more than 300 million tons of coal (Anggianto, 2019). The economic value of coal is still highly regarded, and the industry is desirable to developers of new businesses. Apart from the interests of productivity, political complexity and the pursuit of a business-friendly environment in Indonesia also make the fossil industry continue to roll and dominate. Nevertheless, Indonesia itself is committed to increasing the renewable energy mix in its national vision. In 2025, Indonesia is targeting to increase the use of renewable energy by 23% and then increase again to 31% in 2050 (ESDM, 2017).

One of the renewable energy sources with the most significant potential in Indonesia is geothermal, which has a possibility of up to 29 Gigawatt (GW). This potential is an inevitability given Indonesia's geographical position. The main characteristic of a geothermal energy resource that accounts for it as sustainable is its low pollutant gas emissions. Geothermal Power Plant (GPP) produces very low carbon dioxide and sulfur dioxide, and no nitrogen oxides (US Department of Energy, 2010). Other than that, geothermal makes use of dry steam generated by continuous magma activity, which makes it a sustainable source of energy.

In Indonesia, the first geothermal exploration was carried out in 1926. At that time, exploration began in five geothermal wells in the Kamojang area, West Java. However, geothermal utilization was only carried out commercially in 1983. The first installed unit capacity is 30 Megawatt (MW). The development of the GPP in this region then expanded to 5 units and now operating commercially.

Until now, the use of geothermal energy has seen rapid progress. Many other GPPs have emerged, including in Dieng, Sarulla, Lahendong, Sibayak, Ulu Belu, Karaha, and Lumut Balai. With the rapid development and more attention from the government, Indonesia is now part of the 1 GW country club, a group of countries that have succeeded in generating electricity from geothermal over 1,000 MW, along with other countries such as the United States, the Philippines, Turkey, and New Zealand (Utomo, 2019).

With a potential capacity of 29 GW, 40% of the world's geothermal potential is in Indonesia. With the depletion of fossil reserves and the need to increase sustainable energy use, geothermal is gaining particular attention in Indonesia. In his writings, Utomo explains that there are five characteristics of geothermal utilization. The first is as a source of clean and renewable energy. Second, it is in-situ in character, which means it can only be used in the place where it is extracted. Third, extraction wells and GPP buildings do not require large tracts of land. Fourth, it does not depend on other factors. Unlike other energy sources, geothermal does not rely on the weather, transport facilities, and fuel. Fifth, geothermal also does not depend on price fluctuations, like the case of fossils (Utomo, 2019).

With these characteristics, the use of geothermal energy may provide other benefits. In the "2030 Geothermal Development Road Map", it was stated that geothermal development could increase additional investment up to Rp 507 trillion, reduce greenhouse gas emissions reaching 56 million tons of Co2 / year, save foreign exchange, and generate electricity up to 195 GW. These benefits make geothermal development gains special attention, and it is predicted that it will play a vital role in the development of sustainable energy in Indonesia (Utomo, 2019).

The development of geothermal area also has the potential to bring economic impacts. Apart from the direct and indirect uses of geothermal energy sources, the multiplier effect can also occur through new infrastructure accesses as well as community development surrounding the power plant. Besides, adequate electrification can also encourage innovation or other paths at the local scale.

These possibilities can change the anatomy of the community in general; the social structure that exists in the community can vary due to fluctuations in economic status, their views on the environment can also change. Exposure to the outside world because of the infrastructure and access presented by power plant developers can create new demand and line of supply, all of

which make the community around the power plant can have a new identity. In other words, the presence of a power plant in peripheral areas will produce a new landscape with physical and cultural consequences. In specific settings, political decisions are also intertwined in the development process and may determine the shape of the landscape itself. Considering the change of the landscape, political ecology concepts can be the basis for an analysis of the development of a geothermal power plant and its influence on the surrounding environment. In the case of Ulu Belu, political decision and its projection exist since the very beginning. The appointment of the working area and its exploration, as well as the sustainability narrative used in the development, were not less political.

The Case of Ulu Belu Geothermal Power Plant

One of the geothermal power plants is located in Ulu Belu, Lampung Province, Indonesia. A state-owned company, Pertamina Geothermal Energy (PGE), operates the plant and the geothermal extraction wells. PGE itself holds 95% of geothermal working areas in Indonesia, making the company the largest geothermal company in Indonesia. Being one of the most utilized geothermal resources in Indonesia, Ulu Belu is situated in the remote area of the Lampung Province. The first two power plants (unit 1&2) were built in 2012, while two other units (3 & 4) have operated since 2016 with a capacity of 55 MW each.

With an installed capacity of 220 MW, Ulu Belu is one of the largest power grids in Lampung province. Ulu Belu plant's contribution to electricity in the province reaches 25 percent. This contribution has also utilized the majority of proven geothermal reserves of 300 MW (PGE, 2018). The geothermal potential in the Ulu Belu area is expected to continue to be developed, especially after the exploration of a new geothermal well, which has high enthalpy steam. The Ulu Belu area is part of the Way Panas Working Area of Exploration (WAE), with an area of around 89 thousand hectares and located 100 km southwest of the provincial capital, Bandar Lampung (PGE, 2018).



Picture 1. Ulu Belu Power Plant and its adjacent settlement (privately owned)

This area was first determined as a working area in 1990. The presence of fumaroles, hot springs, and altered rocks demonstrated the potential there. Three conditions as proof for the existence of a geothermal reservoir. In 1994, the first slim hole drilling was carried out, but then development halted. The economic crisis that occurred in Indonesia in 1997 led to another stall. New exploration continued later in 2007 (PGE, 2018).

The development of the geothermal area is in-situ in character; this is because the generated hot steam cannot be piped in the long-distance so that the enthalpy from the steam can be maintained and utilized optimally. Meanwhile, geological formations of geothermal wells are very dependent on the volcanic activity of an area so that many of the geothermal areas are far from the center of activity or, in other words, are in the peripheral area.

In their development, many of the geothermal areas were established on unspoiled land or former community plantations. These conditions have encouraged the geothermal developer to open access to the geothermal wells by creating a new infrastructure. Besides, this also means that the development of geothermal area must be carried out with an ecological approach that is, in principle, adapted to environmental and societal instruments.



Map 1. The power plant and its surrounding environment (Source. Google Earth Pro)

In the context of Ulu Belu, the use of geothermal is mainly focused on indirect use (electricity), whereas the utilization of geothermal is not limited to the energy sector. For direct use, for example, hot steam generated from geothermal exploration can be utilized in the agriculture and tourism sectors. Apart from the direct and indirect use of geothermal energy sources, the multiplier effect can also be expected through new economic accesses as infrastructure development, and Company Social Responsibility (CSR) programs drive the community around the geothermal area. In addition, adequate electrification due to the presence of GPP can also encourage innovation or other growth paths at the local scale.

The Ulu Belu geothermal area has been developed since 2012 in a peripheral area of Lampung Province, Indonesia. Through infrastructure, job opening, community development programs, this particular geothermal area has brought new economic activities, habits, and perspectives to the environment. It had a significant impact on the development of the local economy, which is reflected in the growth of supporting businesses spring from the community, such as housing, food stalls, and grocery, or other activities.

Development programs such as the construction of 20 km of roads, the provision of clean water, the cultivation of goats, freshwater fish, and coffee, as well as the provision of health and education facilities, are claimed to have helped improve the economy of the community (PGE, 2018). In the process of developing the Ulu Belu geothermal area, which took place in a relatively short time, efforts to develop geothermal areas have gone through various stages that made the landscape in the Ulu Belu area become what it is today. Socialization, infrastructure development, and community development programs have produced a new landscape for people in the Ulu Belu Region.

The Ulu Belu area itself is home to 40,757 people. In this area, there are seven villages which are considered as the ring 1 region. Ring 1 region is a crucial area where interests between actors occur. These seven villages are; Ngarip, Muara Dua, Pagar Alam, Karang Rejo, Gunung Tiga, Datarajan, and Air Abang.

Previous Research

Exploration of natural resources occurred in multiple periphery areas. In some cases, there are conflicts of interests between entities that may occur in the development process—many of these related studies circled around interests or power clashes.

In his dissertation, Albert E. Alejo (1999) describes several aspects where the contradictions occur at the cultural level. One of the points of his dissertation is that there is a conflict of interests between the Philippines National Oil Company (PNOC) and indigenous peoples who reject the construction of GPP on Mount Apo because of the issue of customary land (Albert Alejo, 1999). In this case, cultural issues are present, and conflicting interests make it difficult for the two parties to reach an agreement. In the context of Mount Apo, polarizing interests produce a depressed culture, and at the same time, environment degradation.

One of the most crucial parts of the geothermal utilization studies is its economic impact. It is crucial because this is where the interest of the company and the people would intersect. Many works of literature identify the economic implication of the geothermal area, especially to the nearby community as the result of industry creation. Aside from the geothermal extraction for the use of energy that can sustain electricity both for industry and households, Lindal (Lindal,

1992) explains the usage of geothermal water and steam in many different uses, including chemical, agricultural, mineral extraction, oil enhancement, fur/leather, paper, tourism. In a report written by the US Department of Energy, there are three types of economic benefits from geothermal utilization, which parted into direct effect, indirect effect, and induced effect. Job creation and increasing income are parts of the immediate impacts, to which community surrounding the geothermal area will benefit from. Secondly, associated jobs and economic activity involved in supplying goods and services related to the primary business are parts of the effect; for example, workers who manufacture drilling bits and related supplies. And, lastly, the economic activity generated by the re-spending of wages earned by those directly and indirectly employed in the industry, accommodation and logistic supply are examples of the effect (US Department of Energy, 2010).

In the context of Indonesia, an analysis shows that a GPP with a capacity of 250 MW will create more than 200 jobs. This employment is ranging from semi-skilled labor and skilled labor (SERD, 2017). The community could also benefit from increased income. Another study estimates that there will be raise of income as the surrounding people will diversify their income not just from agriculture (Vourdoubas, 2016), but also from newly established industries, accommodation, logistics, and transportation. Aside from income raise, new infrastructure such as road, housing, nursery, school, bus, and telecommunication station can be built to serve its primary function in supporting the power plant and, in some cases, the activities of the community around (Mwangi, 2010).

In his thesis, Jowsey (2003) retains that economic significance in the renewable resources area is strongly tied to ownership and access, which also, to some extent, incur political and strategic interests (Jowsey, 2003). In the case of Ulu Belu, where resources are state-owned, there is a possibility that the resources are "virtually" jointly owned. While it is concentrated and restricted, it also has some part open for public access. This kind of situation makes property resources must be managed both formally through the law and informally through community involvement. Problems that then often arise are more due to differences in interests between the developer and the surrounding community. It is at this point that the alignment of interests has a complex economic, political, and strategic dimension. And finding the intersection of interests could start from one of these dimensions.

Contribution of the Research

This thesis is intended to contribute to the repertoire of discussion in the development of renewable energy resources in general. Through structured analysis enriched with existing theories, this thesis is expected to provide an insight into the socio-political dynamics that define a process of landscape production. By emphasizing the process and impact of geothermal development as an energy resource, this thesis also contributes to enriching the discourse of energy resources development; that does not straightforward serve business needs or sustainability, but also for particular political ecology purpose. Finally, given the importance of geothermal in the future empowerment of Indonesia's sustainable energy, the study of the development of Ulu Belu and its accompanying complexities can be a reference to help identify and examine the critical points of developing sustainable geothermal area in other peripheral regions.

Research Problem

The impacts that occur in the community show that the development of the geothermal area has a dimension of contestation of interests. The development of the geothermal area must face the existing conditions of the community, with their norms and values. The changes presented by the development of the geothermal area have an impact on the community; however, there is a concern that the development of geothermal areas must also look at efforts to align interests. Bearing in mind the actors involved have their respective interests different from one to another, besides it also needs to be seen regarding what powers these actors hold that later determines which interest is more dominant in the actual place.

The dominance of one entity over the other may reflect the marginalization of the community. In this case, the marginalization began when the development has altered the community's livelihood from agriculture. Their land was bought, and the community was left without adequate substitution for the job. The marginalization also can be seen as the community is now more connected to the outside world. While it brings many positive impacts, it would also aggravate the economic gap to the people who couldn't compete with the new exposure of new demand and new habits. Environmental degradation, although it is not severe, may occur when the steam and water are overexploited. Overexploitation of water may also affect agriculture production in surrounding area. If seen closely, these dimensions reflect the formation of a

landscape. The contestation of interests between actors and the power structures within them, the alteration of physical nature and livelihood, and the form of people's perception of nature can be understood by running through the process of landscape production.

In the context of Ulu Belu, the development of geothermal areas for the power plant is inseparable from a process landscape production. The unique natural resources (geothermal) of a landscape become the main driving force which then produces new physical and institutional structures. This thesis is a research on how various interests can play in a landscape, how an idea to reduce carbon emissions at the global level is translated at the atomic level and transcends among different actors, as well as how political and cultural interventions form new norms or institutions. Finally, the landscape may take form as a physical and institutional arena that is created from interactions between humans, nature, and built environment and occur within a specified period to serve particular interests.

The case of exploitation of natural resources is intertwined with the nuances of power projection. There might be conflicting interests, and the exercise of power from more substantial entities can create new marginal groups. The marginalization can be seen from the presence of conflict, changing patterns in the society, and community's control over its area. The development of the Ulu Belu geothermal area is inseparable from this phenomenon, PGE is present there with strong knowledge and financial tools, their presence in the Ulu Belu area is more effective than the local government itself. Their effective presence comes as the culmination of the power structure, and, unlike local governments who have formal responsibility for the welfare of the community, PGE does not have the obligation so that their power projection can go unchallenged. This unequal situation has the potential to present conflicting interests, change people's lives, and diminish communities' control of their territory.

The development of the Ulu Belu geothermal area can be an epitome of the formation of landscape. It comes as a result of contestation of values and ideas. It is essential to know the pattern of development carried out in the region and the effort to align interests. Considering power relations and its exercise are crucial in the production of landscape throughout many interpretations, this thesis is intended to reveal the process of landscape production and to measure the exercise of power, particularly in the geothermal area of Ulu Belu.

Thus, according to these observations, proposed below is the research question:

How is the structure and exercise of power playing out in the production of the Ulu Belu Geothermal landscape?

Analysis Structure

Considering that the process of landscape production is inseparable from the tradition of cultural landscapes, a model is needed to analyze the Ulu Belu landscape. To understand what process occurred so that Ulu Belu can become an existing landscape and what impacts occur in the production process. In structuring the analysis, applying a relevant research model to the situation of the research object is necessary.

Jeremy Korr proposes a research model that accommodates a broader cultural landscape, against just individual artifacts study as most research models were introduced in the past (Korr, 1997). He coins the model after a general consensus that cultural landscape means a manifestation of material culture (Prown, 1988). In his explanation, he explains that cultural landscape is an embodiment of two agents of material culture – humans and artifacts- and nature, thus creating dynamic three-way relationships. Taking Carl Sauer's work as a reference, in which emphasizing active human intervention on landscape production (Sauer, 1925), the model recognizes cultural landscape as a cumulative record of reciprocal effects from humans, its artefactual meaning, and natural components. The model also tries to incorporate Pierce Lewis's guideline that outlines the element of cultural landscape: physical environment, perception, ambitions for altering, cultural strictures, tools, and technology used to shape the landscape (Lewis, 1979, 1983; Korr, 1997).

The model consists of a five-step operation. The first step is to define the components involved, that includes humans, artifacts, non-human natural agents. This trinity of element will be identified and set as main subjects. After careful analysis of the dynamic relationship between these components, the significance of each may define the landscape itself. The second step is to identify the boundaries that were set by space and time. These boundaries emphasize political or social structure. The political institution in this matter is essential because it

establishes and recognizes the boundaries. It affects the perception of the people, as well as reflects what kind of relationship occurred in the landscape (Korr, 1997).

The third operation is to examine the dynamic of triangular relationships between humans, nature, and the built environment. This examination will emphasize human intervention in shaping the landscape and built environment, how nature can act as an agent, and how those three elements affect each other. The fourth operation is to understand how people see their landscape; it is the system, value, problem, wealth, organization, history, aesthetic habitat, artifact, nature, the ideology that evolved into making a perception of the landscape (Meinig, 1979). The fifth operation is cultural analysis, in which descriptive information of what lies behind people's decisions about what to do or not to do with their landscape. This last stage will examine the history of a place, social composition, and even the use of knowledge and technology that distinguish the significance of the role in power relations (Korr, 1997). Considering that people's perception of their landscape is mainly driven by the impact that the geothermal area brings, it is recognized that culture and economic factors are crucial in this operation. It also indicates that the fourth operation will intersect with this operation in several areas.

In applying the model in this study, the five-stage will not be applied in a step-by-step approach. Considering that the data taken through interviews, observations, and literature studies include many elements, it may become a basis for the analysis of each operation, without the need to make clear distinctions between them. Nevertheless, the data and information collected will be arranged accordingly to the purpose of each operation.

