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Local people's perceptions of and participation in a community and state protection forest, West Kalimantan, Indonesia

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Declaration

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Abstract

This study explores the relationships between local people and forest protection initiatives in West Kalimantan, Indonesia. The goal of this thesis has been to uncover interactions with and perceptions of local people towards a community-led versus a state-led forest protection effort, and reveal the extent to which these two are robust and participatory. A sustainable livelihoods approach was used to understand the way local people live their lives and the extent to which they rely on the forests, while Harmon & Putney's (2003) value classification system was adopted to assess the ways local people value the forests and perceive the forest protection efforts. Further, Ostrom's (1999) design principles and Pretty's (1995) typology of participation were merged and applied during data collection and analysis to uncover the institutional soundness and participatory nature of the community and state forests. Data was collected through both structured questionnaires and semi-structured interviews with local people and implementers. Findings show that local people foster a deep connection with the forests and rely on them for a range of forest products. The extrinsic and intrinsic value of local people translated into high levels of local support for the protection initiatives, and a general willingness to get involved. While the community forest mostly adheres to Ostrom's institutional framework, the state forest insufficiently enforces or encompasses these principles. The community forest's institutional robustness renders an environment where participatory practices are incorporated to varying degrees. Yet, in the state forest, participation was not documented. Ultimately, local people perceived the community forest's condition to be improving, while in the state forest the condition was perceived to be worsening. Suggesting institutional robustness and participation impact the soundness of forest protection.



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1. INTRODUCTION

Indonesia's tropical forests represent an ecosystem of immense natural value that provides Indonesia and the world at large with a wide variety of benefits. Despite this, Indonesia's forests are increasingly threatened by exploitive practices that have caused unprecedented rates of deforestation and forest degradation. As a result, many forest protection efforts have developed across the country reflecting different political strategies and tenure regimes. This research studies the interaction of local people with one community-led and one state-led forest protection effort in West-Kalimantan, Indonesia. This was done by looking at the livelihoods and values of local people and their willingness and ability to participate: ultimately revealing potential differences in the institutional robustness and social soundness of the community and state tenure regime.

1.1. Background and history of field

Indonesia's Forests

Indonesia, an archipelago situated in South East Asia, is home to a rich environmental landscape that houses up to 10% of the world's remaining tropical rainforests (Bayunanda, 2012). According to the World Fact Book, Indonesia's forests currently cover about 93.7 million hectare of land that account for roughly 52% of the total land area in the country. In contrast to most other sources, the Indonesian Ministry of Forestry (recently merged with the Ministry of Environment into MoEF) has classified that 75% of the land is within forest boundaries; however, these lands do not all cover forests. The MoEF therefore assumes a presence of 144 million hectares of forests, of which 34% is allocated for protection forests (or national parks), 45% is used for timber and other forms of production and the remaining 21% is left for conversion to other uses (Hammond, 1997).

Indonesia's rainforests are among the most diverse and species rich ecosystems in the world (Rainforest Conservation Fund, 2014), representing a source of great significance to global biodiversity as the country hosts species that occur nowhere else (Whitmore, 1984). Apart from securing biodiversity and providing clean air, the rainforests act as a carbon sink to the world. Conserving forests could therefore contribute to reducing carbon emissions and help in the effort to curb climate change. At the national and local level, forest based industries have been used

to finance the country's development, providing up to 15 million jobs and contributing to 3.5% of the country's GDP (ITS Global, 2011). In addition to its economic contribution, Indonesia's forests also represent valuable sources of livelihoods to large parts of the population; deliver various essential ecological services; and hold great spiritual and customary value to forest dependent and indigenous communities.

Deforestation and forest protection

As mentioned above, Indonesia's vast tropical rainforests represent a valuable asset to the country. Nonetheless, in recent years, as a result of the widespread extraction of forest resources in pursuit of economic benefits and profits, the Indonesian tropical rainforest has been subject to alarming rates of deforestation. Between 1950 and 1990, Indonesia's tropical rainforest was reduced by up to 57 million hectares from 152 million to 95 million hectares (Kusumanto and Sirait, 2002). This was followed by a decrease of 20% in forest cover in the decade that followed (FAO, 2010). One major driver of deforestation during this time were developments in Indonesia's agricultural sector, which makes up a large part of the Indonesian economy, contributing up to 22.5% of GDP in the late 1980s (World Growth, 2011). The agricultural sector impacts forests as land clearance for plantations (hosting agricultural commodities like palm oil) represents one major driver of deforestation (Fitzherbert, et al., 2008). Apart from emitting large amounts of greenhouse gases, creating losses in global biodiversity, and causing irreversible impacts to local ecosystem services, the destruction of Indonesia's rainforests has created many conflicts and has directly and indirectly harmed millions of citizens living close to the forests (Kusumanto and Sirait, 2002).