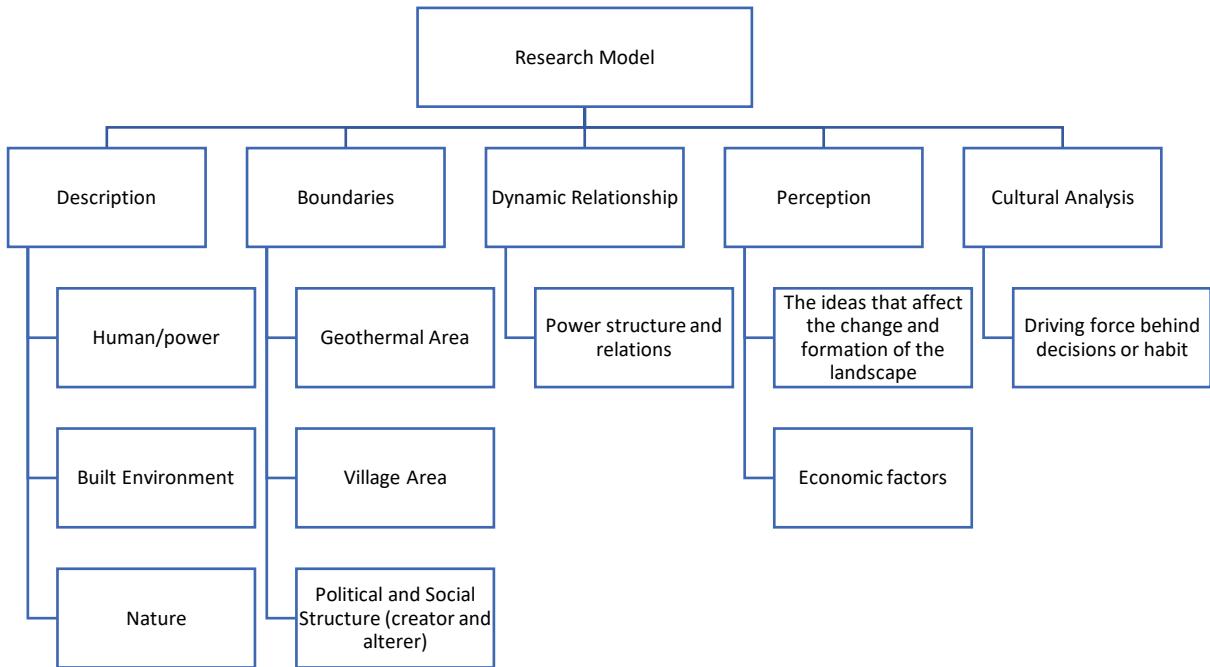


Figure 1. Research model on Ulu Belu case, based on Korr's model (developed by author)

In the application, the model will be used to identify information that needs to be sought during research. Based on Korr's (1997) explanation, the five categories form guidance in the preparation of sub-questions that may help answer the main research question. In the first part, the model may help to identify a description of the actors, nature, and environment forming in the Ulu Belu area. This will explain the focus of the research and the differences of each sub-category. In the boundaries section, it will further explain the geographical and institutional boundaries of the research object, which are the geothermal area, village, and power institution. In the third part, the information sought is the dynamics of the relationship between actors and nature. This section will explain how power can take form, and the manifestation of that power affects the symptoms that occur in the development of the geothermal area in Ulu Belu. The fourth part is the justification for seeking information on perceptions that exist and influence the social turmoil there. In the Ulu Belu case, the value of Ulu Belu development and economic factors are the information that will be analyzed. The fifth part is to look at cultural interventions on social dynamics in Ulu Belu. This section will enrich the analysis in the perception categories.

Based on those descriptions, four sub-questions were developed that would help structure the answer to the main research problem. These four sub-questions are:

- *What is the core idea of geothermal development? And how it transcends among different actors?*
- *How the power interplay between actors, which differentiated by the effective presence, financial, and access runs in the production of the Ulu Belu landscape?*
- *What economic impact that power plant development brings?*
- *How people's perception and participation may help to find intersections in interests?*

The four sub-questions will be categorized and answered in three parts of the analysis. To facilitate the reader in understanding the approach, the following table is used.

Part of analysis	Part of analysis	Theoretical Approach		Data Collection
The Core Idea of Developing the Geothermal Area	<i>What is the core idea of geothermal development? And how it transcends among different actors?</i>	Concept of Landscape	Production of Nature	Interviews, Literature, Observation of daily practice
Power Posture in Ulu Belu	<i>How the power interplay between actors, which differentiated by the effective presence, financial, and access runs in the production of the Ulu Belu landscape?</i>	Degradation and Marginalization	Cultural Analysis	
Socio-economic impact and Exercise of Power	<i>What economic impact that power plant development brings?</i> <i>How people's perception and participation may help to find intersections in interests?</i>			

Table 1. Analysis and theories application

In sum, the research model proposed in this part is used to identify what information needs to be collected to conduct landscape studies. The five operations described in this model are then summarized into four sub-questions to support the main questions of this thesis. The four questions will be linked to existing theories that have a related pattern to each question and will help in structuring the answers to the four questions. Seeing the fact that the empirical data from this research will play an essential role in the structure of analysis and narration, this thesis will use an inductive-deductive approach.

Theoretical Framework

Production of Nature

The main ideas of the "production of nature" are laid out by Neil Smith (2008). To understand and how to read a landscape, it is necessary to understand how nature can take form and what processes occur so that human activity can redefine the permeance of nature. Apart from the general definition of nature, the underlying assumption of nature is initially the antithesis of human production activity. Nature is a substrate material of daily life, which is seen more in use value than the exchange value realm. However, with the progress of capital accumulation and the expansion of economic development, this material is more a result of social production. If the development of the landscape material is placed in a historical context, landscape production is a product of nature. Meanwhile, the differences in the results of this process can be identified as material symptoms of uneven development. At the abstract level, the production of nature consists of the nature of use-exchange values and space-society fusion (Smith, 2008).

Production of nature requires two main elements, the physical place and the production itself. The physical place is the primary material of the relationship between nature and humans, while production is a process in which natural forms are altered. The producer changes the types of material nature into something useful for his interests, which means that the structure and exercise of power will define the position of the producer. This notion conforms to the knowledge that circulated in the late 20th century; landscaping, as a result of production, was central in defining power relations (Barrell, 1983; Bender, 1993). Another opinion that reinforces the idea is the consensus of the branch of art history, which states that artifacts or symbols can be understood as a representation of power (Mitchell, 2004). Whereas, production is a human creativity to change nature to fulfill its life needs. This is where, a production of nature begins to change, from the beginning of use-value to exchange-value (Smith, 2008). In the Ulu Belu case, this theorem is interesting to explore; alteration based on use value is more a necessity when humans intervened. The utilization of limited and local resources makes the community is capable of self-sustaining. Adjustment towards exchange value arises when geothermal exploitation begins.

Marxist's explanation of this process is also related to the mode of production. Modifications to nature are carried out to satisfy human needs and are processed by labor forces. Naturally,

productive human activity is an actual act designed to create a way to fulfill subsistence (Smith, 2008). David Harvey says that it is a necessity that new social relations also exist in it and form a division of labor. The gap resulting from this division of labor becomes norms and crucial in production activities. Stepping aside, Harvey also mentions that this class gap also produced several assumptions, especially related to the disruption of ecological harmony and social balance (David Harvey, 1975; Smith, 2008).

The process of human nature production will probably give birth to a production and consumption mismatch, which means that the production process of nature either becomes a deficit or a social surplus. Social surplus is initially an ideal condition. However, when a surplus has provided comfort, it will produce a certain standard. A surplus that was a possibility has become a necessity. A surplus then extends basic needs (Smith, 2008). This condition is prevalent in the community livelihood that changes after PGE infiltrates the Ulu Belu area.

Generally, the surplus does generate an economic pulse. However, competition over access to surplus is very exclusive. It could lead to severe disparity when the surplus is only enjoyed by certain groups, while on the other hand, marginalizes the larger groups. A surplus can also be generated from a creation and has a representative function. Lefebvre explains the flexibility of the definition of the surplus; he states that the definition of surplus may extend. In his context, to aesthetics. Aesthetics for him can be interpreted as a privilege that is formed according to the tastes of dominant groups (Lefebvre, 1991).

After the stages of the production process, exchange economies emerge and replace what was then use-value. This is the beginning of exploitation, where nature is no longer utilized for its use but exploited to gain a surplus. An institution emerged, an institution that facilitates and regulates the exchange of commodities, and this is the condition of *second nature*. *Second nature* provides a platform that is more abstract than material creations; the existence of legal, economic, and political institutions is becoming more apparent. In the *second nature*, the bourgeoisie's power will increase by controlling not only the exchange process but also the production process (Smith, 2008). The institution may also serve as a tool to control an area, formally or informally. This notion conforms to Lefebvre's opinion that nature is human-produced. Humans have created legal, political, religious, artistic, and philosophical tools, as a form of intervention in realizing a space (Lefebvre, 1991, 1996). This is another evidence that it takes human intervention in the production of nature.

Although initially introduced in agriculture cases, the symptoms conveyed in the theory of the production of nature are relevant to the exploitation of other natural resources, including geothermal. Production of nature not only discusses the results on the physical order, but the long process is very dependent and will have a significant impact on social life in it. While this production process and its reflection in the geothermal area of Ulu Belu are viewed from a critical perspective, it is also necessary to look at efforts to unite the balance of humans and nature. In achieving this, a social control mechanism is essential to determine what is and what is not socially necessary, what is and what is not valuable. Something that is in a geographical and social context cannot be determined by the market as exalted by capitalism. There needs to be a mechanism where necessity is judged not according to the market's logic, but according to human needs, not based on exchange-value but from use-value (Smith, 2008).

Concept of Landscape

Landscape itself has come with many interpretations over time. Historically landscape is trinity of land, people, and territory (Olwig, 2016), without a clear distinction between constituents or with other ambiguities. The concept of landscape is about people and the land, which is the place to live for the people, and used collectively. The landscape is the territory that represents politics and institutions. This explanation can generally describe the various types of landscapes encountered throughout the world, and also implicitly places the importance of political intervention in the production of the landscape. With this explanation, the meaning of landscape is determined by the reciprocal relationship of, at least, these three things. As science developed, especially after the Renaissance, the landscape is explained to have a deeper meaning. Landscape paintings that originated in Italy, Germany, and the Netherlands in the 16th century, provided a new perspective on the landscape. Landscaping has a representative function, depends on the meaning of the painter. Meanwhile, other senses may develop, depending on the people who see the painting. Thus, a landscape can also be seen differently and have different meanings depending on the perspective of the beholder (Cosgrove and Daniels, 1988).

Representations and perspectives on a landscape are also used in the engineering of a landscape. Natural science, which later developed, engineering, geology, ecology, became the science that manipulated a landscape. The current landscape is a set of real phenomena. Not only ambiguous but also dualistic, it is more than the physical aspects, but also it serves as a

representation of political manifestation. The science of geography in its development produced an alternative to giving new meaning to a landscape, by engineering the nature, culture, and human intervention (Kolen and Rennes, 2015). Human intervention and social construction brought by humans to this landscape may then become the main feature of this research problem framework.

The definition of landscape production also occurs organically, Marwyn Samuel explains that Landscape is more than just a by-product of anonymous social, economic, and demographic development (Marwyn, 1979). For him, the landscape is the biographical accounts of many/numerous individuals who have occupied, worked, shaped, and dreamed of them over time. The impressions of these individuals, the unidentified, unnamed actors, play an essential role in the making of landscapes

However, Samuel's idea in the landscape is more visible in one direction: people, mostly individuals and elites. The narrative built on the landscape in Samuel's view is about the story, memory, and values of unidentified actors on nature. In a broader sense, this approach sees landscape production as organic, embedded in the history and material culture of a landscape, without paying more attention to reordering and changing experiences of the landscape (Marwyn, 1979).

Nevertheless, political intervention in the form of order and institution is prevalent in the process of landscape production. The depth of political interference in the production of the landscape is explained by John de Jong (2105). He argues that human activities that affect landscape are not random, but structured by both spatial and social order. He also reiterates that people and change of institutions remain essential in the dynamic of the landscape. By taking the examples of *Bulten Wittevrouwen* in the town of Utrecht, the Netherlands, the biographic breakdown of the town put institutional effects on the shape and the function of the town. For an extended period, the spatial order was dictated by military and religious interests. During the 15th and 16th centuries, the Catholic church played a vital role in the exploitation of the land. Their dominance was present not just in its physical manifestation, but also in legal, political, economic, and cultural respect. Planning and development of spatial use represent the interests of the institutional bodies (Jong, 2015).

In the 19th century, the neighborhood of *Bulten Wittenvrouwen* was developed from rural into the urban landscape as a new identity, and national uniformity was introduced. From 1795 onwards, the political institution in the Netherlands was rapidly revolved. Dissolution of monasteries after French administration and the appropriation of properties led to the demolition of monasteries. In exchange, the landscape was replaced to serve military purposes as supported by the French authority. From 1815 onwards, Utrecht has become a garrison town, flanked by the fortification system. This is where the dominant institution is central to the alteration of the landscape. Land-use decisions are bound by the variation of social, economic, legal, and political institutions, which determined by the dynamic of dominant values (Jong, 2015).

Other explanations with different approaches also place humans as an essential component in landscape production. Human intervention is an integral part of the production of landscapes, as stated by Carl Sauer in "Morphology of the Landscape". Sauer explains that landscape is a cultural entity formed by humans and, studying geography is to explore the cultural landscape (Sauer, 1925). In short, he explains that culture is an agent that changes nature as a medium to produce what is called a cultural landscape (Sauer, 1925; Wyllie, 2007).

Explanations about the landscape illustrate the notion of landscaping that is not straightforward. Wyllie (2007), traced the semantic footprint of the term "landscape". He says that the landscape in the old Dutch tradition put forward the legal and administrative concepts in the community. Whereas in the German tradition, the landscape is the land itself, as an object as it is. In American landscape tradition, the landscape is "bounded-area". They emphasize human intervention in the form of the role of culture instead of an artistic or legal-administrative approach (Wyllie, 2007).

Although there are differences in the landscape definition, those explanations underline a vital component of a landscape; it is a result of the constant interrelationship between material objects and society and the institutions that regulate between the two. A landscape with biographical and biological processes is an arena for human civilization activities. The landscape is utilized, formed, and used as the identity of humans around it.

In addition, political and cultural intervention may also have a significant role in defining a landscape. The synthesis of culture and nature can indeed explain a landscape itself, but in the

process, political agents also play essential roles. As described by Carl Sauer in "The Personality of Mexico". In the article, he explains how the regions in Mexico developed according to the civilization that controlled the region. The arrival of Spain in the 14th century, which later became the leading political force there, changed the pattern of production and distribution of mines, formed a new economic frontier, and even had a profound influence on demographic conditions. What is also interesting, in this paper, this political intervention took place to control metal mining which to some extent, related to exploitation of natural resources (Sauer, 1941).

Degradation and Marginalization

Robbins (2012) explains the overexploitation of natural resources as an excess of national and global demand. When a product meets a broader market and finds their demand, overexploitation of the source material may lead to, ironically, poverty and land degradation.

"...Otherwise, environmentally innocuous production systems undergo transition to overexploitation of natural resources on which they depend as a response to state development intervention and/or increasing integration in regional and global markets. This may lead to increasing poverty and, cyclically, increasing overexploitation. Similarly, sustainable community management is hypothesized to become unsustainable as a result of efforts by state authorities or outside firms to enclose traditional collective property or impose new/foreign institutions. Related assertions posit that modernist development efforts to improve production systems of local people have led contradictorily to decreased sustainability of local practice and a linked decrease in the equity of resource distribution."

(Robbins, 2012:159)

Eventually, it also could bring natural degradation that decreases production. Declining environmental condition is the first sign of community marginalization (Robbins, 2012). As an example, William Moseley takes the case of cotton export in Mali. He explains that the demand for cotton export has been there since the colonialism era. The land expansion was developed in the name of economic growth. While the state gains revenue from cotton export, overexploitation has depleted soil fertility on a smaller scale and hurt small-holders revenue. It also aggravated by poor agricultural practices. The declining cotton production, in this case, was strongly related to ecological depletion (Moseley, 2005). Marginalization, in this pattern, is identified with the economic relationship between the community and the power holders. In which little control to the power holder is absent, and most of the surpluses do not go to the larger populations. An example from Myanmar argues that political decisions may also

contribute to the larger scale of marginalization when the government decided to increase a large-scale investment and eventually enforce an act that illegalizes villagers' farmland (Franco *et al.*, 2018).

However, political ecology discourse is not necessarily identical to marginalization. In several cases, state intervention has shown as a useful tool to deter marginalization and degradation in the agriculture sector. As an example, is Grossman's (1998) research of banana smallholders in St. Vincent. In his study, state intervention in the upstream-downstream banana industry has helped the smallholders to initiate humane and sustainable agriculture practice. By such practice, the smallholders can sustain their livelihood and maintain their banana's productivity (Grossman, 1998). However, he also states that specific environment, historical, and cultural circumstances, as well as traditional as particular conditions may determine the result. He also retains that human-environment interactions -local environmental details against broader policies and market- must be given adequate attention to make political ecology relevant and useful (Robbins, 2012).

This complexity is not absent in the case of Ulu Belu. However, the degree of degradation and marginalization and the scale of the actors may not be identical one to another. When patterns of degradation and marginalization may present in some cases, it comes down to the unique practice in each place that will determine the impact.

Relevance and use of theories

The production of nature provides a comprehensive framework to understand the power structure and relation in any landscape, particularly in the context of natural resource utilization. The theory helps to explain the symptoms that arise from human efforts to regulate and form a landscape, the processes, and the perceived impact. The flexibility of the theory makes it applicable in many cases and helps to structure the analysis.

The same is applied to the use of the theory of degradation and marginalization. The theory explains the impact of the imbalance utilization of natural resources, especially in terms of the impact arising from unsustainable exploitation practices. Nonetheless, this theory also leaves some space for a different result and can be used to find analysis that is focusing on economic impacts and community control. The relevance of this theory depends on the practice in each

place. The context will determine the extent of degradation and marginalization. This flexibility is vital to see production practices from a particular area somewhat.

Methodology

This section will outline the methodology used to answer the research problem of this thesis. This section is divided into three parts, the first is the explanation of grounded-theory, and the second part is the explanation of fieldwork, interviews and data treatment, which in this thesis refers to the coding system. The importance of empirical data in this thesis will be accompanied by the transparency of interview transcripts, which will be attached in the additional sections of this thesis.

Grounded Theory

The research is conducted within the framework of grounded theory, considering the particular and locality of the issue. Empirical data gathered from interviews will mainly be the foundation of the research structure, as the grounded theory framework offers flexibility and adaptability for the empirical data (Raaschou, 2018). Generating contextual theory is usually resulted from this approach, as the method emphasized the establishment of fact generality through comparative studies (Strauss and Glaser, 1967). However, it is also the general understanding of the method that empirical data is central to grounded theory (Strauss and Glaser, 1967; Raaschou, 2018).

As the empirical data has become foundational material in this thesis and the approach highlights the iteration process that is supported by data and analysis. The application of grounded theory in this thesis is leaning on the approach laid out by Ribot and Peluso (2003), where the research design is formed around collected data (Ribot and Peluso, 2003; Raaschou, 2018). This approach also ensures adaptability to match existing theories, while at the same time still adhere to the main criteria of grounded theory (Strauss and Glaser, 1967; Chiumbu, 2017; Raaschou, 2018).

The grounded theory put forward context and aims to form or to conform theory based on empirical data. The strategy that will be used to produce interpretative descriptions and new knowledge is coding. Coding may help to a more focused analysis and considerably appropriate way for empirical data treatment.

Description of fieldwork

Data Types and Sources

The type of data taken includes primary and secondary data. Primary data was collected through semi-structured interviews with related parties in PGE, Ulu Belu Subdistrict apparatus, and the local community, as well as individual observation. Secondary data was collected through literature studies. Coding is used to categorize all of the statements from the interviews. These categories cover aspects of economics, culture, environment, the perspective of the land, physical and societal change, as well as their view on PGE.

Observation

Observation is a part of "lived experience" to observe and participate in the community. The observation was conducted during the whole internship. Observation helps to make sense of the development of geothermal business in Indonesia. However, for the thesis, the observation was mainly conducted during fieldwork and was done by applying the three basics process of observation. The three-stage processes are gaining access to the community, living and working among the community, and referring to the academy (Ian Cook, 2005).

Although the fieldwork was considerably short, I was able to get the sense of the daily activity of the people as I lived in one of the houses of the community member, joined one of the community meetings, and joined two social community gatherings. I also talked to local doctors and a lecturer from a local university to gain reliable references of the sense from observing the community's daily life. During the observations, I took notes and photographs as material evidence (Ian Cook, 2005).

Literature

The study also rests on secondary data from official documents and published reports from PGE and Indonesian authorities, as well as the Social Mapping report of the Ulu Belu area developed by an Indonesian University. The selection is limited to documents concerning geothermal development in Indonesia and the social condition of communities in Ulu Belu.

Description of the interviews

Interviews were conducted during the internship term at PGE from August to December 2019. Seven from nine interviews were conducted in Ulu Belu during the fieldwork on 11 – 20

November 2019. One interview with PGE headquarters' officer was held in Jakarta on 14 October 2019, and another interview with Universitas Lampung's lecturer was conducted on 17 March 2020 by phone. The length of the interviews ranged between 10-58 minutes, depends on their willingness to share information. Interviews are all semi-structured but tailor-made to each interviewee, depending on position and circumstances, using the Indonesian language. All interviews were recorded and transcribed. Quotations will be used directly from the transcripts.

Although the fieldwork was conducted within the period of internship and some of the PGE officers helped me with transportation from the airport to Ulu Belu and to find accommodation during my fieldwork, I was able to position myself as neutral interviewers without any intervention from PGE. I distanced myself from the PGE officer and always introduced myself as a student.

Location

The location of the object of research is the geothermal area of Pertamina Geothermal Energy in the Ulu Belu District, Tenggamus Regency, Lampung Province. Three ring 1 villages namely, Karang Rejo, Muara Dua, and Pagar Alam which are located 1-3 km around the geothermal power plant. However, due to the nature of geothermal exploitation, the *epicentrum* of the activity is the whole district, as ring 1 includes all the geothermal wells.

This location was chosen because PGE's Ulu Belu area is considered a new geothermal area. Landscape changes that occur there can still be traced through observation and interviews because the parties involved are still relevant. The three villages, aside from being the closest to the power plant, are also the location where the majority of the activities of PGE are concentrated. The office, the power plant, most of the geothermal wells and pipes are in these three villages. Also, the villages are where intensive interaction between PGE and the community occurred. In addition, the demographic of the community, which are mostly trans-migrants, can be another element that can give a certain weight to the research.

Sampling

Purposive sampling is the method of selecting samples for those who are considered to understand the research issue. Eight of the respondents are particular and were identified to match the sample of information within the area study (Julian Parfitt, 2005). Each respondent

was given a set of tailor-made questions. Nine people were respondents of this interview; a PGE headquarters employee, a PGE Ulu Belu Public Relations officer, an Ulu Belu resident employed by PGE, a Community Development consultant, a head of Muara Dua village, a lecturer of Universitas Lampung, and three community members. All interviews were conducted one-on-one, and I had the liberty to choose my respondents. One respondent, however, the head of Muara Dua village, was interviewed in the PGE office as he came by invitation from one of the PGE officers.

Limitation to the interviews

There are several limitations to the interviews in this thesis. First, the considerably low number of interviews that make it difficult to draw a general conclusion. Second, the information gathered from interviewees varies in substance. This is reflected in the duration of each interview, which ranges from 10-60 minutes. Several interviewees, mainly the local people, responded very straightforward and shortly, which makes it challenging to develop a more in-depth conversation. Repetition also found in their answers. Also, as the transcript is Indonesian, I have to employ my interpretation. Otherwise, the translation would be difficult to be put in context. Third, is the considerably short time of fieldwork.

However, these limitations are not without solutions. Systematic coding may resolve the low number of interviewees and information imbalance problems. Through coding, information is carefully selected and analyzed. Therefore, information importance can be systematically arranged. Literature study and observation are eventually complemented the data collected from the fieldwork and helped to make sense of the complicated situations in Ulu Belu.

Coding of interviews

Information gathered from all interviews is categorized in coding treatment to answer the sub-questions. Categorization from the coding will form an abstract idea that fits into the needs and conceptually analyzed (Julian Parfitt, 2005). Personal impression from the interviewees is treated with my interpretation, based on their position, education, or substance of the information (Strauss and Glaser, 1967; Raaschou, 2018). The interpretation is vital to create a systematic analysis based on valid information.

Categories and coding Description

From the interviews, 47 codes were created, and from these codes, nine categories were made. The categories are; the memory of the place, public participation, physical damage/depletion,

access, social structure, economic benefits, power relations, shared value, and law and regulation. As aforementioned, these categories are built to answer the sub-questions of the research problem. The coding table is presented on the last page of the document.

Attachment of the place

This category follows the interviewee's statements regarding their interpretation of Ulu Belu. It could be interaction, social attachment, and familiarity with their surrounding environment.

Public participation

This category includes statements that imply people's contribution to the whole process of geothermal development, including socialization and the people's participation in the PGE operation. This category also plays an integral part in assessing power exercise in Ulu Belu.

Physical damage

As environment sustainability is crucial in the narrative of geothermal utilization, it is also critical to see whether the PGE operation has resulted in nature depletion. While the utilization of geothermal emphasizes environment consideration on a broader level, it is interesting to see that at the local level, it brings an entirely different impact.

Access

It is also an assessment of power exercise. Understanding people's channel to voice their interests and whether or not there is a room for parties to contest their interests. Access is also about how the community can reasonably benefit from the PGE's operation.

Social structure

The structure is defined by the demographic composition and social situation of the Ulu Belu, how people integrate and form some kind of solidarity in any type of purpose.

Economic benefits

The PGE operation is nevertheless has given birth to new economic fabrics. What was once an equal society has been altered into a more leveled structure. Some people benefit from this development as they can fulfil the new demands, and the PGE employs some, but most people are still untouched by the development.

Power relations

The holder of effective power is central to this thesis. As the theories put, the production of the landscape depends on how they exercise power. The power relations present in almost every aspect of Ulu Belu. From the early stage of geothermal operation to the social dynamic that happens daily.

Law and regulation

This is a set of institutional platforms that also defines the holder of effective power in Ulu Belu and also acts as the legitimization to conduct the operation in Ulu Belu. Law is abstract for most people there, but the presence is affecting their life.

Chapter 2: Analysis

This chapter is divided into three sections, as mentioned in the previous chapter. The first part will focus on the idea of geothermal development and people's understanding of the idea. The second part will dive deeper into social dynamics in Ulu Belu regarding power structure and power projection phenomenon. Analysis of both sections will reveal symptoms in landscape and production of nature theory as laid out by Neill Smith. The third part of the analysis will use the diagnosis from the previous two sections and consider daily practice, especially from the economic side to see how the power projections occur and to which extend marginalization has occurred in Ulu Belu. This economic review is essential because these narratives attract public sympathy, and the economy may become an area of shared interests. In this section, we will also learn how socio-cultural conditions can influence people's mindsets and habits.

Analysis part 1: The Core Idea of Developing the Geothermal Area

In order to understand the power structure and its projections in Ulu Belu, it is necessary to look at how the idea of developing geothermal energy has become a concern of political entities and then to see the first symptoms of power structure formation in Ulu Belu and later, the marginalization. This section will seek an answer to how geothermal area development ideas have transcended into different actors; this is important to identify because this is where the narratives and justifications for developing geothermal areas emerged.

Developing Geothermal Power Plant: National Concern

As mentioned in the first part of this chapter, Indonesia was once a giant producer of fossil fuels in the 70-90s decade. Still, the depletion of fossil resource reserves had a direct impact on the declining daily oil production. At the same time, Indonesia's annual fossil consumption is increasing, a combination of the two leads to the deficit of the consumption-production balance of fossil resources. Generally, Oil consumption continues to grow from year to year, while domestic production continues to decline. Since 2003, oil production in Indonesia has been unable to meet domestic consumption. Although at present, national gas and coal consumption is still below national production, awareness about fossil limitations is becoming more mainstream because of this condition. This condition has contributed to the development of other energy resources, including geothermal.

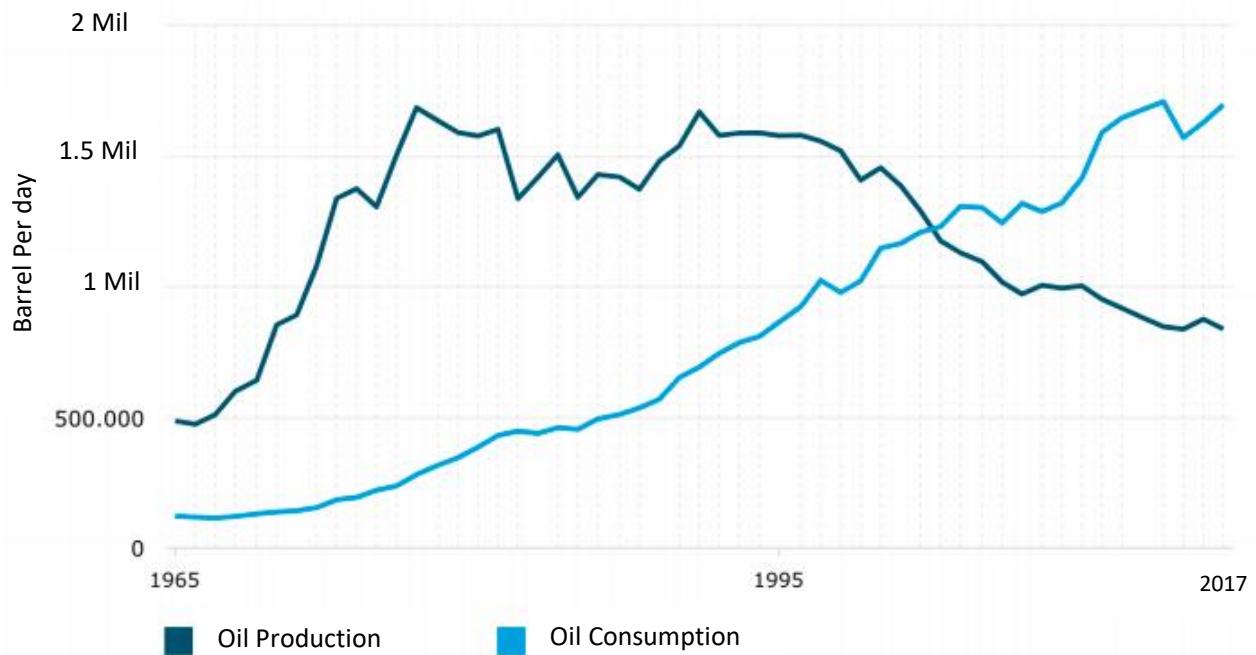


Figure 2. Indonesia's year-to-year oil production and consumption (BP Global Company, 2018) Processed by katadata.com <https://databoks.katadata.co.id/datapublish/2019/02/14/indonesia-defisit-minyak-sejak-2003> (accessed on 10th April 2020).

In Indonesia, the development of geothermal resources is relatively faster than the development of other renewable resources (Suharyati *et al.*, 2019). At least three reasons have caused this development. The first is familiarity. Geothermal development has been carried out since the colonial era with the exploration of the first geothermal well in the Kamojang area in 1926 (Hakim, 2015), so that there have been established geothermal development project in Indonesia that can be replicated. Besides, the expertise needed for geothermal development is mining and geological practices, which are prevalent in Indonesia.

The second factor is availability, Indonesia's geothermal potential is estimated to be 29 GW, and it constitutes 40 percent of the world's geothermal resources (Suharyati *et al.*, 2019), this optimization conforms with President Joko Widodo's 35 GW electricity program. Besides, local geothermal characteristics can also guarantee financial stability, because geothermal is not traded on the international market, so they are not affected by price fluctuations as happened in fossils. This availability also concerns the independence of national energy. The availability of geothermal is not affected by the international security situation, which often disrupts fossil supply and becomes the leverage of exporters to assert their influence on importer countries.

The third factor is reliability. Geothermal does not depend on weather or climate conditions so that it can be utilized throughout the year. Reliability is vital, considering that one of the objectives of electrification is for the benefit of industries, which require a reliable electricity supply. Industrialization through foreign direct investment is currently a national priority for President Joko Widodo's economic project. These three reasons are justifications for encouraging geothermal development and are the reasons for rapid geothermal growth in the renewable energy sector.

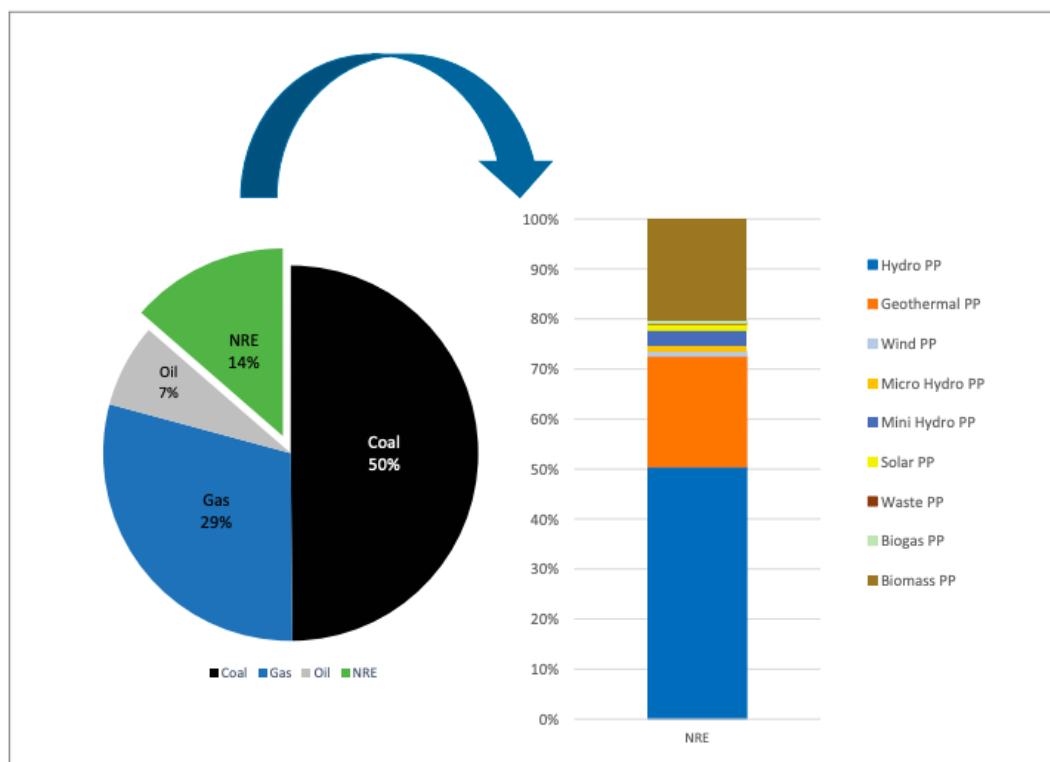


Figure 3. Renewable power plant installed capacity 2018 (Suharyati *et al.*, 2019)

The justification for the development of geothermal energy is also driven by other external factors, especially those that are political. Formally, two laws regulate geothermal development in Indonesia, the first being the National Energy Policy Act 30/2007, and the second is Geothermal Law 21/2014. Some of the keywords contained in these regulations include national energy security, optimizing renewable energy, and also minimizing the use of petroleum (Saefulhak, Mumpuni, and Tumiwa, 2017; Winanti *et al.*, 2020). The commitment to optimize renewable energy for energy independence in Indonesia has also been stated explicitly by top-rank officials, including by President Joko Widodo himself (Amanda Kusumawardhani, 2019; Anggianto, 2019; Winanti *et al.*, 2020).

This national commitment also conforms with global interest. Indonesia is one of the countries that ratified the Paris Agreement in 2016. From this commitment, Indonesia aims to reduce greenhouse gas emissions by 29% in 2030. Besides, the development of renewable energy is also a capital of sustainable development, which has become a global trend in response to climate change, environmental degradation, and the increasing human population (Saefulhak, Mumpuni and Tumiwa, 2017).

The implementation of the above commitment is not without cause. Geothermal or renewable energy development, in general, is in the political-economy spectrum. Along with the commitment to reduce greenhouse gas emissions, fulfilling energy needs is inseparable from economic priorities to encourage large-scale industrialization. As it stands, the industrial sector is the largest energy consumer.

As a national priority, the supply and security of energy supply for the industry is significant to sustain the national economy. Energy demand for the industry would continue to increase to reach 46.8% of total energy consumption in 2050 (Winanti *et al.*, 2020). With the energy needs that will continue to grow, surely there needs to be a solution to achieve national energy independence.

From these assumptions, many factors help the development of geothermal energy to become a national interest. Political factors such as global-national commitment, the need for national energy development, and efforts to create energy independence have sided the technical factors of geothermal advantages. From this narrative, justifications for geothermal development are formed and, in practice, affect the exercise of power in the creation of a new landscape at the local level.

As conveyed by John de Jong (2015), the interests of political power influence the formation of landscapes. This process will also affect the physical and institutional anatomy of the landscape itself (Jong, 2015). In the Ulu Belu case, this symptom is also present; the importance of optimizing geothermal resources has transcended on a multi-level spectrum. There is an urgency for national needs, and, simultaneously, it has become a global demand. However, the arena of the interplay is actually in the scope of the micro, the local community in the Ulu Belu, because the development of geothermal may directly affect their daily life. This is the initial

stage of political intervention in the formation of a landscape, namely the intervention of ideas, before later into intervention in an institutional and physical nature.

People's Understanding of the Development of Ulu Belu Geothermal Area

The crucial point in developing the geothermal area is actually at the local community level. Especially in Ulu Belu, a place that already has existing demography with a particular custom and livelihood. Asserting an external idea is a challenge and requires a lot of adjustments. Before the operation of the Ulu Belu power plant, the majority of the Ulu Belu community were coffee farmers, and community activities generally revolved around this. Exceptions were in supporting sectors such as health workers and education. This demographic situation has been going on since the colonial plantation era (PSDK, 2015). In general, the culture and custom of the community intertwined with the system of production, distribution, and consumption of farming products. This situation is further preserved by the fact that access to villages in the Ulu Belu area is minimal, as stated by one resident.