With time, progressively more people became outspoken about the rampant deforestation taking place in Indonesia, leading to a broad consensus among international and national actors alike that action is needed to halt the further loss of Indonesia's tropical rainforests. In response to this pressure, the Indonesian government started to prioritize mitigating deforestation and improving forestry practices; a stance first made public at the World Forestry Congress held in Jakarta in 1978. During this congress, the government agreed to alter their forestry laws and practices, and expressed their aim to make them more sustainable and considerate of the people (Kusumanto and Sirait, 2002).

To date, numerous conservation projects have been developed in Indonesia, and, for the first time in history, improved forest governance has become a priority in the National Medium Term Development Plan of 2015-2019 (Situmorang, et al., 2015). Ultimately, it is the hope that forest protection initiatives will help ensure the safekeeping of biodiversity for current and future generations, while also help in mitigating global warming. However, to ensure the protection of Indonesia's forests it is of great importance that issues of governance and management are also addressed.

Forest governance and management

Indonesia has had a long history of state control over forests. In fact, throughout history and up and till today, the Indonesian state owns most of the country's forested land. The Ministry of Environment and Forestry (MoEF) is the central government body responsible for governing the forests. However, since the onset of decentralization in the 1990s, devolution of power has taken place from the central government to provincial and municipal bodies. This has created a landscape where both central and regional government bodies are charged with the role to govern Indonesia's forests.

Since the start of Suharto's presidency and the New Order regime in 1967, when Indonesia transitioned from its socialist leader Sukarno to the democratically elected (capitalist) leader Suharto, the Indonesian government has largely used extractive industries to fuel its economic development. During this time, the government leased large plots of land to both foreign and domestic corporations, whose approach was characterized by large-scale resource extraction for the purpose of high profits (Kusumanto and Sirait, 2002). Reflecting a style of environmental governance that favors firms and concession holders while neglecting to acknowledge local people and their environment. This ultimately resulted in the vast depletion of Indonesia's forests and caused serious violations of the rights of forest communities to access and use the forests (Kusumanto and Sirait, 2002).

Since the fall of president Suharto in 1998, Indonesia has entered an era of reform in which the country is beginning to acknowledge and address the immense economic, environmental and social repercussions of its extractive industries and the value of their forest ecosystems. Despite still having a long way to go, this recognition has already encouraged more just and accommodating forest governance and management practices (Kusumanto & Sirait, 2002).

A shift towards increased local involvement?

While the reform era brought along with it a new interest in government collaboration with local communities on matters of forestry, the Indonesian government had first proposed efforts to increase participation in the mid to late 1980s (Kusumanto and Sirait, 2002). However, substantive changes were not made until the Environmental Act of 1997 concerning the management of the environment. This was the first act of its kind to explicitly refer to the possibility for participation in forest management. Consecutive laws, like the Forestry Law no. 41 of 1999, further outlined what local participation would entail, stipulating, among other things, that communities are entitled to offer input and oversee forestry developments (Chapter 10, Article 68). Apart from government efforts, NGOs, academics, international donors and other civil society organizations have played an important role in steering, advocating and encouraging the presence of participatory methods in natural resource management in Indonesia,

To date, there is a willingness by the Indonesian government as well as local people and civil society organizations to move towards participatory methods in forestry. However, while the Indonesian government has committed to increasing participation in forestry practices, the actual extent and nature of participation on the ground is still unclear. This research will contribute to this relatively under-studied field.

1.2. Problem statement

Despite notions of participatory development having been around since the late 1960s and early 1970s, it is still common for conservation initiatives and/or forest protection efforts, in practice, to neglect the needs of local communities and deny the value of local knowledge (Isager, Theilade, and Thomsen, 2002). As a consequence, advocates of participatory approaches have associated conservation failures with inadequate inclusion of the interests and needs of all stakeholders (Grimble, Chan, Aglionby, and Quan, 1995). Moreover, an increasing body of literature advocates for participatory practices in the management of environmental commons, with scholars like Ostrom (1999) claiming participation is inherent to well functioning institutions, and Cleaver (2012; 1999), Isager et al (2002), and Vedeld (2017) suggesting local participation is indispensible to sound conservation.