"It was 30 km travel, yet we took three hours just to get here because the road was bad ..."
(annex 1, p. 69)

The difficulty in access can be understood because Ulu Belu is located 30 km from the main provincial road. Before 2011, there was no proper road connecting Ulu Belu with other regions. This situation makes Ulu Belu secluded from developments that occur outside its territory. It does not mean that it is entirely isolated, but regional development has been severely hampered. Moreover, there is an impression that the Ulu Belu area is not a priority for regional development because its local value is limited to coffee plantations. This also has an impact on public awareness in terms of obtaining an education. The people are too used to farming, meanwhile, access to the other region, in terms of transportation, is also very limited. As a result, the new generation in Ulu Belu is generally expected to continue the profession as a farmer, which does not require tertiary education. From this fact, it can be seen that the development of the geothermal area is far from the general knowledge of the community in Ulu Belu.

One of the major turning points of the Ulu Belu development is road access. In 2011, PGE completed the construction of a 30 km highway from the provincial road to the Ulu Belu area. The benefits received by the community from the construction of this highway appear from the

very beginning, and the impact has a considerable magnitude. This becomes an important indicator that the community's perception of the development of the Ulu Belu geothermal area takes form in terms of benefits, and the benefits are immediately impactful through the presence of this highway. In several interviews, the importance of this highway was conveyed repeatedly, both by PGE employees and the community members. A senior PGE analyst also mentioned that this access brings benefits to the community.

"When the road is finished, transportation gets easier, the price of commodities is now the same. The people are happy. The limitation has been eliminated, commodities' price is stable" (annex 2, p.74)

This is where the community's perception of the Ulu Belu geothermal area is seen. For the people in Ulu Belu, the perception of the development of geothermal areas is relatively built from the material impact. In the case of Ulu Belu, the impact is regional development. Some keywords that appear in interviews with the public reinforce this argument. One of them is a statement from the Head of Muara Dua Village, which states that the geothermal area must be developed because it is important for regional development.

"Certainly not only villages but on a national scale, because the progress of Ulu Belu is sourced from companies that enter Ulu Belu. If there is no company, it will not develop, it would still be isolated" (annex 7, p.87)

The similar statement comes from another community member, in more personal and specific scope

"The development of GPP must be carried out, the existence of PGE is important, especially here. So, I say it's important, if there is no help from PGE it won't be this good, there are positive impacts, so it's very important. Very helpful" (annex 4, p.81)

These opinions emerged repeatedly and may illustrate the people's perspective on the narrative of the development of Ulu Belu. Their idea of the development of the Ulu Belu geothermal area is materialistic, which directly affected their daily lives. A more idealistic narrative at the global-national level is not the primary concern of this community, as seen in the results of the interview.

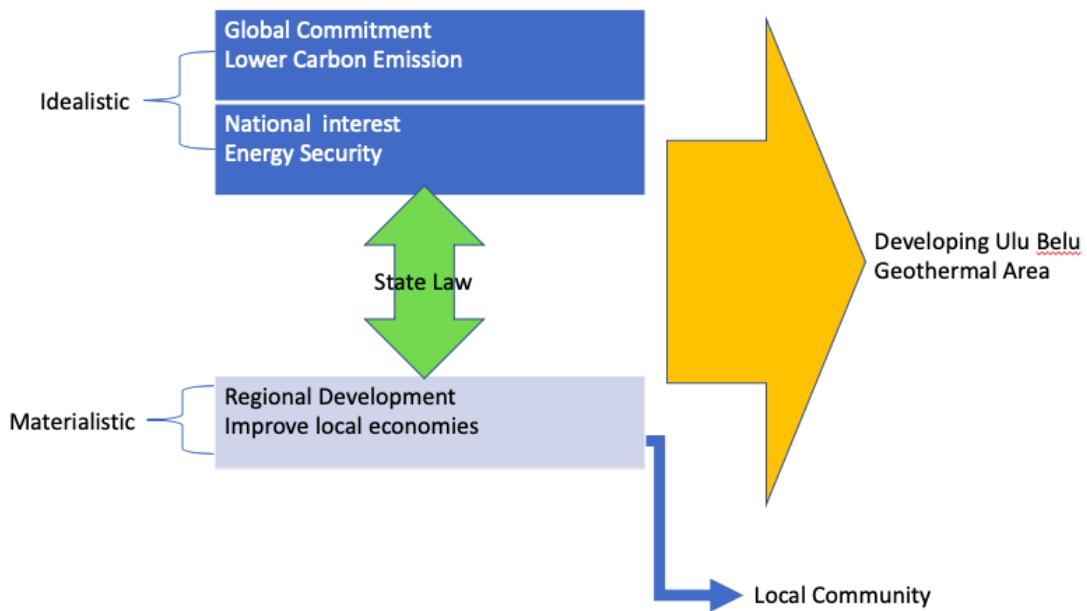


Figure 4. The transdisciplinarity of interests in Ulu Belu geothermal area development (developed by author)

Indirectly, the local people must bear global-national interests, which are abstract for them. Some of the global demands and national interests must be carried by the people who live in the Ulu Belu area (*see. figure 4*). This is where there is a gap, where people who do not understand global-national concern must bear and serve both interests. Thus, the national interest has also been incurred by the community. This is smoothed because state law removes the boundaries between the narratives. Global-national commitment, which is supported by state law, is abstract, but now it is also a factor that significantly influences the community's daily lives. Considering that this community bears the interests of an abstract idea, it is very justified if the Ulu Belu community then needs to get the broadest possible benefits from the development of this geothermal area.

Analysis part 2: Power Posture in Ulu Belu

This section will reveal the process of forming power structure, the effective presence of that power, and the interaction of power structures. The identification of the three symptoms is essential in explaining what is happening in Ulu Belu in terms of power interplay. Assessment of this part might be the beginning of a fair and sustainable geothermal development practice discourse.

Assessing Production of Nature and its impact on the Formation of Power

In terms of production of nature, two processes are at the core of production itself. The first is the production of physical material, which is a fundamental manifestation of human relationship with nature. In the physical production process, changes occur in the conversion of forest land into plantations, and then from plantations into geothermal areas. The physical productions include all physical buildings supporting the activities of the geothermal power plant. Included in this physical building are office buildings, power plants, geothermal wells and pipes, highways, and other supporting infrastructures. Besides, the emergence of new economic activities to support power plant operations has also resulted from this physical change. The emergence of new needs such as accommodation and logistics, making physical changes visible from the built houses. Land that once was plantations has been turned into houses that also functioned as boarding houses or food stalls.



Picture 2. Food stalls in Ulu Belu (privately owned)

The second production process is the production itself. This stage is the process of exploiting natural resources, from use-value to exchange-value (Smith, 2008). In a general sense, this

production stage is closer to the symptoms of agricultural exploitation, where the farming products that were used to meet their own needs, are then expanded to meet global needs, thus creating new social classes. In the Ulu Belu case, the application of this understanding can be seen since the colonial era, when the colonial government cleared forests to be transformed into new coffee plantations (Suwirta, 2002; Ahmaddin, 2007; Brainard, 2011). The exploitation of this coffee plantation was inseparable from the interest of the colonial government at that time, which was to meet the needs of the world market for coffee. However, after the independence, management of the plantations in Ulu Belu became the community's right, even though the distribution of the yields was still dependent on the reseller or the coffee company (PSDK, 2015).

The development of the Ulu Belu geothermal area brings a phenomenon of land use transformation into a new stage. This is where the notion of production expanded from being related solely to agriculture to being extended to land management. In the Ulu Belu case, the plantation land management was a manifestation of use-value because the community understands and has control over their land. Transformation into exchange-value occurs when land exploitation has become beyond the control of the community. This pattern can be followed by seeing that community plantation and geothermal areas use the same property. However, geothermal exploitation converts some of the plantation lands and uses practices that are entirely different from plantation management. It takes specific knowledge and use of high technology to utilize geothermal, and this is totally beyond the control of the people there.

The transition to exchange-value is virtually an essential process for producing surpluses. This is achieved by increasing the capacity to produce more than is needed to survive (Engels, 1972). In exploitative practice, the transition from use-value to exchange-value results in class differentiation: exploiters and exploited, and this is the main idea of production itself.

"Hitherto whenever classes had begun to form, it had always been exclusively in the field of production; the persons engaged in production were separated into those who directed and those who executed or else into large-scale and small-scale producers" (Engels, 1972:331)

The statement can be a pretext that the shift of use-value to exchange-value (production of exchange) is mostly a matter of control and unequal access, spatially to the visible property

and abstractly to the knowledge. To this extent, it defines class differentiation that can explain the structure of power in the Ulu Belu geothermal area.

After the stage of production, where nature is exploited to gain surplus, an institutional tool is needed to perpetuate this production process. This tool then appears as what is called *second nature*. In this phase, institutions that regulate production become increasingly structured. In Neil Smith's (2008) explanation, *second nature* is characterized by increased bourgeoisie's power in controlling a production process by creating institutions that can perpetuate its power (Smith, 2008).

In general, these institutions include legal, economic, and political institutions. These institutions create an abstract platform but capable of enforcing its rule to the community. Looking at the Ulu Belu case, this *second nature* comes with a scope that is smaller than the general understanding but has all the aspects needed to preserve the power of PGE. Although these institutions are informal, the impact given to the community's livelihood is real, and this will later explain the effective presence of power in Ulu Belu. PGE comes with interest and legal instruments that forms structural support for its operations in Ulu Belu. The financial support that PGE also owns, far exceeds the ability of local governments in Ulu Belu. These impressions, along with the visible impacts that PGE brings to Ulu Belu, clearly show that PGE is the culmination of the power structure in Ulu Belu.

Effective Presence of Power

All the processes that took place in Ulu Belu led to an explanation that in the Ulu Belu case, PGE sits at the top of the power structure. As explained by the notion of *second nature* that supports PGE, and at the same time, is driven by PGE. Although the *second nature* is more informal, the institution appears in daily activities in Ulu Belu. To prove this, an assessment of the effective presence of power in Ulu Belu is needed.

Ulu Belu, like other districts in Indonesia, consists of several villages. Structurally, Ulu Belu District is under the administration of the Tenggamus Regency, Lampung Province. In a formal structure, the Ulu Belu District apparatus, or the village apparatus below, is an authoritative institution that holds power in Ulu Belu. However, the problem of this formal structure is its presence is felt to be minimal by the community. Especially in terms of physical development

and community welfare improvement. The results of some interviews reflect this situation; the local government is considered less concerned about community welfare; its development programs have never been effective and limited accessibility aggravates the situation.

"In that case, the benefits were felt, because PGE was able to do it, the government could not, because in the past, it had only been set with stones, and then it was eroded by rain. So after this hot mix, PGE has done quite good. We can sell the agriculture products. Then with so many people here, there will be a lot of income too." (annex 1, p.69)

Another statement explains the difficulties of electricity and communication infrastructure.

"I would remain a farmer without the presence of GPP. Electricity was also none before, since there was electricity coming in. Because there is access road, handphone signal also improved, as long as there is a road, people are more mobile. Now the road is better. Unemployment also decreased as people also work with vendors" (annex 4, P.80)

In interviews and literature studies, government tools do have limitations to be present effectively in Ulu Belu. At least, there are two reasons for this limitation. The first is the ability of the local government itself which is very limited. Lampung Province is one of the provinces with the most significant poverty presentation. In 2019, the poverty rate in Lampung province was recorded at 13 percent (Etika *et al.*, 2019). This is ironic with the fact that Lampung's economic performance from regional income and the Gini coefficient is in the top half, compared to other provinces in Indonesia (Kusnandar, 2018).

The second is the fact that Ulu Belu is not on the list of development priorities of Lampung Province. This is reviewed by looking at community livelihoods that are limited to the plantation sector. This sector is an essential sector for the Lampung Government. Still, the value of the Ulu Belu area is very local; there is no other value that can encourage the Government to prioritize development in Ulu Belu, as is the case with regions that have tourism potential (Saktiyanto, 2015). Ulu Belu is also not part of the main provincial roads, so it is not a priority for infrastructure development. These reasons make the presence of the local government considered minuscule in Ulu Belu.

The experience brought by the presence of PGE is very different. PGE's direct contribution to the community in the form of road construction, employment opportunities, infrastructure improvements, and CSR (Corporate Social Responsibility) programs directly improved the community. The magnitude is even more substantial as the changes occur in a relatively short

time but have a significant impact. This direct contribution strikes precisely at the weaknesses of the regional government, which is neglecting developments in Ulu Belu. In addition to road construction, PGE also built bridges, repairing mosques and schools. Besides, PGE is also involved in religious and cultural activities by donating money or logistics to support those activities.



Picture 3. The main road and house accommodation (privately owned)

Another contribution, which is also a significant concern, is direct employment. The PGE project is a large project that requires a lot of workforces, thus opening up employment opportunities from the community for both permanent and temporal vacancies. This is important because it provides an option for the community to have job diversification. Before the existence of PGE, the majority of the community worked as coffee farmers by relying on income from the plantation only at harvest time. Geographically, the limited choice of community employment is understandable, given the Ulu Belu area tends to be isolated, while the surrounding environment and local culture are also revolved around agriculture.

"Yes, in all respects, the development of human resources itself, which means providing opportunities to get jobs for local residents" (annex 7, p.85)

In addition, the effective presence can also be seen from the daily interaction of the community with PGE. There are hundreds of workers working with PGE, including contractors who operate wells and power plants. The community indeed utilizes the workers' presence by providing food stalls and accommodation, or other essential needs. Through these new efforts, community interaction with PGE has become intensive and is of a daily nature. This is different from interactions with bureaucratic instruments of government. The active involvement of PGE and its financial strength have made the community more dependent on PGE than the local government itself. This dependency issue will be discussed in the next section

Symbolically, PGE's presence can also be measured from its properties and marks that scattered all over Ulu Belu. PGE's properties are modern, massive, and lavish. Advanced technologies and infrastructures also support the properties. These are almost contrasted to that of community or local government. The status of a national vital object entitled in PGE's properties also reinforces its presence. Regarding those, PGE is undeniably more effective than any other party in the case of Ulu Belu.

The Gap in the Interests Contests

PGE sits at the top of the structure in Ulu Belu. Aside from its effectiveness, it can also be seen from the gap that PGE has with the surrounding community. In daily practice, conflict of interest between PGE and the Ulu Belu community often occurs, especially when it relates to complaints from PGE operations. In several documented cases, community complaints include crop damage, decreasing yields, depleting water content, silting of rivers, leakage of waste, well drilling noise, ground vibrations due to large vehicles, and dust entering the house due to PGE vehicles passing around (*annex 10, p.93*). Meanwhile, the demands that come from the community include the request to provide jobs and to provide street lighting (*annex 7, p.87*). Complaints and demands, in this case, are differentiated based on their impacts. Complaints are caused by the direct operational impacts of PGE, while the demands do not come from the direct operational impacts, but rather from the community initiatives.



Picture 4. Geothermal Pipes and settlements are often adjacent (privately owned)

In the Ulu Belu case, PGE can be considered a core entity that has the main power in Ulu Belu geothermal area. Its power is reflected in gaps that separate between PGE and community in terms of influence. These gaps and how they exercised are essential to see the outcome of the frictions, as mentioned earlier.

The gaps themselves can be identified in at least three things, the first and crucial, of course, knowledge (Wallerstein, 2004). As already mentioned, geothermal development is costly and requires high technology. The exploration process alone requires a multidisciplinary study that claims a lot of costs, not to mention the expensive technology used for extraction and utilization. Geothermal itself is not a source that can be extracted and utilized independently by the community. Especially if considering at livelihood and the average education of the people there (PSDK, 2015). This also shows the irony in the development of the geothermal area; the community does not have the knowledge to utilize their natural resources.

The second gap is accessibility. PGE, as a state-owned enterprise (SOE), certainly has access to those who determine the policy. In the writer's observation, access to lawmakers is within PGE's reach, tiered from national to the local level. President Joko Widodo himself even inaugurated units 3 and 4 of the Ulu Belu GPP. Meanwhile, from the level of Governors, Regents, Sub-Districts, until the national and regional parliaments are all within the reach of PGE (*annex 3, p.78*). The development of sustainable energy resources is one of the focuses of

the current government of Indonesia, and geothermal, being the most abundant and reliable, is one of the most important renewable energy resources. As one of the priorities, PGE received blessings from multiple stakeholders regarding the sustainability of its operations; this what makes PGE superior in terms of access.

This access is also related to legal instruments and the geothermal allocation process that occurs in the law-making process. In the legal process, in Indonesia, the legislative function is carried out through the parliament. With its representation function, the Ulu Belu community already has its representative in the process of formalizing the law, regardless of the performance of the parliament that is more substantial. Contestation of interests hardly occurred at the time of the determination of the geothermal area. The community has almost no control over this process. The process itself was taken during the "old regime," where the process of tendering gives privilege to State-owned Enterprises.

"There is a mechanism, direct delegation to SOE. Like the one we got for Kotabangun, which will be handed over to PGE. This also why national electric company got eight areas. We got 14 areas the last time, but that because of our status as the regulator. Now it is a different case, the ministry controls it all." (annex 2, p.73)

All processes of participation and consultation with the community only take place after exploration and not during the allocation process. This often creates friction of interests with the community in other regions. One example of this case is the rejection of geothermal exploration in Lawu, Indonesia. Lawu geothermal area is located around the historical site of Majapahit remnants. Lawu is also the location of several cultural sites that are very valuable to the community so that the development of the geothermal area had received protests from the community. Until now, the Lawu geothermal area has not been developed (Richter, 2018).

The third gap is the capital. PGE, as a State-owned enterprise and the most extensive geothermal company in Indonesia, is considered a credible and reliable entity. Trust to this company is quite high, making it easier for PGE to get capital loans from multilateral institutions such as the World Bank or bilateral cooperation. The conformity with world trends to switch to sustainable energy sources also facilitates PGE's access to the capital market. The declining production of Indonesian fossils and the tendency to utilize renewable power also makes PGE the future of its parent company, Pertamina. These conditions make PGE have a strong position, which translated into their financial strength. In the Ulu Belu case, the effect

that results from PGE's financial power is discernible. 30 km of road, bridges, houses of worship, office buildings and other infrastructures built by PGE may imply that PGE has financial capabilities far beyond that of the local government. The effect of PGE's strong financial capability is community dependence. Even though the task of developing regions is the responsibility of the local government, PGE's strong financial capacity and direct community access to PGE have made communities often depend on PGE for their regional development.

In daily interaction, the existence of this gap significantly affects the friction of interests. Rigidity in these gaps can also make the interests of PGE run unchallenged if it is exercised arbitrarily. Without proper balancing mechanisms, these gaps may widen and lead the community to lose the ability to determine their destiny. If it happens continuously, the impact of this phenomenon may extend to the destruction of nature, as moral constraints on the surrounding environment may be sacrificed in the exchange of materialistic values.

This situation conforms to the phenomenon described in the process of production of nature, where the ultimate power indeed changes the landscape institutionally and physically to gain profit or achieve its interests. Regarding that, the symptom of this production of nature, which is marginalization, is inevitable and even might be extended to environmental degradation. However, the degree of marginalization of the entire production process is very dependent on the practice of exploitation and what efforts are made, so that the interests between PGE and the community may intersect. This notion needs to get more elaboration to look more contextually at how the production of nature plays out in specific landscapes.

Analysis part 3: Socio-economic impact and Exercise of Power

This section will explain the exercise of power from PGE as the most influential entity in Ulu Belu and its impact on society. This section will also define the segments of interest intersection between PGE and the community, which helps stave off the friction from the conflict. Furthermore, cultural explanations will also be reviewed to see the background factor of community acceptance of Ulu Belu operations, despite the gap in power.

Economic Gain or Sugarcoated Marginalization?

The geothermal area in Ulu Belu can be considered to be one of the successful geothermal projects. Since the beginning of the development, until it began full operation in 2017, the operation of the Ulu Belu Power Plant is relatively without any disturbance. Protests or friction with the community did occur but did not extend to prolonged conflicts or disrupt the operation of the power plant. However, marginalization is not absent. PGE comes with a reliable and effective power structure that creates a vast gap between PGE and the community. This is where the indication of marginalization can be elaborated.

Marginalization itself is a process of disempowerment of certain groups as an implication of interest imbalance. In many cases, it relates to economic integration with broader interests (Park, 1928; Capello, 2009; Kumar, 2010). The first indication of marginalization is a dependency (Robbins, 2001, 2012). After the community plantation was sold for the benefit of power plant operations, some farmers must face two choices, their yield decrease, or they must find other jobs.

"Some houses are built after the projects, they did think that 'it's great that we can build house around the road'. They were previously plantations, no houses, some pipes are built there. Today there are a lot of houses built there" (annex 1, p.71)

These offices were once a plantation, Karangrejo, and Pagar Alam, up here it's Muara Dua. From once plantation and forest. the road was once muddy, now alhamdulillah the access is open (annex 7, p.85)

Some did succeed in making the most of the situation by working with PGE, providing their homes for PGE workers' accommodation, or opening a restaurant. But other groups cannot fully enjoy, and instead must be faced with sudden price hike due to high demand, especially in terms of property and logistics goods. The opening of the access road also makes the community's exposure to the outside region more intensive, the flow of movement of goods

and people is getting stronger, bringing new ideas and demands that may, at some level, marginalized groups that cannot quickly adapt.

"Earnings can be five times, that's a positive. Yes, but the downside, once there was PGE, all prices went up, all prices. Prices in Jakarta are the same here. In 2006, the price of bananas was 500, now it can be 15 thousand, just as much as in Jakarta. So that's bad for the people whose livelihoods are still farmers, do not change, are not involved in the project. Their expenses are getting bigger, the income is still low. (...) At the very least they were involved in the process of land acquisition, like yesterday, a long time ago in August, many more of the land had been acquired, but the price of land soared. Because of the PGE's high range, they paid it along with its lands and all the plants in it." (annex 1, p.70)

To respond to these economic symptoms, some community groups also use environmental degradation as a reason for them to seek compensation. Damage to farming products, noise from power plant activities, silting of rivers, and shrinking water debit are reasons for the community to seek additional income from compensation, regardless of whether or not there is a connection between environment degradation and power plant activities. Meanwhile, the Ulu Belu community itself hopes that PGE can employ more workers from the surrounding community. There is a sense that the community deserves more employment from PGE. Seeing this situation, the indication of community dependence on PGE is thorough. Their effective presence is sided by contributions and direct interaction that is much more effective than of the local government, making this dependency more obvious.

"The family is better than me, in terms of income, material. Because first, I was born to a poor family. My hope as a father, as head of the household, my children can get better living. With good opportunity, you can work here later. I have two daughters, If there are vacancies here, why not? If not, don't force it either." (annex 4, p.81)

In addition to dependency, this marginalization of the community also worsens by the presence of the middlemen group. On the one hand, this group is important to consolidate the people, so that the interests of the community are more united and are conveyed in a more measured manner. However, this group can also drive the interests of the community, especially in terms of compensation for complaints. This activity of piggybacking the interests of the community has the potential to undermine community initiatives further and make the interests of the community not adequately accommodated.

In the Ulu Belu case, exploitation does not directly give birth to marginalization, but several processes make the symptoms of it appear. Meanwhile, environmental degradation is also

inseparable, even though these degradations need to be further proven. Robbins (2012), explains that degradation is an indication of marginalization. In its premise, environmental degradation that occurs is blamed on the marginalized groups, seen in the broader political and economic context (Robbins, 2012). What happened in Ulu Belu is not precisely following the premise, but what has become a symptom of marginalization is apparently inseparable from the degradation factor and still highly dependent on the economic and political context. Marginalization and degradation are unavoidable in the process of exploitation, but there are an economic context and political outlook that can determine to which extent both may end up.

Finding the Intersection of Interests: Economic Interdependence and Shared Identity

In the general setting, the more powerful and wealthier entities can dominate and exploit the more peripheral entities. Mastery over knowledge and technology, as well as the capital, are crucial in explaining the superiority of such power (Martinez-Vela, 2001). This relational setting is not limited to the international scale. It also can be found at various scales, including in urban development (Friedmann, 1966; Moore, 1994), Social Network (Hojman and Szeidl, 2008; Rubí-barceló, 2012), as well as regional development (Evangelinides, 1973). While the powerful entities assert their interests, it is the peripheral entities that experienced and bore most of the changes. The peripheral entities have little power to the changes, both physical and institutional, that were being brought to their surroundings.

Although in the context of Ulu Belu, there is an imbalance in power, economic development cannot be ignored. Economic improvement and active community participation are ways to minimize the marginalization. This is not impossible; in the case of development in Latin America, there are several examples of so-called "economic maturity". Economic maturity is when there is the ability to produce substitute goods, fair income distribution, and break from domination systems without incorporating themselves totally into another system (Cardoso and Faletto, 1979).

Translating this idea into a micro-scope, especially in the Ulu Belu case, marginalization may be limited through community development. In general understanding, development means less dependency and the ability to self-sustain (Cardoso and Faletto, 1979). In the context of Ulu Belu, the way to achieve this is to make people more independent through active

participation. This can be used as a guideline for authority holders who are ideally in the form of state-owned. This is also related to the idea from Wallerstein that geopolitical processes can obscure inequality through more substantial periphery participation (Wallerstein, 2000, 2004; Hryniwicz, 2015).

Economic development is a sector where the presence of PGE has given a significant impact on the community. Especially for people who can adapt to new demands due to the development of this geothermal area, namely those engaged in the accommodation sector, logistics, or other supporting needs. In this scheme, the relationship between community groups and PGE runs in mutualism, both of them need each other and create a sustainable economic situation. This idea conforms to PGE's narrative of "synergizing with the community".

"Synergy means that PGE exists and continues to grow and continue to operate, continues to exist with the community. So the PGE is still there, sustain, not only because of the PGE but because there is a good relationship with the community. There is a mutual symbiosis, the community needs PGE, PGE needs the community. The point here is that community cooperation is important for PGE (...) Simple, PGE can work smoothly without disturbing the community, PGE can help but we are not disturbed. The community accepts benefits, but they are never satisfied, if examined ontologically there must be something, but in the axiological realm, it will be difficult. For the community, it is very important that there is PGE. Especially people who later succeeded, who had only been selling stones and now are contractors. However, for people who cannot work, who cannot help, who cannot take advantage, of course there is no change" (annex 3, p.77-78)

The idea for the development of the geothermal economy itself is part of PGE's business development strategy. The use of geothermal power generation is currently the main business, but for direct use, such as tourism and agriculture, has not been maximized in Indonesia. Especially for Ulu Belu, there has been a discourse to develop the use of geothermal for drying coffee beans.

"Apart from indirect use, it means direct use. It is not commercially available in Indonesia. Kamojang also hasn't, now is still focused on developing electric energy, still conventional. Geothermal is extracted, then the steam is used to drive the turbine. While in Japan, New Zealand, it is widely used on the side of tourism, hot springs. (...) It is adjusted to the area, we are mapping what we can develop in terms of direct use (...) Coffee, heating it for drying coffee. Geothermal can be used as a brand that is environmentally friendly or something. Yes, that's how we do the marketing." (annex 2, p.76)

This is also supported by the fact that PGE itself deliver CSR programs in the form of community development. The main programs are related to goat farming, coffee plantations, and community cultural development (*annex 8, p.89*). It can be seen that the economic sector has the potential to become an intersection of interests between PGE and the surrounding community. What also needs to be considered is that geothermal has become the identity of the people in Ulu Belu. At present, PGE is part of community identity, so that the development of geothermal economics can be internalized as a culture. Therefore, a higher number of people can benefit from geothermal utilization.

"Since the presence of PGE, we enjoy freedom. Isolated because we are from other districts. We are the locals, people used to underestimate us. Because we are inland. But now Ulu Belu already open, now it is heading to what is called as freedom, if we introduce ourselves, there is some kind of honor. So, there is a better identity (annex 7, p.85)

In addition, the formation of this identity can also continue to be explored, considering the people in Ulu Belu even willing to be able to work at PGE (*annex 5, p.83*), and there is a thought from the community to get a better education because of this desire. The community has become more open to pursuing education in the geology or mining sector because of this desire. The formation of this identity will also affect the community's sense of belonging with PGE, and mutual interests between the two can be further developed.

Social Acceptance: Accessibility, Consolidation, and Cultural Intervention

The process of finding mutual interests that have been mentioned above is very much influenced by community involvement. Here, the communication factor plays a critical role, and effective communication is very dependent on trust. Trust itself can especially be built if the purpose of communication with the public is intended to enhance awareness and encourage public participation (Pellizzzone, 2006). In the Ulu Belu case, accessibility to PGE was propelled by direct communication; every complaint was directly submitted to and responded by PGE's public affairs officer.

"Depending on the demands, if for example it is rational and will harm the company, we will accommodate. However, if it does not make sense, brought in any forum, this does not harm the company, we would ignore. But surely, I am listening. For example, they once demanded compensation for ground vibrations because the rig truck passed. The last one complained about silting of the river, when the construction of GPP unit 3 and 4. But we made sure it was not due to drilling. We invited the environmental service to talk with them, so they understood

"it was not due to company activities (...) surely all, however slight. Even if only dust enters the house. Everyone has my contact " (annex 3, p.79)

This openness is supported by the daily interaction of the community with PGE workers and also by their CSR programs because that is where active communication and mutual trust can take form. The interaction of PGE workers with the community has become more intensive, opening up the perspective of the community to be able to work in a sector that has not been within their reach. PGE also opened up employment opportunities for communities around Ulu Belu, as an effort to increase community participation in PGE activities. In practice, both PGE and the community both understand the importance of the interests of each other. Here, accessibility plays a vital role in aligning the interests of these two entities

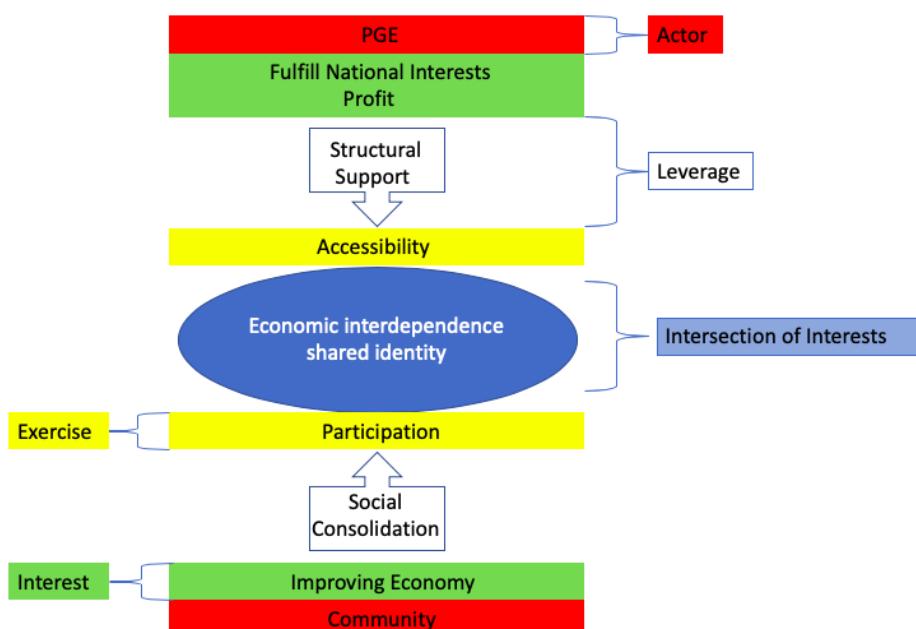


Figure 5. Process breakdown to find intersection of interests in Ulu Belu (developed by author)

Accessibility that provides space for public participation is an important area of exercise of power. The openness towards the community may invite more participation than tokenism (Arnstein, 1969), and PGE can be trusted despite the absolute power it possesses. In the long term, this relationship is crucial in optimally developing the Ulu Belu geothermal area.

"As power becomes more decisive than arguments, siting decisions may lead to open controversial conflicts: local communities may decide to interfere with the process imposed by the central authorities instead of cooperating to find acceptable solutions (Wolsink, 1994).

On the contrary, institutions may perceive the interests they themselves represent as higher than the interests of the local communities: the debate risks to be transformed to a matter of power. The facilities siting may easily result in a trend of siting in "powerless" areas, and a top-down land management imposed by central authorities instead of participated decisions taken by all interest groups (open planning) may lead to qualitatively poor decisions. Local participation in the decision-making process, objections of residents, and local control over the effects of the proposed facilities should all be taken into serious consideration since they can improve the quality of the entire innovation process" (Pellizzone, 2006:39)

Social consolidation is crucial to propel robust public participation and to balance structural support that PGE owns. Conditions that can support social consolidation are organized societies and collective struggle for independent interests. At least two recent developments have supported the formation of social consolidation, the first being the level of public education and the second, the democratization of the election of village officials. As the community sees progress in both aspects, social consolidation would become their organic mechanism to balance the power structure in Ulu Belu.

Understanding the culture of the community is also essential to explain why the materialistic approach affects social acceptance in Ulu Belu. This impression is seen because, for the community, the environment is considered as productive land and must generate economic gain for them. Observation and literature studies have shown that the environmental attachment of people is specific; They want to spend their lives there, but the spiritual attachment is not pronounced (Mubiyarto, 1992; PSDK, 2015). This argument is also supported by the cultural and historical events that form the demographic situation today in Ulu Belu. The community in Ulu Belu is composed of two main ethnic groups, the Javanese and the indigenous, Semendo. In Ulu Belu, the two groups can be visually differentiated by their languages and houses. Javanese's houses are typical houses that can also be found in many cities in Indonesia. While the Semendo's houses can be identified with wood material and built on stilts or "stage houses".



Picture 5. Semendo's traditional houses, as compared to Javanese-owned houses (privately owned)

The Javanese are also more diverse in livelihood compared to Semendo, which mainly work as farmers. Despite the differences, both groups live in a modern way. Initially, the Javanese moved from Java to Ulu Belu as part of the "transmigration program". The transmigration program has started during the Dutch Indies administration. But the majority started in the 1950s, where millions of Javanese families were moved from Java to the less dense area. To attract them to move, a hectare of land per family was given for them to be altered as agricultural land. This program was considered successful and continued until the late 1990s.

Meanwhile, the Semedo is known for their nomadic culture, where they moved to open new land to settle and cultivate the land (community forestry) into agricultural land or *Ngume* (*annex 9, p.91*). The matrilineal line of Semendo also obliges the male of the family to seek new land, as the family's properties (land and houses) will be inherited to female descendants (Guspitawaty, 2002; Velinda, Wilodati and Kosasih, 2017). However, as the community is now more established in modern livelihood and considering the limited land, the tradition of *Ngume* began to fade. Today, their houses host more than one family, and the male is usually taking care of his wife's farm.

Looking at the customs of two main groups, it is understandable that the communities in Ulu Belu perceive their land as productive land. The fact may also define how the community responds towards the development of the geothermal area in Ulu Belu; the materialistic perspective of the landscape determines their acceptance.

Chapter 3: Discussion and Conclusion

Discussion

In the production of nature, the exchange-value arises after exploitation. The existence of an entity with strong knowledge and finance makes exploitation that had never previously been thought organically possible. In the case of exploitation of natural resources, infiltration with various interests changes the use of the landscape from use-value to exchange-value. In the Ulu Belu case, land use then becomes more quantified because many people experience adjustments from physical and institutional changes that occur in their area. Exposure to the outside world is open, new needs are present, developments in the outside world also happen in this region, and people have other options as a livelihood aside from farming. This critical review of landscape quantification sees the possibility that makes people dependent on entities that effectively exercise its power there, which in this case, PGE.

This criticism certainly brings another discourse on dependency and economic development to the table. Communities in Ulu Belu are minuscule groups compared to the whole population of Indonesia. Still, they must bear the responsibility of broader interests and also experience the impact of the realization of these interests. It is out of the question that the community has all the right to benefit from the geothermal development area, but the benefit itself is hardly neutral; it depends on which group's perspective. The economic growth is evident and visible, but at the same time, it does not necessarily improve the community's well-being, as marginalization is inevitably happening (Suharyo *et al.*, 2003). Developments that bring substantive economic growth are needed to bring people back to their dignity while keeping geothermal areas operation continues. One way that can be done to achieve this is through economic diversification. It is unfortunate for PGE, the obligation to develop regions is not their responsibility, but their presence, which is more effective than the local government, makes the community demanded that they accommodate their needs, including in employment. In this case, dependency can be detrimental to PGE and the community, so there needs to be a particular vision to encourage the community to be more independent.

Public Participation

Given that the geothermal potential in Indonesia is one of the largest in the world, and there are still many designated geothermal areas that have not yet been developed, it is important to

understand that what happens in Ulu Belu can also occur elsewhere. The acceptance and experience of the Ulu Belu community on the development of the geothermal area is quite high. The materialistic needs of the community are internalized culturally and historically, and it has become PGE's concern as well. But in other places, the case might be different. Attachment to the environment or spiritual perspective can make community acceptance different than that of in Ulu Belu. Moreover, geothermal sources are generally located in peripheral areas where the typical community still preserves a strong cultural attachment to nature.