Through including local people's voices in decision-making, doors could open to valuable local knowledge and expertise in support of forest protection. Hence, to many, participatory forms of forest management are seen as a crucial policy concept if one is to achieve environmentally and socially sustainable and sound forest management practices (Inoue, 2000; Sakumoto, 2002). Given the current climate of vast deforestation and forest degradation, frequent conflicts in forest communities, and the global challenge of climate change, it is of immense importance that Indonesian forest governance and management practices become more sustainable and inclusive.

Considering the potential for participation in Indonesia, in particularly in strengthening institutions of forest protection, this study aims to reveal the current state of participation in one community-led and one state-led forest in West Kalimantan, Indonesia. Moreover, the assessment of local perceptions and values towards the forest protection efforts will help to uncover local people's relations with and local support towards the initiatives. This information is quintessential to the effectiveness of participatory practices, and arguably, sustainable forest management.

1.3. Objectives and research questions

This research consists of two central research objectives that guide the research process, each accompanied by research questions.

Research Statement

The intention of this research is to uncover the views of local people towards two prominent forest protection efforts in the Gunung Palung Landscape¹, and reveal the extent to which these are participatory.

Objectives

1. To uncover local people's livelihoods, and the way they perceive and value a community-led and state-led protection forest in the Gunung Palung Landscape.

¹ The Gunung Palung Landscape (GPL) refers to the area in the Northern part of the Ketapang District, West Kalimantan, Indonesia.

2. To assess the extent to which the community and state forests are participatory and highlight possible differences between local people's relationship to the community and state forest.

Research Questions Objective 1

- 1.1. What are the livelihood assets, activities, and cash outcomes of people living close to or in the protected areas? To what extent do they depend on the forests?
- 1.2. How do local people perceive and value the community and state forests? How much local support is there for these forest protection efforts?

Research Questions Objective 2

- 2.1. To what extent are the community and state forests participatory?
 - 2.1.1. To what degree were local people involved in the planning and establishment of the community and state forests?
 - 2.1.2. How have the community and state forests been designed, and is this inclusive of local people?
 - 2.1.3. In what ways are the community and state forests being managed, and are local people involved in the process?
- 2.2. Overall, how do local people interact with the protection forests? Are there key differences in this between the community and state forest and what does this imply?

1.4. Research methods

This research is foremostly based on primary data collected in two forest protection efforts located in West Kalimantan, Indonesia. Mixed-methods were used to gather the data. In total, 60 questionnaires and 7 semi-structured interviews were conducted over a period of two months.

1.5. Thesis outline

This study will be structured as following. The Introduction Chapter has outlined the research topic; providing background information, a problem statement,

research objectives and questions. Chapter 2 describes the theory that shaped the research objectives and questions and steered data collection and analysis, while Chapter 3 presents the research methods used. Chapter 4 outlines the research findings and provides a discussion thereof, and lastly, Chapter 5 presents the research conclusions.

2. THEORETICAL FRAMEWORK

This chapter presents an overview of the selected theory that has provided a framework through which the research topic was studied. First, the theoretical framework used to study livelihoods, perceptions, and values is defined; after which, the theory applied in the analysis of participation is outlined.

2.1. The sustainable livelihoods approach

Studies indicate that poor people depend largely on natural resources like the forests for their income and subsistence needs (Vedeld et al, 2007). Forests not only provide timber for building and fuel wood, among other uses, but also provide people with non-timber forest products (NTFP) and an array of environmental services (Vedeld et al, 2007). In this study, a relationship between people's livelihood assets, activities, outcomes, and their values and perceptions towards the forests is assumed. Therefore, by uncovering what local people do for a living and how they use the environment for this cause, one can better understand their attitudes and values in regards to the forests and forest protection efforts. Hence, the sustainable livelihoods approach has been applied to help sketch a better picture of the context of participant's lives.

Questions on the participant's livelihood assets, strategies, and outcomes, were asked in part A of the questionnaires. Uncovering this provided important data on the resources that participants have access to, the livelihood activities they are engaged in, and the degree to which they depend on forest resources to secure their livelihood activities, cash and subsistence outcomes, and basic needs. Overall, ideas from the sustainable livelihoods approach provide the basis through which data on livelihoods was collected.