Seeing the problems that might arise, it requires more active community involvement. To encourage this, effective, accurate, and reliable communication is crucial to do. On the one hand, this will explain the benefits and risks of geothermal operations so that false accusations can be avoided, and trust can take form between the community and the developer. With the establishment of trust, active community participation can be carried out, and this participation needs to be realized because, in the development of geothermal areas, the community also has a vital role to play in optimizing its development.

Policy implication

The most important thing to be realized is that confidence and trust must be built. Thus, it will help both parties to understand each other's importance. Public participation must be carried out in the form of consultative or active involvement by opening up jobs. Whenever possible, it is necessary to encourage more power delegation by placing the community in decision-making clout.

In the long run, economic diversification is something that should be the goal of the Ulu Belu community development program. In addition, to break off from dependency, this diversification is also important to keep away tokenism, and community involvement may become more substantive or even corrective. Opportunities to take advantage of economic diversification are promising because geothermal can be used for direct use, especially in terms of tourism and agriculture, the use of both can help people to open up new economic sectors. By maximizing this potential as well, community identity with geothermal areas can also be more fused.

Conclusion

Reading the development of the Ulu Belu geothermal area produces an essential pattern in the discourse of power relations in the development of the geothermal sector. Unlike the exploitation of natural resources in general, the geothermal sector carries environmentally friendly narratives, supports energy independence, and has the potential to improve sustainable economic development for local communities. With these narratives, the geothermal sector has structural support to be utilized optimally in all regions of Indonesia.

However, the facts on the ground do not occur linearly; the development of geothermal areas turns out to be more dynamic than the promoted narrative. By linking to the theory, the development of the Ulu Belu geothermal area is inseparable from the process of production of nature. The exploitation of nature and labor occurs, and it falls into what is called as capitalist accumulation, (Robbins, 2012). In the case of Ulu Belu, exploitation is a political agreement that ultimately changes Ulu Belu physically and institutionally, to form an entirely new landscape then.

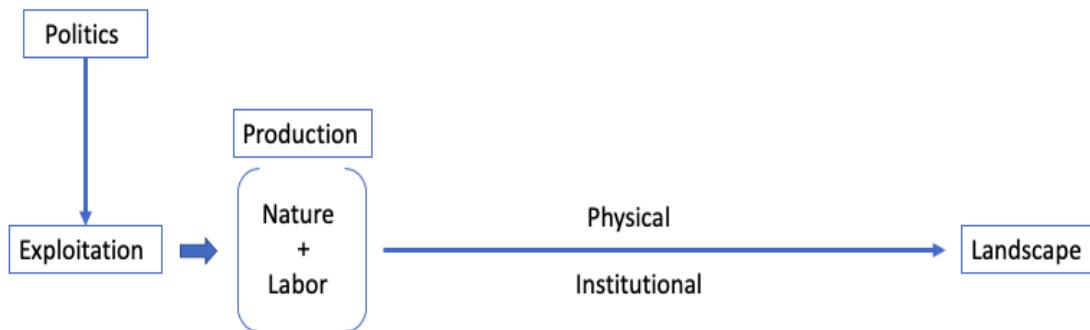


Figure 6. Landscape formation model in Ulu Belu (developed by author)

Analysis in the second part of this paper has proven that the formation of a landscape is part of political efforts. Political intervention manifests in the form of interests at the global-national level, commitment to reducing carbon emissions, and energy independence. Eventually, it was a political decision that also encouraged the development of geothermal areas in Ulu Belu, and from this, the exploitation process began.

In the process, the formation of landscape also involves a process of production of nature, which then forms landscape dualism; as a physical phenomenon and political manifestation (representation) itself (see figure 6). In this process of production of nature, many consequences have a direct effect on society, and these dynamics are attempted to be captured in this paper; when political decisions at a broader scope are benign, at the micro-level, the dynamics that occur are the most crucial.

The process of production of nature as a consequence of political decisions has created physical changes in the Ulu Belu landscape and institutionally, also helped create an entirely new power structure. Knowledge, financial support, and access to the regulator have become structural supports for PGE's domination in Ulu Belu. PGE, with its structural supports, has become the culmination of the power structure in Ulu Belu. As a result, PGE is able to determine the changes that occur in Ulu Belu. This assumption is proven by looking at the symptoms conveyed in the production of nature (Smith, 2008); PGE's relationship with the community in Ulu Belu is the exploiter and the exploited. PGE is present in Ulu Belu effectively and becomes the primary variable of the changes in the Ulu Belu landscape.

Considering such a relationship, conflict of interest becomes a crucial arena to see how PGE exercises its power in Ulu Belu. It is also essential to look at the extent of marginalization in Ulu Belu. It is evident, that marginalization does occur in Ulu Belu, but efforts to provide accessibility from PGE and initiatives to carry out social consolidation from the community have shown that there is room to minimize its effect. Through both, the meeting point for the contestation of interests is not impossible to find. Economic interdependence, PGE's geothermal business development and people's desire to improve their livelihood, has been identified as an intersection of the interests of the two entities in Ulu Belu. In addition, shared identity as a geothermal community can also be used to encourage new shared interests.

The search for shared interests can also be supported by understanding the cultural background of the Ulu Belu community. Ulu Belu's demographic consists of two main groups, the Javanese and the Semendo. While both are unique in characteristics, they both perceive their surroundings as productive land. Further community involvement may be formed on this basis.

The process of forming the landscape has created an entirely new power posture but plays a vital role in the development of Ulu Belu. PGE, with all its structural support, has almost

unchallenged power compared to the people who live there. This gap is an interstice where differences in interests can lead to destructive actions. In this paper, the gap is increasingly apparent because marginalization is not absent, and the production process is unavoidable. However, marginalization can be decomposed through the controlled exercise of power and significant public participation. Through this pattern of relationships, efforts to find an intersection in each other's interests can be seen, and the development of the Ulu Belu Geothermal area can be sustainable and optimal.

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Annex.

Transcript of interview with April, local midwife

April, midwife, local foodstall owner

13 November 2019

This is what you do?

Yes, selling fried chicken with my husband

How long have you've been here?

I was born in Buah Batu, the village down there. But my grandparents were here. I spent my childhood here, it was forest, very underdeveloped, the road was almost non-existence

The road was here?

Yes, but impassable

Was there any residence?

Some, but most are plantations

Your parents were farmer?

They were coffee farmer here, that's why I bought this land. It took three hours to get here, but now, less than an hour

Were your grandparents trans-migrant?

They were, from Jogja

There were newer waves of trans-migrant, correct?

I am not very familiar with them, but my grandparents moved from Jogja. In the 60's, among the first wave. That's why I know about the plantation.

Were there people who settled first?

Yes, the Semendo whose houses are on stilt. It was their settlement, but small in population.

What do you think about the Power Plant?

Negative and Positive, positively the infrastructures are improved. The road is very beneficial. I moved here in 2005, so I know how it was

Nothing has really changed from the 60's?

No, I held my wedding here in 2006, I took the Jeep, the off-road one, but most of the time we walked on our feet. The jeep was rented, we paid 100.000 rupiah per person. It was 30 km travel, yet we took three hours just to get here because the road was bad, so the car was pulled first on the incline. Because the road was difficult, when the parents-in-law came here, cobblestone was built in 2006. In that case, the benefits were felt, because PGE was able to do it, the government could not, because in the past, it had only been set with stones, and then it was eroded by rain. So after this hot mix, PGE has done quite good. We can sell the agriculture products. Then with so many people here, there will be a lot of income too.

What do you mean by many people?

Yes, people from companies, they involve many projects. if there is drilling, automatically. Many of the people's homes are rented, now we are selling foods, also feel the benefits. I felt yesterday, three months ago. Three months ago, it was quiet, because they returned home to postpone the preparation of new drilling. So now I only rely on people who buy and that's not much.

How improved your income has been?

Earnings can be five times, that's a positive. Yes, but the downside, once there was PGE, all prices went up, all prices. Prices in Jakarta are the same here. In 2006, the price of bananas was 500, now it can be 15 thousand, just as much as in Jakarta. So that's bad for the people whose livelihoods are still farmers, do not change, are not involved in the project. Their expenses are getting bigger, the income is still low

Even more beneficial for the emergence of new sectors like yours?

Yes, for farmers it doesn't feel too much, for them the benefit might be the path to the land or it is easier if they want to come down to bring the produce to the market.

Is there anyone that you know, which from the farmers then switches to another profession?

Yes, there are some like my younger siblings. Like my younger siblings who used to be working at a workshop, because they have mechanical expertise to work at PGE, the income is quite good. Many residents are involved anyway, it's just that the citizens' skills are limited. But then it opened the minds of the people too if, yes, if we wanted to go forward to work at PGE, then (the children) would go to college majoring in mining or oil and gas, if there were any thoughts like that. If I see some farmers also adding jobs, so they would have side jobs. What used to be just farming, can be trading, can be involved in work, can be involved in projects, for example to make a road, they also work, so there are more sides.

When PGE wanted to make PLTP, was there a process for involving the community?

I don't know exactly, what I know is that. At the very least they were involved in the process of land acquisition, like yesterday, a long time ago in August, many more of the land had been acquired, but the price of land soared. Because of the PGE's high range, they paid it along with its lands and all the plants in it.

Oh, does this mean that PGE standard raises the price of land? Are the people happy with this?

Yes, people are happy, but if people want to buy land, so it's hard. If the land is acquired, they fortune will multiply.

So if you as an entrepreneur feel that this helps?

It does

What's with the electrical infrastructure or telecommunications connection?

Yes, it's quite good if it's a signal, if it's just a little disturbed here, but if it's somewhere else it's good. Yes, as long as there are these towers, they are built so many and we get signals, so my husband can work from here, right?

So because of this road those infrastructures also just appeared?

Yes, they just appeared. In 2005 it was still difficult to make a call, here the signal is missing, there is no signal. Once I was a midwife in 2011, I was here, because our house in Bandar Lampung caught fire, so I moved here, because my basic education was a midwife. There, the internet has started to be possible after PGE was entered. If electricity has always been like this, it doesn't make any difference.

Is the electricity well? Is it out often?

Rarely. Never out but for an hour and two hours.

Is that true from childhood?

Yes, did not have the blackout yesterday. From childhood it was rare to electricity to go out.

Do you have experience seeing the landscape, now there are pipes that pass?

I like the beauty of being green, it is suddenly rather disturbed. But yes, for the advancement of the region, that's fine too.

I often pass pipes in front of the house, I mean whether the house was built after the pipe or vice versa?

Some houses are built after the projects, they did think that 'it's great that we can build house around the road'. They were previously plantations, no houses, some pipes are built there. Today there are lot of houses built there. If I used to be there in the garden, I used to come, so I often go home. Pipe is just a pipe, there are no houses, now in Mekar Sari already has many houses, but that comes later.

Do they understand the risks?

I don't understand that either. So, the land that the pipeline passes is freed by PGE. What was released was only a few meters through the pipes, the rest was still their land. Well their land was built into a house.

Have you ever heard of complaints?

I have never heard of a pipe-busting or something. It's still safe.

If you know what people complain about?

Never, but once I heard of hot water incident. That spilled over into the settlement, but then they got compensation. Because the response is good.

Regarding the relationship between the majority of Javanese and Semendo?

Actually, it is not only Javanese and Semendo, but there is a Sundanese, there is a mixture and the people here are mixed, my husband, can speak Javanese and Semendo.

How the situation before?

Yes, it's difficult long before this office (PGE) was established. People here are very strict minded, just how can we eat today, whether it's from stealing, whether it's someone's nagging. It was easy for them to do, because here it was far from the apparatuses. Precinct is far away, so it was terrible

Until now?

No, right now security has entered, yes, from the army and police. The new police station was built. So, the crime rate is decreasing.

Who did they rob?

These are people who have a land, so clove and coffee plantations. The fruits have been stolen, so people pay thugs for security, from education it's very minimal they just graduated from elementary school. They are not looking for skills to make money, so they dare to rob. Well, so after this, all of these people who were educated had job. Since PGE, even though they become helper, they have job, while the requirements for PGE to work on are there must be a letter of good conduct from PGE. A month gets a salary of 1 million, 1.5 million, because in the village can still do gardening for themselves, crime decreases.

What was a crime before?

There are thugs from residents themselves. In the past the results of the coffee were brought down to the market, using the trailbike and then intercepted on the road. Now people are going down safer. Because the crime rate has decreased, because lately the criminals were thinking about school, no school no job (PGE). Because the requirements for PGE are at least high school, a letter of good behavior is needed, so they have a relationship with the police. In the past, robbing a house was also important, as long as I was living. So now we also talk with people with better education, because they have started to open with outsiders, attitudes start to improve. It is more comfortable than before. Like I help patients, I don't understand Semendo, so at first Indonesian was still like foreign languages, I had to ask someone else to interpret Semendo. Now it's not bad because they started school, so they have learned better Indonesian.

If seen, even though they are mostly Muslims, are they obedient, ma'am, but apparently it needs something other than religion to reduce crime?

Not to demean the teacher of the Koran, the delivery of koran is not enough." Oh this is for food, I can't steal" but because they think it's a base to steal, it shouldn't be, but it's not delivered. I joined first, before PGE, my study was only to read the Quran not the experience and meaning of the Quran. The children are clever but they don't understand. I don't want to put down his teacher, but because of lack of education. For people to get out, don't be like a frog in a shell. One must see the outside world.

I have heard that Semendo people in this region are more prosperous than Semendo in other regions, because according to data, criminal areas are still very high?

I experienced my childhood here, and I often noticed something. I went to the market to pay attention to people, I heard people oh I can't get here. For example, I bought cucumbers, I bargained, wow I can't get a thousand. Wow, that's a lie, I know exactly their profit from farmers, it's better to be honest. So I put my price down, so people also know my profit. I like to study.

Transcript of interview with Jati, Senior Analyst Strategic Planning and Business Development Pertamina Geothermal Energy

**Jati, 14 Oktober 2019. Senior Analyst Strategic Planning and Business Development
Pertamina Geothermal Energy**

How was the initial development process?

So, if in Ulu Belu, there are a total of 4 GPP units, the first time it was 1 and 2 that belonged to National Electricity Company (PLN), so PGE developed its steam field. The initial process was of course exploration first, three exploration wells, get reserves, followed by development. If the detailed process is, after we can prove it we can publish documents that confirm our resources, what can be developed. That's PLN's job, from the specifications of the resources we have, they adjust to the technology they have. Usually it is like that in geothermal, so each area has different characteristics, different phases. What is produced is pure steam. That will determine the technology to be used.

Because power plants 1 and 2 were built by PLN, PLN built power plants after there were proven reserves from us. Power plants 1 and 2 were built in 2012. The development of units 3 and 4 is the total project that we are working on upstream as well as downstream. From the available resources, the difference is that from units one and two there is a document. That we told PLN we would build units 3 and 4, then in 2014 it began. Unit 4 was built in 2016. It was parallel working, from agreement from 2016 and 2017, the range was one year. until now the total power generation is 4x55

Both PLN and PGE stand on Pertamina's geotherma area?

Yes, PGE, so we sell steam for GPP unit 1 and 2 and electricity for GPP unit 3 and 4. From the beginning the temporary office until now has been established.

What is the process of gaining rights of geothermal area?

Our 12 areas are actually from the old regime, we have held the concession for a long time based on the Regulation of the Minister of Energy and Mineral Resources. If in the new regime there were Seulawah and Gunung Lawu. In this new regime, we must have Geothermal Permit and onearea must have an entity, so PGE must create a subsidiary, hence PGE Seulawah and PGE Gunung Lawu. In the old regime we consolidated, so the former remained in effect before the law was enacted. With the stipulation of 30 years, after 30 years our right is up and must be extended.

Do you mean to be auctioned again?

No, it can be extended but must follow the new regime so that in 2044 there will be new PGE subsidiaries, PGE Ulu Belu, and PGE Kamojang. And the set of incentives is also different, in terms of taxation, in terms of financial reporting it is different between current laws.

There is one mechanism, there is an assignment but only to State-owned enterprises (SOE). So if for example there is one area it will be handed over to SOEs before it is auctioned. With a direct assignment mechanism.

Is it for a new regime like that?

There is a mechanism, direct delegation to SOE. Like the one we got for Kotabangun, which will be handed over to PGE. This also why national electric company got eight areas. We got 14 areas the last time, but that because our status as the regulator. Now it is a different case, the ministry controls it all. Area asserted that it is permissible for Pertamina to continue, but

the status is different. It was a regulator, a business entity. It used to be self-regulating, now business entities are following the rules.

What obstacles are faced?

Constraints same as other places. And from the infrastructure side there are no roads, access, clusters for wells. Well, there are hills that we razed. But one of the characteristics, we don't open a lot of land, we need only one hectare for a cluster, very small. Our rights can get hundreds of thousands of hectares, but what we really use to build access, clusters, is really small. In fact, we also maintain it to remain forested. The function of the forest is to maintain the fluid cycle.

Another obstacle with the community, if this is different from one place to another. There are people who support, for example in Seulawah, support comes from the community from government agencies, we were asked when the project runs. In other places there are also things like that, but in other places there are also those who really reject it, as in Mount Lawu and Bali. If in Ulu Belu, this community actually accepts. Because from the beginning we have built a road that beneficial for the community. I first went there in 2010, it was still a rocky road. From Pringsweu to the top, it can take 3-4 hours because it was slow. Now it only takes an hour from Pringsewu to Ulubelu, that's easier access. When the road is finished, transportation gets easier, the price of commodities is now the same. The people are happy. The limitation has been eliminated, commodities' price is stable. Then, it starts to stretch, from the first infrastructure created. Now that food stalls have appeared, rented houses have also appeared. Now that's a very big project, there are also many contractors, and they also live in people's homes. There is only one obstacle that arises, that is thuggery, so we also have to fight it. So at that time trailer was extorted 500 thousand each, imagine how much they can get from doing this. That's just a pay. But we are also from there, some time we finally use the services of the army apparatuses for the project. So the army itself is helping directly to work, since it has been conducive. So projects 3 and 4 can be done faster

These thugs are local?

Yes, but then it's gone and we also feel that their livelihood from extortion is gone. So we poured out the CSR program, even though the CSR Act was only realized when the company already made 2 percent profit. We have just started the project, building a mosque and installing clean water.

On the other hand, we build places of worship, schools, and health facilities, they then respect and are now conducive. Already running, as it should.

But if from the community's land, which was a plantation or a forest, which for example is now changing?