2.2. Analysis of perceptions and values

In this research, the study of values is used to analyze people's attitudes towards the forests and forest protection efforts. Values can be understood in a myriad of ways, referring to both the worth of something, the property or use of a thing, or an idea or feeling (Lockwood, 2005; Najder, 1975). The latter understanding is applied in this study, where values are perceived as relating to people's ideas or feelings. Hence, values can be understood as "...an enduring belief that a specific mode of

conduct or end state of existence is personally or socially preferable to an opposite or converse mode of conduct or end state of existence" (Rokeach, 1973, p. 5). Implying values are judgments about what is important and therefore preferable for people.

Data was obtained at the individual level using a range of indicators that bring to light the anthropocentric, biocentric and ecocentric values held by local people towards the forests and protection efforts. The indicators used are based on Harmon & Putney's (2003, p. 7-8) typology of "intangible values". Whilst some of the indicators used to measure values clearly reflect the economic notion of 'use values', others focus on non-use, intrinsic values. In their work, Harmon & Putney make the point that protected areas can be valued in many different ways; as contributing either directly to people by providing material resources, or more subtly by contributing to improved quality of life (2003, p. 5). This view reflects, by and large, the stance utilized in this research, where values are seen both in terms of overt or covert individual and collective preferences, yet also as social institutions that impact on people's quality of life. Therefore, to elaborate on Harmon & Putney's (2003) understanding of values as either utilitarian or intrinsic, values are also approached as representing social institutions that reflect (dominant) social relations, beliefs, and ideas about what is right and desired (Vatn, 2015). Therefore, to balance out the rather economic view of values as preferences, values are also approached as being influenced by society. Suggesting that values are held in part by individuals, but are also heavily influenced by culture and cultural norms (Vatn, 2015). Therefore, values are considered as the ideas, judgments, and feelings of individuals, as well as the popular beliefs and norms of society. Hence, both the sociological and economic interpretation of values is applied, where the former points to values being socially constructed, while the latter suggests values are purely individual and relate to people's welfare and preferences (Vatn, 2015).

Moreover, while this research approaches values as commensurable, it is acknowledged that values are in many aspects plural (Vatn, 2015). To reduce the limitations associated with oversimplifying values, the ambiguity related to the study of values is acknowledged throughout the discussion of results in section 4.2 of this research.

Classifying values

The different types of values measured, and the indicators used to measure these, are based on Harmon & Putney's (2003, p. 7-8) classification of values. Gathered from their work, the following values were selected to help shape questions used for data collection and aid in the analysis of local people's attitudes towards forest protection efforts in the GPL.

- 1. Use values: Use values imply that nature should be used for anthropocentric gains. Questions on use values give insight into participant's perceptions of the forests as either instrumentally or intrinsically valuable, or both.
- 2. Educational value: When something has educational value it means that by way of interacting with nature people are educated about it, and that protected natural areas are valuable sites for scientists and interested individuals to study wildlife and nature (Putney, 2003). Educational value was measured to create a deeper understanding of the qualities of the forests as perceived by local people.
- 3. Cultural/spiritual value: Cultural and spiritual value refer to the wider relationship of people with nature as ascribed by traditions or beliefs (Putney, 2003), and thereby gives insight into the ways that participants feel connected to the forests.
- 4. Therapeutic values: Therapeutic value measures how people view nature in terms of providing psychological and physical wellbeing (Putney, 2003). Knowledge on whether participants value the forests in this sense aids in creating an understanding of the qualities and importance that people ascribe to the forests.
- 5. Existence values: Existence value refers to the satisfaction and symbolic importance that someone experiences from knowing that valuable environments, species, and cultural sites are being protected and conserved (Putney, 2003). Uncovering the existence value experienced by local people creates insight into their attitudes towards the forest protection efforts.
- 6. Aesthetic values: Lastly, aesthetic value refers to the deep appreciation by people of the natural beauty and meaning found in nature (Putney, 2003). Uncovering aesthetic

values gives insight into the way in which local people value the forests and those efforts aimed at protecting them.

The values described above each take a different angle to understanding the way in which local people value the forests and forest protection efforts. When combined, which has been done in this framework, the affinity to the forests and perceptions towards the forest protection efforts by local people and the communities' studied is highlighted. Data on values was collected in part C of the questionnaire. Here, inspired by Lillehagen's (2016) approach to studying values, statements that reflect certain values were posed and participants marked the extent to which they agree or disagree with them on a Likert Scale.

2.3. Analysis of participation

In support of objective two, Pretty's (1995) typology of participation and Ostrom's (1999) design principles were used. Merged, these theories help analyze the extent to which participatory methods are applied, and the type and quality of their practice in the community and state forests.

Despite there existing many and varying definitions of participation, generally, understandings of participation recognize a need to involve people (albeit in ranging degrees) in processes of governance or management in order for local views to be better communicated and represented. Therefore, in this research, participation is understood both as a process that can aid in addressing goals like forest protection, as well as the right of people. While the conventional theory of participatory development (PD) is used as the theoretical basis for understanding participation as a process that can be used instrumentally (a tool through which forest management can be improved), a critical institutional approach highlights participation as an arena fraught with power relations (see Cleaver, 1999).

The theories by Pretty and Ostrom gravitate towards the PD model of participation, which is reflected in their sometimes-confined understanding of participation as instrumental, and created by following a linear path (Vedeld, 2017). In consequence, these approaches have been criticized for being over-simplistic and blind to important historical and cultural dimensions (Cleaver, 1999). Taking into consideration these critiques, this work recognizes the inherent complexity of

participation. Participation is therefore approached as multi-faceted, encompassing varying degrees and functions, and embedded with and shaped by social institutions and power structures (Cleaver, 1999). Despite their limitations, Ostroms (1999) and Pretty's (1995) theories provide a clear framework through which the presence, degree, and type of participation in the community and state forests are identified and studied.

2.3.1. Pretty's typology of participation

Pretty's typology of citizen participation provides the basis for analyzing the extent to which participation is practiced, and the quality thereof, in the community and state forests. Pretty's work identifies seven rungs of participation that describe varying characteristics and the ways in which participation can be applied and practiced (Pretty, 1995). Below you can find the different types and dimensions of participation considered in his research.

- 1. Manipulative participation: When participation is manipulative, it is transformed into a vehicle of pretense used to make it seem as though there are participatory practices in place when there are not. This could involve having citizens on an official board, but in reality giving them no power to contribute. In this study, manipulative participation was measured by asking participants about their roles in activities like community meetings.
- 2. Passive participation: Passive participation denotes a type of participation in which there is only one-way communication from power holders to citizens. In this case, the participant is a passive observer who is merely informed about activities but does not get the chance to provide input. Passive participation was measured by asking respondents about the ways in which they were informed about the protection forests and whether they could give feedback or not.
- 3. Participation by consultation: Participation by consultation refers to a type of participation in which participants simply answer questions posed by external stakeholders, for instance through surveys. While this method permits local people to give input, it does not always guarantee that the findings get applied and therefore

benefit the participants (Pretty, 1995). This type of participation was studied by questioning whether and in what ways implementers consulted local people, and what was done with the information once gathered.

- 4. Participation for material incentives: Participation for material incentives is a type of participation that involves local people contributing resources like their own labor in return for material incentives like food or cash. Although this kind of participation is active in the sense that citizens contribute physically, they do not contribute towards planning or decision-making. This was explored through conversations with local people and implementers.
- 5. Functional participation: As the name suggests, functional participation uses the participant to reach a certain end goal. Therefore, in functional participation, participants frequently help complete tasks that meet predetermined goals (Pretty, 1995). Although participants do get the opportunity to organize groups and participate in decision-making, their input is usually processed only after important decisions have already been made (Pretty, 1995); keeping participants from exercising real influence. The presence of functional participation was studied by asking local people about the nature of their participation, and implementers about the process of local participation.
- 6. Interactive participation: When participation is interactive, people are involved in planning and decision-making, and this involvement is perceived as the right of people rather than merely a means to achieve project goals. Interactive participation therefore permits local people to have a say in matters regarding the management of structures and processes. To uncover the presence of this type of participation, implementers were asked to describe decision-making processes, and local people were questioned about the nature of their involvement.
- 7. Self-mobilization: Self-Mobilization refers to citizens taking independent initiative to get involved and exercise power. Although it is common with this type of participation for citizens to create contacts with NGOs or government bodies to help facilitate or enable their plans, the control over decisions ultimately remains with the citizens.

Apart from Pretty's typology, the concept of nonparticipation, originally used by Arnstein (1969) in her work, is considered. Arnstein argues that in the case of nonparticipation power holders only claim to be participatory, yet "...their real objective is not to enable people to participate in planning or conducting programs, but to enable power holders to "educate" or "cure" the participants" (Arnstein, 1969, p. 217). *Manipulative* and *passive* participation could therefore be considered forms of nonparticipation. Aside from understanding nonparticipation as participation that is not genuine, it will also refer to initiatives that have failed to implement any of the types of participation described above.