There certainly is, for example there are Darajad, they need transportation to cross extreme paths. The whole trail brand, it takes a jeep to transport potato and carrot. After there is access, their business is smoother, distribution is smoother, the economies of scale are much bigger. In fact, there are already skippers because there is easy access to the market. I see the Ulu Belu is also like that. There are many coffee plantations there, even one of the CSRs is warming coffee. If it is heated naturally, it took long time, if it is heated with geothermal brine the temperature and quality of the coffee can be adjusted. So, it becomes a premium product, Ulu Belu coffee. That's now, apart from that access. Besides, we also don't open up large tracts of land, so it's not significant in reducing the area of attention there.

Back to thuggery? When army was involved, the army exists only when there is a project, so that their security levels remain stable?

When the TNI was involved it was a shock for the thugs. after the work contract was finished, we had cooperation from the security side, even some were recruited to maintain the security. At PGE there were many colonels, who resigned to move to PGE. In big projects like that, this is the scheme. Even though they have already resigned, the ranks are still very military. Those below them will be seen as seniors, even though they are no longer active.

After the presence of these staffs, the atmosphere became different, especially with other security forces. As there is a problem in Salak Mountain, the police chief is concerned about our activities, because we are considered to work in protected forests. Whereas based on the law, the geothermal project was excluded from the definition of mining activities. But we brought the security forces, then the conversation went well.

What is the highest demand for electricity from households?

What needs to be understood is the fact that the existence of GPP does not have direct implications for electrification in the area. it happened in Salak Mountain, the largest GPP in Indonesia with 360 MW. But around the GPP, there are still some that haven't yet been electrified, some say it's paradoxical. This is how there is a source of electricity but there is still ring 1 that has not been electrified. Because we actually produce electricity into the PLN's grid, so this is the realm of electrification. Which are PLN wants to channel is up to them, so it's not necessarily.

If in Ulu Belu I am not sure, when we built GPP unit 3 and 4 in the designated document the discussion was electricity shortage, so we built them. After it was built, the discussion then disappeared. Actually, we immediately build GPP, it is not possible just from exploitation we continue to make GPP. If there is no PLN plan, it won't be, so it was planned from the start. Because they have also calculated his electricity needs, so it is to fulfill electricity needs or replace obsolete sources such as fossils.

If I may know, is there an industry in Ulu belu?

If there, I don't see industry, there are more housing and plantation-producing areas. If in Lahendong there is a palm sugar industry that is exporting. If in Ulu Belu not, the economy is still very local. Supposing you still have a full breakfast with only 3000 t, you can get uduk rice.

For facilities? Is there a health center?

If there is a hospital nearby in Pringsewu, the nearest town. If Tenggamus is further isolated Some of our employees also choose to stay in Pringsewu. In each area we cooperate with the medical center, in each area we provide clinics and ambulances for first aid facilities for workers. But if it necessary, it is possible that there are people who need it.

What about education?

I don't know, this must be confirmed later to the people there. Dissemination to schools, if repairs to schools, repairs to places of worship. But we also have socialization for healthy living, how to maintain hygiene routinely. Is there more to it than that? There should already be. Because the CSR program targets health, education and economic development.

For a clean water program?

It's streaming at some point, like Aqua's program. The community needs efforts to look for clean water, we provide a strategic point so that people stay there to fetch water.

I find geothermal is often juxtaposed with alternative energy, would that be part of the development?

Yes that alternative energy should not be used anymore, because indeed the condition is like that. Fossils are still majorities even though we have another energy called renewable energy. What is geothermal? if asked to parties in Iceland or Germany is not alternative energy anymore, it is primary energy. We should no longer want to build the fossil power plant. Yes, the wording in Indonesia is still an alternative energy because indeed the portion of geothermal in Indonesia is still very small. Our energy mix is like that. Obsolete but relevant. We still haven't stopped our coal projects, the portion will still be added to the national energy projection. What happens in developed countries, has been to stop coals and nuclear, they are already dizzy about how to demolish the plan. So it has been replaced, so the additional energy of 55, 55 fossil fuels is removed, an additional 300, removed 300. If we are still growing all of it. Only the portion of the plan will be increased when viewed from the law, now we have a policy of 7500 MW geothermal portion. To support that, accelerate it, what policies need to be done, those that have not yet been seen.

PGE has 14 areas? how many are operational?

The first is Kamojang, Ulu Belu, Lahendong, Karaha, Sbiayak, there are 6. The contracted area of the joint cooperation is five, but there is also one area on operation and joint cooperation. For example, Kamojang-darajad, we are starting the fortress.

Kamojang is complete. How about utilizing geothermal direct use?

Apart from indirect use, it means direct use. It is not commercially available in Indonesia. Kamojang also hasn't, now is still focused on developing electric energy, still conventional. Geothermal is extracted, then the steam is used to drive the turbine. While in Japan, New Zealand, it is widely used on the side of tourism, hot springs. In Indonesia, many hot spring baths in Sibayak are made by themselves, and that is not our activity, it is individuals. Not from the results of GPP. If in New Zealand and Iceland, the remnants of the condensed steam discharges that have brine before being injected and are used by the. For hot water baths, for methanol, fish drying, various kinds of cosmetics. It is adjusted to the area, we are mapping what we can develop in terms of direct use. There is no more info on the world bank, because the they will fund. When we went to Iceland, we were shown this direct use. Now we see consultants, we are still mapping the commercial side. If you sell these products, where are the markets? that we are still studying.

For Ulu Belu?

Coffee, heating it for drying coffee. Geothermal can be used as a brand that is environmentally friendly or something. Yes, that's how we do the marketing.

Economic diversification there?

The presence of GPP is not direct use. Economies still built more because of the presence of GPP activities.

I see that from the map, there are houses that have just appeared on the road?

The obstacle there, we build access to new clusters, so we make a road. There was nothing but the day after, there were already temporary houses. Built temporarily by residents, whether for stalls, for whatever. The problem is if there is activity, for example the well production test. For example, causing damage in places nearby, although it is not our responsibility. Due to land acquisition, even though on our left and right is still our land. But the public cannot be

explained like that, we are confronted as they finally asking for compensation. Often, there is damage or crop failure experienced by farmers who have nothing to do with us, still they ask for compensation to us. We invited experts to identify and the results were not relevant, their findings were like that. You can find the ins and outs of the story, later with the public relations officers. What are the constraints and solutions. For land acquisition plans for pipelines, for example, we have mapped how many plots of land are related. The plant was planted the next day, now when the compensation had to be calculated the plants, even though it was only an overnight plant. That's the ins and outs in the field.

When we talk about the field, is this the Tenggamus district, what does this mean by the citizens?

Around geothermal area, including its access.

I once found an interesting fact, but this happened in the Salak mountain. So there are NGOs who wrote to us. Ask for scrap metal, for them to sell again. The NGO asked us but the chairman of the NGOs was not a local citizen either. So these NGOs make use of it. Yes, as before, how come the residents know that with plants on land that will be released there will be a growing compensation for planting, there is no way any initiative will foster intervention. Like that.

If we talk about the road access 20 km?

That is. Everything was built from Tenggamus, including repairing the road that we are paving again. We foster from nothing and the maintenance too.

I see a narrative that residents are interested in the natural scenery combined with artificial pipes, is that also there?

Yes, of course, there was nothing. Now there is a pipeline, there was a pipe, which was from a quiet area but became a place for selfie photos. So there is one in the access road that people use to sell roasted corn and it becomes a place to hang out.

Transcript of interview with Arif, Supervisor of External Relations of PGE Ulu Belu

Arief Mulizar, Supervisor External Relations of PGE Ulu Belu

15 November 2019

Growing with the community does that become PGE's value?

PGE or Community. PGE synergizes the community, because what will it grow like. What is the synergy?

How do you interpret?

Synergy means that PGE exists and continues to grow and continue to operate, continues to exist with the community. So the PGE is still there, sustain, not only because of the PGE but because there is a good relationship with the community. There is a mutual symbiosis, the community needs PGE, PGE needs the community. The point here is that community cooperation is important for PGE.

What is the importance for the community?

Access and openness, from those who were previously isolated. Bad roads, do not have access to the good outside world. Finally, they can get signals, roads, the economy is increasing. When

the transportation road goes well, the transportation access becomes easy, the prices here are the same as the regency. That's what makes people happy. There are no transportation limitations that make costs rise.

Do you continue to see the development of this area?

I see from two years, it is not significant. But from what I heard. Yes, it means that GPP is present so access to electricity is easy to get, previously there was none. Job literacy, new business literacy, selling stones, renting a house, making a restaurant, PGE opens the mind of the community, have the magnetism of economy to not just working as a farmer. There are things to do besides farming.

What kind of synergy is expected?

Simple, PGE can work smoothly without disturbing the community, PGE can help but we are not disturbed. The community accepts benefits, but they are never satisfied, if examined ontologically there must be something, but in the axiological realm, it will be difficult. For the community, it is very important that there is PGE. Especially people who later succeeded, who had only been selling stones and now are contractors. However, for people who cannot work, who cannot help, who cannot take advantage, of course there is no change.

Is there any data for assistance?

There is data collection, but it is not 100 percent because it is not PGE's duty to improve the welfare of the Ulu Belu community, it is PGE's task to manage Geothermal Energy.

What is the best community approach to do?

Our society's approach has two functions, external relation and CSR. The first thing to do is of course CSR. There are five aspects, environment, education, health, infrastructure, community development, all the same. Based on laws and regulations. We look for groups that can be helped, we don't give cash. Cash only to the orphans and the poor.

From me, what was done was to establish communication with the regional apparatus, the authorities, the community. And talk to them a lot. I often explain, I am the liaison between the community and the company, my feet in two places. During this time, I carried out that role. I met the community for dozens of cases, thank God it didn't make a fuss.

Do they feel represented by you?

Just ask the community, but I was hit by a decision, I could not make any decision. No matter how small the problem, you have to wait for confirmation. The mindset of me and my boss is different, because we have entered into a strategic policy, while those in the field are those of us who understand. So, my job is to convey it to superiors, superiors who decide. But I give advice in the form of options.

The point is that this strategic policy, whether aligning something that has been decided by the center?

We are SOE, to spend money is worth it. If for example, we have to compensate more than General Manager authorization, we have to report to the center.

How is the relationship with the Government?

With the government, all levels are secured, there is no problem. We don't have a problem. Because we can explain rationally. The government supports, because this is also a national government project so we are supported.

Including energy mix targets?

It is certain that Indonesia must develop geothermal energy. Lampung is one of the most potential, so the governor must support. The governor said to as soon as possible we must develop Ulu Belu, if there is a problem contact me. Like that governor's more or less has mandated. Until the regent was, the district head, and the village head. Problems arise when there are interests, for example this village needs something. Against secured security apparatuses, because there is a special allocation for security. With NGO also the communication is good

Are there many NGOs?

There are 3 or more, but they appear. With WWF or Walhi, we can communicate smoothly.

Regarding NGOs do you think they are organic or do people feel represented?

If you ask the people, of course, ask the people, are they represented? Sometimes I find NGOs easy, because of the consolidation of the community they handle, so I just have to face the representatives. It's just that I usually confirm beforehand if the NGOs have started to be irrational. I confirm to the community, then there will be negotiations. The NGO must be embraced not to be considered an opposition, because it will cause a lot of undermining. Because of the policy, the way I work has no standard. That's really personality, can not be standardized, depending on personal.

Are demands organic?

They will not sue if it does harm. The problem is whether the loss is worth the claim. The loss is 20 but demands 40. They never come to feel aggrieved. Never. But there is a process whereby they are missing 40, even though the loss is 20, how can I make compensation 21.

Do you always accommodate?

Depending on the demands, if for example it is rational and will harm the company, we will accommodate. However, if it does not make sense, brought in any forum, this does not harm the company, we would ignore. But surely, I am listening. For example, they once demanded compensation for ground vibrations because the rig truck passed. The last one complained about silting of the river, when the construction of GPP unit 3 and 4. But we made sure it was not due to drilling. We invited the environmental service to talk with them, so they understood that it was not due to company activities.

Any demands you hear?

surely all, however slight. Even if only dust enters the house. Everyone has my contact.

Are there new houses built near cluster?

Some are legal, because the land belongs to them. If we use their land, we will buy it. We can't be repressive if they don't want to sell. We are also SOEs.

How do people see that?

They built a house that near the road we built, if it doesn't work they won't make a house.

So, they understand the consequences?

Yes, but there is no interference, next to the GPP is also not interference. But there are no emissions, there may be a disturbing sulfur odor and noise.

Transcript of interview with Taufik, PGE Security and local farmer

Taufik, Security and local farmer

15 November 2019

As local people, what do your parents work as?

Coffee farmers, until now thank God. As a local citizen

What do you think about the presence of this GPP?

As a local citizen, there are advantages and disadvantages, from the road was poor and access to the Gunung Padang took a long time. With PGE it's faster. So the car can pass. That is good. But there are bad, good and bad, for the impact itself is felt in agriculture. From before geothermal, the soil was more fertile. Water availability, not as usual. In the past, even though dry season was a year, water was always available even though there was no rain. Now that there is less water, I say it is affected a little. Because behind our house there is also a river. In the past, even though there were still many months of water in dry season, now three months of dry season the water has drastically shrunk.

But it only happened 4 months, is it true because of the GPP?

Because it only knows 50-50, is it because of GPP or not. Formerly hot 7 months, normal, now looks dry. Then, it's still 50-50 whether it's because of GPP or not. Whether this happened because of the emergence of GPP or not I do not know.

I have heard that because of the presence of this PLTP, has PGE built water facilities?

Never heard of it.

What are the benefits besides the road?

I would remain a farmer without the presence of GPP. Electricity was also none before, since there was electricity coming in. Because there is access road, handphone signal also improved, as long as there is a road, people are more mobile. Now the road is better. Unemployment also decreased as people also work with vendors.

How was the recruitment process done?

Recruitment list, from the vendor originally went to my father who inform the people. But then they were invited too, because there were new posts. We can work, but we have to take security education at the Lampung Regional Police. Education for 24 days. I was unemployed for a year, then worked at PGE.

Was this your initiative or from PGE?

Own initiative, own expense. PGE used to open job vacancies but there are conditions, must take security education first. There are 12 applicants. Alhamdulillah, all those who took part in Education were 12 people. So it is suitable, thank God until now we are still working here.

Besides security, any, especially the local people, who were recruited by PGE?

Locally besides security there is also those who work in maintenance function.

Did you understand the process of communication to the citizens from the beginning?

At first, this is not the problem, if there are many complaints now. It had been more comfortable, the residents were closer to PGE, both of them respecting each other.

What was said in the socialization?

Lack of understanding of the problem.

Do you feel that GPP development is economically profitable?

Economically profitable. From the farmer side, there is a difference from before, the result, somewhat less than before. But there is an increase in electrification. If the focus is on those in agriculture, not involved to PGE, nothing really changed. But it's different from people like me who works here but also still farming.

So does anyone work two jobs like that?

Yes, like vendors, also contributed there. In particular, I also have a plantation, but because we work, I am not the person who manages land. But it opened up opportunities for other farmers to work on my land, both of which helped. Farmers who do not have land help to work my land.

How about income?

There is an increase in income. If there is a 2-fold increase, if there is work, there will be additional income. So, there is a definite income in addition aside from being farmer.

How do you see this GPP facility?

We're on Gunung Tiga, there are no pipes. for other residents right here. Many people ask if this pipe is leaking. I personally am not concerned about it, as is the case here.

Visually, how?

In my opinion, it's fine. That is to say there is no problem, first these pipes than the house.

How do you see the importance of PGE, both on a local and national scale?

The development of GPP must be carried out, the existence of PGE is important, especially here. So, I say it's important, if there is no help from PGE it won't be this good, there are positive impacts so it's very important. Very helpful.

What does place mean to you?

With the existence of PGE, it becomes lively. There were no lights, there was no road, it was quiet. people never leave the house, the road is also damaged, getting out of the area can be half a day or a day, the road was bleak, the phone signal was also absent. In my opinion, PGE is very good in my opinion, but that had a positive side, a negative side.

What do you dream about your family?

The family is better than me, in terms of income, material. Because first, I was born of a poor family. My hope as a father, as head of the household, my children can get better living. With good opportunity, you can work here later. I have two daughters, If there are vacancies here, why not? If not, don't force it either.

Regarding yesterday's complains?

The meeting was accompanied by Laskar Merah Putih (an NGO), on behalf of the people. Initially good, initially he was not uniformed here. So, people who didn't understand at first became an issue. this is in my opinion. The complaint was coordinated by the NGO. After that it was coordinated again to meet at the stall, they all dressed in uniform. Finally, yesterday's meeting was accompanied by security apparatuses. They complained yesterday of noise, from

the well. We found solutions, the first was the earplug solution, but they didn't accept it. Previously they did not feel that it was noisy, but was coordinated by an unauthorized NGO.

What have they been doing all this time?

Coordination for complaints. Especially in the past year alone. They are not really concerned, they are only here because of PGE.

Transcript of interview with Deki, Coffee Farmer

Deki apriliano, Coffee Farmer

17 November 2019

Profession?

Here guarding the parking, so on from Monday, no holidays. When again the new farming season. Farmer's parents too.

Benefits of PGE?

Since there is a village PGE going forward, the road has become good, this used to be all muddy roads. Many residents have jobs at PGE.

Complaint?

If there is no complaint, the benefit is from the existence of the road.

Already 20 years living here, do you know about the development of GPP?

First my deceased father arranged the work for PGE for residents.

What did you mean by the role of your father? Does this hot spring belong to your family?

Previously set security. Hot water is still owned by the community, but a person built this infrastructure, it has been 2 years. Residents visit here, there are still many other tours. There is also Danau Anugerah. There is a waterfall above, if you walk it will take one night. But the manager is not the village head.

Infrastructure is developing, what is the impact?

There is also an impact, this environment has become less natural. Both in terms of air, and scenery too. It was still cool, not that hot. The results of the earth, all drawn by PGE.

For farmers?

Not. Coffee production has been declining for a year. usually 1 ton, now maybe 500 kg.

Another complaint?

There is nothing

How do you communicate with PGE?

Good communication, good relations.

Already married, thinking about working at PGE?

Yes, God willing, according to ability, want the child to participate at PGE for work.

Is there any awareness about education?

Yes

What does Ulu Belu mean to you?

It's better to find work here than to go abroad, than to Jakarta. If there is definitely an income here, you can still farm, or even to work at PGE. For children, it is also my hope for them to work near here.

Transcript of interview with Herman, Coffee Farmer

Herman, Coffee Farmer

17 November 2019

Is this your Parents' land?

Indeed, the land of the parents. I live in the Pagar Alam village.

Are there any benefits from the existence of PGE?

We can work, sometimes I am involved as a labor worker. But uncertain.

How were you involved?