When using Pretty's ladder as a tool to aid in the analysis of participation and its characteristics, one must be wary of its limitations. Although Pretty linguistically coins the first four steps of the ladder as participation, one could argue that these rungs are not actual participation considering in all of these cases local people's involvement stops the moment the initiative ends (Vedeld, 2017). Moreover, because participation is classified in terms of the degree of local people's involvement, there is little to no focus on the further implications of participation on matters of effectiveness or biodiversity quality etc. (Vedeld, 2017). This undoubtedly raises questions on the further contextualization of Pretty's ladder; "Where and how is the ladder situated – and who owns the ladder and the ground on which it stands?" (Vedeld, 2017, p. 61).

2.3.2. Ostrom's design principles for robust institutions

Elinor Ostrom's work (1999) belongs to a large body of research concerned with common pool natural resource management. In her empirical research, based on many years of experience in the field, Ostrom proposes an alternative way of thinking that juxtaposes the popular narratives based on the "tragedy of the commons". Ostrom suggests that well functioning institutions are based on a set of 8 design principles (characteristics) that, when applied, create 'robust and long enduring institutions', and when absent, increases the chance that conflict and failures of resource management occur (Vedeld, 2002).

Ostrom's design principles closely relate to the study of participation, considering the more design principles present in an institution, the more able the institution is to sustainably accommodate local participation. In this research,

Ostrom's design principles are used to help analyze the extent to which the community and state forests accommodate participatory practices and can consequently be considered participatory. By helping to conceptualize and reveal the structure and design of these institutions, Ostrom's institutional perspective helps uncover the factors that encourage and/or discourage local participation. Below follows a brief description of Ostrom's 8 design principles and their application in this research.

The first principle is *clearly defined boundaries*, which suggests that areas should be marked clearly so that areas can be distinctly identified, and members defined (Ostrom, 1999). In the case of forest protection for example, such boundaries would help differentiate between areas that can be used by local communities for withdrawal of resources and which cannot. When properly in place, this ensures that the resource is better protected from extraction and exploitation, and as boundaries also determine membership, it is an example of participation. A number of questions in both the interview and the questionnaires cover this topic.

The second principle concerns the "Congruence between Appropriation and Provision Rules and Local Conditions" (Ostrom, 1999, p. 2). This principle stresses the importance of striking a balance between the rules that are made about resource appropriation (benefits) and provision (costs) and the local conditions of the community. Here, the notion that one size fits all is challenged, where Ostrom suggests that institutions operate most sustainably when rules are tailored to the environment and community in question (Ostrom, 1999) In this research, the analysis of access and use rules will reveal whether they clearly stipulate costs and benefits and whether they are in congruence with local conditions or not.

The third principle is that of *collective choice arrangement*. When applied it means those people impacted by rules can also contribute to modifying them (Ostrom, 1999). Ostrom (1999) believes that such participation ultimately translates into rules that are better suited to the environment and people's needs, resulting in overall better and sustainable institutions. Again, this principle is incorporated extensively in both the interview and questionnaire to help uncover if and how local people are involved in decision-making and whether they get the chance to participate.

However, "the presence of good rules ...does not account for users following them" (Ostrom, 1999, p. 2). Therefore, efforts need to be made to ensure effective *monitoring* and *graduated sanctions*, which respectively represent the fourth and fifth

design principle. Ostrom (1999) stresses that for the effective implementation of monitoring and sanctions, those administering must either be accountable to local people or be locals themselves. Suggesting participation is part of effective monitoring. Monitoring and graduated sanctions are important pillars to participatory institutions; hence, they were thoroughly integrated into the questions asked during data collection.

The 6th principle points to the need for *conflict resolution mechanisms* that are both low cost and easy in use. Although Ostrom does not think that conflict resolution mechanisms necessarily result in better functioning institutions, she mostly points to it being a prerequisite for effective rule implementation that should not be omitted. Questions addressing whether or not there were conflict resolution mechanisms in place were asked during questionnaires and interviews.

The 7th principle describes the *right of local people to organize*, which is achieved when "...the rights of users to devise their own institutions are not challenged by external governmental authorities" (Ostrom, 1999, p. 6), but instead these authorities view them as a legitimate entity. Local organization and the participation of local people in shaping the management and governance of resources allows for the representation of important local knowledge and ideas. This principle was therefore used as an indicator for measuring the degree of participation through both the questionnaires and interviews.

The last and 8th principle suggests that for institutions to function well they must be part of *nested enterprises*, meaning they are a part of multiple levels of organizations (Ostrom, 1999). Ostrom believes that no one institution is able to encompass all elements of a common pool resource and its governance unless it is part of multiple levels of organization or nested in larger institutions that can facilitate the smaller ones (Ostrom, 1999). For instance, the community forest studied in this research is nested in a number of larger institutions (NGOs, the Government etc.) that guide local people in managing the protection effort.

In all, the above described principles devised by Ostrom provide a convincing framework that helps analyze the extent to which the protection efforts studied in this research are 'robust' and 'long-enduring' and contain and have the ability to host participatory practices. However, when applying this theory, one must note that it is critiqued for promoting the formalization of institutions for instrumental ends and with assumptions that one-size-fits-all (Cleaver, 1999). Regarding participation,

Cleaver suggests that there is a "...tendency to emphasize participation through democratic representation", and, "...that meaningful participation in public meetings is evidenced by individual (verbal) contributions" (Cleaver, 1999, p. 602). Suggesting that both these practices forgo cultural norms and practices, and focusing on them could potentially lead to missing signs of actual involvement (Cleaver, 1999). Therefore, Ostrom's design principles must be applied with care, recognizing that it is a general model that is not specifically tailored to the context or cultural norms and practices of the cases to which it is applied.

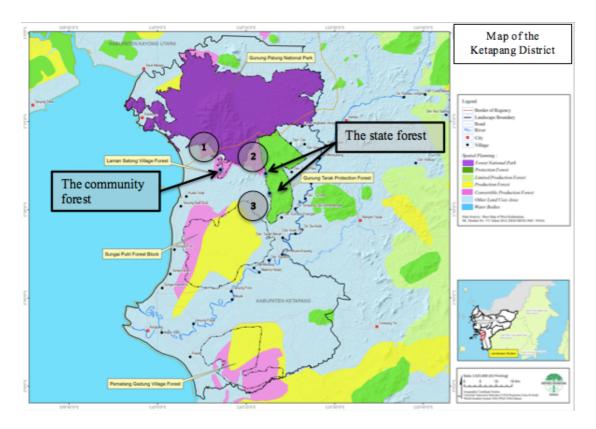
3. RESEARCH METHODOLOGY

The following chapter describes the research methodology used during this study. I start with a description of the study area, after which the research design, sampling techniques, data collection and analysis strategies, research ethics, limitations, and validity and reliability of the study are outlined.

3.1. Description of study area

This research focuses on two forest protection efforts in the province of West-Kalimantan, Indonesia. More specifically, in the areas surrounding the most Southern point of the Gunung Palung National Park located in the Northern part of the Ketapang District. Both research locations border the Gunung Palung National Park (outlined dark purple in Figure 1) and are in close proximity to each other. The regional area discussed in this research is therefore referred to as the Gunung Palung Landscape (GPL). Figure 1 shows a map of the Ketapang District, as well as the major land types and key protection efforts found in the area. In the map, the state forest (Gunung Tarak Protection Forest) is marked green and the community forest (Laman Satong Village Forest) pink. Apart from showing the specific location of the community and state forests, the map indicates the three villages sampled. The circled numbers on Figure 1 correspond to the different villages, where number one points to Manjau, number two to Nek Doyan, and number three to Sumber Priangan.

Figure 1: Map of the Ketapang District and research locations, West Kalimantan, Indonesia 2017 (Adapted from Purwanto, 2016)



Demography, biodiversity and climate

The Ketapang District has a population of 403,625 people, of which the majority belongs to the Malay ethnic group. However, other ethnic groups like Dayak and Chinese are also prevalent. A diversity of religions exists in this District, with most Malays being Muslim and Dayak and Chinese Catholic.

As is the case in the whole of the Indonesian archipelago, the district has a tropical ecosystem and climate. As a result, the area has average humidity levels of 85%, and average monthly precipitation levels of 294mm (Flora Fauna International, 2010). Being situated in a tropical ecosystem, there are no distinct seasons, however, humidity levels do vary between months, with the most humid month being December and the driest August (Flora Fauna International, 2010).

The climate allows for a wealth of plants and animals to flourish, making the area very bio diverse, with the state forest alone being home to at least 45 different species of mammals (Flora Fauna International, 2010), the most popular being the

endangered orangutan. Secondary, peat swamp, and dipterocarp forest are the dominant types of forest in the landscape (Intarini, Komalasari, Ekaputri, and Agustavia, 2014).