Entry sometimes has to bribe

Must still pay? did you get the mentor?

Minimum salary of two million per month, pay the same as those from the company.

IS there are many stalls from the street?

Yes, but if here it's tourism.

Is there a direct connection to the road built by PGE?

No, it's been there a long time.

Are there development impacts?

That's the steam, coffee damage, pollution. Especially for coffee plantation. Close to the well, noisy. I experienced, when opening the well it heard up to here.

Complaints that you experienced?

Yes, we clearly lost, but there was communication with PGE for compensation

During this time smoothly?

Smoothly.

Are there views of pipes and other infrastructure?

It's alright.

Already married? What do you think your children are?

If my mind is there, but this income is uncertain. We have no price for coffee, the company must pay.

Thinking of children working at PGE?

I always thought that, I already have my grandchild.

Have you been born here? How is the development here?

Already here. Its development has been rapid.

How was the communication first?

Yes, there are jobs if provided, but this is all from the company.

What do you think about this pipe that crosses community land?

Yes, they were compensated and that was discussed.

Are there projects going on?

It's uncertain

How about coffee production?

Declining, declining prices, production too.

How was the production first?

It used to be above 20,000 per kg

How do you sell it? To the market directly?

No, there are middlemen, bid there.

If there is a way, you should be able to take it directly?

Yes, selling to middlemen doesn't match, the price should be higher. If sold on the market 20 thousand per kg, if middlemen 17-18 thousand per kg. We sell it to middlemen because we don't have a vehicle.

Transcript of interview with Iqrunnasi, Head of Muara Dua Village

Iqrunnasi, Head of Muara Dua Village

16 November 2019

How long have you been the head of village?

Inaugurated May 23, 2019, ending later after being appointed by the Village Head in June. Inauguration in June.

Can you have two periods?

Yes, it depends on the mechanism itself, if that election will get a candidate, and this election will find a winner. If I do not have a candidate or there is only a single candidate, then it will not be an election, if it does not become an automatic election, my position will be extended.

For how many years?

Until we get the definitive village head.

How were you chosen?

I was referred to by members and village guard bodies with community bodies.

How long have you been the village secretary?

Approximately 14 years. Since 2004.

How long have you been living here?

Yes, from birth, living in Muara Dua. But I grew up in Kalianda, precisely in the Palas district. 6 years, from middle school until graduating high school.

How far is your house from here?

In front of the mosque my parents' house, which has a sukaianang stall.

What was the parent's profession?

Coffee Farmers.

How do you think about the presence of this GPP?

Very significant contribution, not only to Muara Dua, but also to Ulu Belu, as well as Tenggamus.

Significant in what way?

Yes, in all respects, the development of human resources itself, which means providing opportunities to get jobs for local residents.

Did you see that happen?

Correctly.

Own benefit?

The greatest benefit that we were isolated, now it's freedom.

In terms of what?

Previously, access was closed, with the presence of the company so that it opened all aspects, be it transportation, economy, and so on. So what was said earlier, is a manifestation of significant changes in all aspects.

You said freedom before, how was it?

If we, Indonesia from 1945 had been independent, but freedom here meant for the territory of Ulu Belu itself. Since the presence of PGE, we enjoy freedom. Isolated because we are from other districts. We are the locals, people used to underestimate us. Because we are inland. But now Ulu Belu already open, now it is heading to what is called as freedom, if we introduce ourselves, there is some kind of honor. So, there is a better identity

You really know that nothing has happened, until now there is a road and a GPP. May I tell how it started?

These offices were once a plantation, Karangrejo and Pagar Alam, up here it's Muara Dua. From once plantation and forest. The road was once muddy, now alhamdulillah the access is open.

Is there anything that was communicated between you and PGE?

Initially the head of his village came from the company, meaning to visit with the village leader. Our jobs are limited to administrative matters. At first PGE was present, even before I was appointed as village secretary. So, linear with the time I was appointed as village secretary. Incidentally there were a few incidents at that time, so residents took part in a protest.

Can you tell more?

The action that happened at that time was due to miscommunication. We were going to a comparative study to Batu Tegi (location of the hydropower plant). Incidentally, in Batu Tegi Hydroelectric Power, the income is not as much as PGE. Whereas all the roads have been hot-mixed, we haven't yet experienced that. A little hot mix, eroded again, more holes, so we conveyed this problem to the company. The company said that all the roads would be opened

after all of the drilling wells were operating, at that time we did not accept them, so there was a protest. Besides that, there was indeed a one-sided dismissal incident.

Dismissal from PGE?

The PGE. But after we took part in the protest they were accommodated again. And what they demanded is that the road construction be hastened, not until a month the road is finally completed. Finally, a kind of communication was carried out. That was the first step so we could achieve freedom.

What form of public participation?

Deliberation, what is the desire of the company for example, land acquisition is communicated. There are no difficulties so you can get full support from all levels.

Including communication from you?

Yes, once a month, there is communication from PGE

Economically, do you see a difference?

There are economic differences. For example, the sale value of the residents' agricultural products is intact. Because before there was a way, citizens' income was cut by the middlemen. Now residents who have transportation can transfer directly to the market. Because there is the road. In the past, the farmers were forced to sell to middlemen, now the residents themselves can go directly to the bay (market).

If from the profession, do you see any kind of profession diversification?

If it is related to the profession I think it is related to the intentions of individuals. The goals of the company itself will clearly provide guidance and direction, even more than that. But yes, the individual himself must have the desire to take advantage of this development.

I see many people who open a food stall, open a garage, open a boarding house. How do you see that?

Yes, it is because the access is opened, if the access road is not open, what do they do it. Of course, it's related.

If according to you, about the infrastructure of PGE, whether from the office, pipes or wells that were built, what do you think?

If the pipe is still a little wedge from the minds of my citizens. Regarding yesterday, there was a kind of bloom in the area of kembang sari, fly over, still too steep and still too narrow often caused accidents. It was communicated but not followed up.

How can residents convey the problem?

Delivered through deliberations, related to the flyover that was built was still very rudimentary. They ask to be addressed, other complaints of course the desire of the community to be accommodated. But in general, the wishes of this community, related to employment because we are in Muara Dua, as a village buffer is a priority. Given the negative and positive impacts that might occur, the Muara Dua area will be the first to be affected. It is my hope that my residents want that the workforce to be prioritized.

Now if we look, there is a garden with pipes, how do you see this?

The scenery is very cool, beautiful, especially with the presence of PGE, which had been only trees, now there are offices, there is lighting, and there are roads. Now it is very supportive.

Regarding the area, is there a synergy between PGE and the community?

If for the synergy itself, it has actually begun to run. But our hope is that it can be increased. Yes, it was increased first, among companies with a minimum of village officials, closer. During this time there are still limits. Related to the synergy it was still less intensive.

If for example there are social programs from PGE, how was the implementation?

Many programs have been implemented in the villages, but that was just the beginning, now it is not as active as before. In the future, we want to be more in sync with the company.

What is the meaning of Muara Dua to you?

Everything, my birth place. I strive so that my residents can be comfortable, can move forward, can develop, of course, can contribute to the village itself.

Can the presence of PGE add to that meaning?

Yes, it really adds. I see this PGE as means. Without the presence of PGE, it is not freedom. The community can choose work other than farmers. All that's left is to synchronize, communication is going well, so that what was said can be accommodated by the company.

Do you see this GPP's importance in all local and regional or national levels?

Certainly not only villages but on a national scale, because the progress of Ulu Belu is sourced from companies that enter Ulu Belu. If there is no company, it will not develop, it would still be isolated.

When it comes to development, I happened to talk with residents. They began to enjoy electricity and cellphone signals. Is it true because of the presence of GPP?

That is related to communication access too, of course it has a positive impact on society. I would like to submit to the village of the aforementioned objector, at least be a priority, there is relief for the terms of work at PGE or for lighting on the street. I once got a warning from the PLN that we contributed to provide the street lighting to be considered illegal by the company. Even though every time we pay, it covers the cost of street lighting. So, we followed up, they said this must be traced with the local government. I hope this does not happen, how the company's payments cover everything. I hope so.

How do you see the relationship between village officials and companies?

Good relations, even though communication is still not going well. The reason is I do not understand, we hope that we can work together, we can all combine into a unity. This synergy is important.

What is the public's view of the company?

Very, very helpful, very beneficial. Open access, employment opportunities and income from the community itself. Without open access, it might just be that people's life. PGE has a significant impact.

Does the community see the presence of PGE as helping?

In general, very good. It means to help.

What is the level of education or health level that arises after the access?

For health, I think that is the authority of the regency government. If education has been touched, the building has also been assisted with its construction. now the hope of the

community is how to get jobs from our area. That is the foundation. Because of the ability, willingness, and filing of my community, so they are isolated by themselves. Employment must be of a high school standard, even though my community has a majority of elementary school education until junior high school, even though they have become a family pillar.

But with higher education requirements, does it also change the outlook on education?

Glance changes the outlook, but the reality is that we need jobs.

So there is a change of mind to send their children to a higher level of education, but is there also a reality of the existence of people who need jobs?

Correctly.

Transcript of interview with Ilham, Outsource Consultant, Community Development Officer

Ilham,

Outsource consultant, Community Development Officer

18 November 2019

What's your role here?

Monitor or support all activities carried out by PGE, especially in the case of CSR.

How long have you worked here?

3 months.

What underlies CSR?

Over time, other than because there are legal rules. The things done by the company often clash with the interests of the community, moreover the longer the interests of the community getting more and more. All activities designed are always related to company interests.

What did you do while here?

Realizing that there are two approaches, the program provides what benefits for the community and what benefits for the company. That can be assessed by the CSR officer itself, it's good that we can be more coordinated.

In academics, what is CSR used?

As the name says, Corporate Social Responsibility. Companies that have assets in residential areas have social responsibilities. Actually, not only social responsibility but also environmental responsibility.

In social studies what should CSR achieve?

First, of course, follow the rule of law. Secondly, so that the relationship between the community and the company runs well. So that the company's presence can carry out its operations and the community does not feel disturbed by the company's operations.

What parameters are considered?

The program looks at social mapping. Through social mapping we see which people are the priorities for receiving CSR programs. There are financial consequences from the

implementation of CSR, it is expected that with social mapping CSR can run more efficiently and on target.

How was Social Mapping done?

Social mapping identifies the roles, positions and interests of actors. What people see it as. That position is a social position in society. Then identifying the interests of the community, we see that from conversations between citizens. Yesterday we did social mapping with 20 informants. From there we can identify.

What is the basis for accommodating the interests of the community?

Can also continue and develop existing ones. For example, the development of goat farming, it was originally from the social mapping analysis.

How does this program determine it?

There are five sectors, infrastructure, education, environment, community empowerment, and health. For example, we want to make an environmental program, for example, a green school, which school needs us to identify. Come directly, analysis, observation. After we get the data, we list what can be done.

How do you determine the program?

That's a bottom-up approach, so from the social mapping, the new program is for all five aspects.

What programs are there in Ulu Belu?

Goats, garbage bank groups, and coffee farmer partners, are included. If it's already developed, like coffee farmers who already have their own innovations, what we need is to help. Green school infrastructure, procurement of school health units, planting plants. Road improvements are also included. There is also a Geothermal Information Center, so people can come to know more about how geothermal energy operates.

Tourist attraction?

Currently not yet become the object of CSR

How to assess the success of the program?

Empowerment is most important and must be monitored continuously, if the infrastructure does not have to be monitored. The important thing is that the program is sustainable.

Is CSR aimed at individuals?

Not always. Individuals are assisted depending on needs. Individuals can, because it has potential. This is judged by observation, which is certainly not just once. Besides individuals, there are also groups. CSR does not have an important benchmark there, what groups and individuals profit and loss.

Aim for economic development?

Certainly, but for the long term.

Overlapping with the government?

Nothing here, we focus on the Ulu Belu. There are several villages here, there are 6 villages directly related to PGE. The scope of the government is wider, so there may be division of tasks for village development.

The government is meddling in CSR affairs?

There is involvement in several things, we have a program that involves the government. Not interfering, but still coordinating. So, the name PGE and the name of the government are side by side. Both contributions.

How is the program determined?

During social mapping, not only interviews there are also discussions with the community. And the people who come to discuss also have the capacity, level of education, position and influence. Because it's a matter of data validity.

What is the importance of the cultural approach?

Very important, I experienced it myself. With us being able to explore the local culture, we can easily get closer to the community.

Are there contributions to cultural events?

Reog and Kuda Lumping. Incidentally who can do those are people from Java. We want to form a program so that children can learn this culture. There are plans to do this.

Transcript of interview with Vivit, Anthropologist at Lampung University

Batholomeu Vivit, anthropologist at Lampung University

18 Maret 2020

How was the first encounter with Ulu Belu village?

15 years ago, the study was conducted without any reference. I started in 2005. Because speaking of Lampung, it was included with Javanese and Semendo people. When speaking Semendo, they are similar to those of Lampung from the farming system. They call it "Ngume" or "Ngumo". Ngume means moving fields, they plant rice in dry land. A typical Lampung farmer is a dry land farmer, if in Java it is a wetland. Dryland farmers plant on sloping lands, plant it side by side with large trees, leave it, then harvest.

In wetlands farming is a routine every day, must use an irrigation system. The system in Lampung, agriculture does not need intensive care every day. They plant in a rugged place, on a hillside or in the forest. They change land from forest to land, moving from forest to forest, usually on hillsides. They grow pepper, coffee and durian. The term culture "ngume" or shifting fields.

From religion point of view?

The majority religion is Muslim, they arrived in Lampung because of the "Ngume" they continued to look for land. Because in their system, if the community is full, they move, move to find another land. For example, there is one resident family, has two children, the first child is in control, the second child is looking for another land, so it continued until finally they reach Lampung. Ethnically not Lampung, but culturally their area in Lampung and in contact with Lampung culture. Because of "Ngume". Finally, the Semendo people are farming communities, the day to day the farming orientation of the Semendo community remains high.

Does that mean Semendo people don't inhabit the city?

Yes, they live in rural or agriculture area, because of their orientation, more and more choose to farm rather than become bureaucrats.

How is the demography of Semendo?

Ethnic Semendo in 2010, 60% Javanese, 13% Lampung, the rest are other ethnic groups. Including Semendo, they are few.

If it is called indigenous, is it Semendo?

Ulu Belu is a Tenggamus, originally from Lampung because he entered Tenggamus. Because they lived at community forestry, the Semendo people are therefore called indigenous in that area because this is the culture area. The one above is Semendo, in community forestry mostly Semendo people. There are no inland people like the Orang Rimba in Lampung.

Does the tribe have its own characteristics? What is the local wisdom like?

“Ngume” is local wisdom, because in “Ngume” there are special processions that aim to protect the environment. In the process they are looking for a place not arbitrarily, there are traditional ways. For example, looking for a good month, this can be done, this cannot be done, which trees can be cut down, which ones cannot, which ones can be burned which cannot be burned. They have a way to limit land burning, the fires they do are small-scale and do not spread. And they use it for substitution needs, they are open for them to be planted again. Another local wisdom, there is a so-called “Damar Rempon”, so they plant on slopes, they plant large trees so they don't collapse.

I caught also see how productive land can be?

Yes, open the land cover, while it is done to meet basic needs, but if talking for a large scale such as industry, then it's a different matter

Now it seems they more more settled?

Now the “Ngume” has been reduced because of limited land, so they took over community forestry. The more they are pressured into their positions, this situation are the same as those of Lampung people.

A clear differentiator might be from the Lampungese?

Different languages, there are different characters, different customs. The pattern of agricultural systems is similar. The attributes of the condition are different but the farming system is similar because the contours of the land are the same.

Is there any stereotype?

The view of one tribe to another, there must be a stereotype, whether it tends to be negative or positive, it there must be. Maybe there are people who see Semendo as a mountain person from the village, that's prejudice. Must be careful because it forms stereotypes.

While I was there maybe the ratio of Javanese to Semendo was 50-50?

Can be distinguished from the house most clearly, economically they may be late as well as education. Their orientation is also still a farmer, if the Javanese start thinking about becoming employees or bureaucrats. That might make that impression.

Are there conflicts between tribes?

Not that big, because they don't intersect economically.

Especially because Javanese are migrants, and they process the land into agricultural land?

Javanese people have a high adaptation, so there is rarely any contact between Javanese people and the Semendo. Perhaps the factor of religious equality also influences, because the issue of religion is very sensitive and is the highest level of conflict. Javanese and Semendo people do not have conflicts, Semendo people are dry land farmers so there is no economic intersection, both have their respective fields. Different method. Javanese farmers with irrigation, Semendo people cultivate dry land. Javanese farming, in the fourth or fifth generation, have switched professions to education or health, such as midwives, nurses or doctors. Semendo people are still oriented towards farming.

There is a way, people are starting to think about finding another profession besides farming?

Maybe it means they are just starting to switch professions because they have PGE, so they are thinking of working elsewhere.

Interview Coding and Categories

Code Number	Label	Number of Appearances	Category
1	Cluster came first	2	Attachment of the place
2	Collecting the requests	3	Public participation
3	Noise	2	Physical damage
5	Represent the company and the people	5	Access to the infrastructure
2	Compensate	5	Social structure
1	Open people's perspective	6	Economic Benefits
1	Previously plantation	2	Power Relations
4	"the road is inaccessible before"	9	Shared Value
5	Trans-migrants from Java	1	Law and Regulation
4	Infrastructure is useful	20	
7	Government inability	2	
7	"if it's not PGE, no one will"	3	
4	"We can sell our agriculture product, directly"	6	
6	Increasing income and diversifying professions	18	
6	Price rises	2	
2	Land acquisition	4	
4	"phone signal and electricity are better"	3	
8	PGE importance for the betterment of the area	8	
3	Hot water leaking	1	
5	People from different background integrate	1	
9	Geothermal regime	1	
5	Crime rate decrease	3	
9	Army and police involvement	3	
4	CSR importance	7	
3	Land use	3	
8	Synergize PGE with the people	7	
7	Gap between people and the company	2	
7	Government Support the company	5	
7	NGO or civil society involvement	3	

2	Complaint negotiation	6	
3	Shaking ground	1	
3	River sedimentation	1	
3	Land deterioration	1	
3	Water supply declining	1	
2	Hiring locals	4	
2	Communicate initial projects	3	
7	Information gap	4	
8	Hope to improve economic condition	5	
3	Air pollution	1	
3	Illegal levy	1	
5	“Becoming independent”	3	
5	New Identity	1	
2	Protest	2	
2	Social Gathering	1	
2	Importance cultural approach	1	
1	Ulu Belu means everything	6	
1	Important area (ring 1)	2	