District governance and tenure rights

The Ketapang District is managed directly by the National, Provincial and District governments. However, usually it is the case that decisions are made solely at the National level, while implementation of government law is done at Provincial and District levels (Personal Communication, April 1st, 2017). However, at the District level, village and sub-village chiefs as well as customary leadership also frequently enforce local initiatives (Personal Communication, April 1st, 2017).

The Indonesian government has divided forest management into different status categories. This determines who manages the area and under what conditions. The government classifies forests in one of six ways (ordered from most protected to least), as (1) national park, (2) protection forest, (3) limited production forest, (4) production forest, (5) convertible production forest or (6) other land use area, where the latter is appointed to an area that is perceived as non-forest area, but may in fact have forests on it (Personal Communication, April 1st, 2017).

Despite the fact that the state has legal control over most forest land in Indonesia, it is often the case that villagers claim customary rights over land that they inherited (Intarini, Komalasari, Ekaputri, & Agustavia, 2014). However, while informally recognized by most people, when decisions are made, the Indonesian law frequently disregards or overrules customary rights (Personal Communication, April 1st, 2017). As a consequence, contradictions between what is recognized by custom and by law often create confusions about land tenure and rights, which again can lead to conflicts (Intarini, Komalasari, Ekaputri, and Agustavia, 2014).

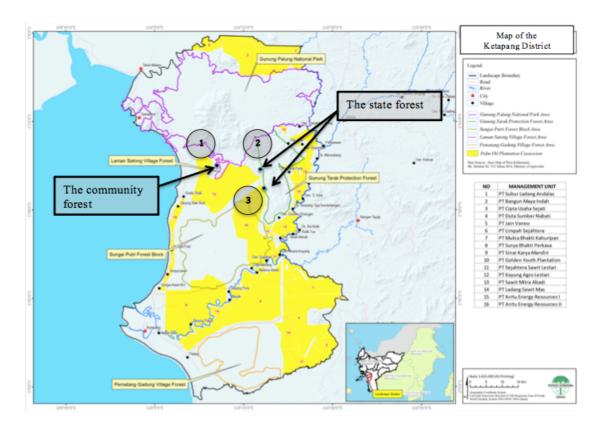
Land use and external impacting actors

Rice is the staple crop cultivated to meet subsistence needs in the Ketapang District, while crops like rubber are most often produced to create cash incomes (Intarini, Komalasari, Ekaputri, and Agustavia, 2014). Overall, the district's economy is mainly dependent on extractive industries like palm oil, mining and logging (Intarini, Komalasari, Ekaputri, and Agustavia, 2014). In fact, to date, palm oil cultivation is the primary source of economic development in the area closely

followed by logging and tree crops like rubber (Purwanto, 2016). Most people in the Ketapang District are employed in these extractive industries.

Due to their economically profitable character, these agricultural projects have developed rapidly across the province. However, because of the high rates of land conversion and deforestation that takes place, these developments pose a substantial threat to forest protection and conservation efforts (Curran, et al., 2004), where, between 1985 and 2001 at least 56% of Kalimantan's protected lowland forests were deforested and degraded (Curran, et al., 2004). Moreover, based on an analysis conducted between 2000 and 2005, the Ketapang District deforests roughly 74,590 hectares of forests annually (Sugardjito & Adhikerana, 2010), some of which undoubtedly takes place within forest protection efforts. Figure 2 shows the distribution of palm oil plantation concessions in the Ketapang District. This map shows how the community and state forests are surrounded by palm oil concessions, making them particularly vulnerable to encroachment by palm oil plantations.

Figure 2. Map of the distribution of palm oil concessions in the Ketapang District, West Kalimantan, Indonesia 2017 (Adapted from Purwanto, 2016)



The community forest

The first forest protection effort studied in this research is the Laman Satong village forest (referred to as community forest throughout this research). 'Village forest' (*hutan desa*) is a type of land tenure status that allows for a shift in management rights from the central government to local communities for a period of 35 years, and it is extendable. The Laman Satong village in total covers 32,600 hectares of land, of which 1,070 hectares are community forest area (CFA). The CFA consists of mostly secondary lowland forests that provide inhabitants with ecosystem services like fresh water and non-timber forest products. Apart from providing the local population with these services and resources, parts of the community forest are used by locals as places of worship. The majority of the village inhabitants belong to the Dayak ethnic group and practice Catholicism.

The community forest was initiated by local people and assisted by the NGOs Yayasan Palung and Flora Fauna International. Local people currently use the community forest as a protection forest that guards the environment from deforestation and degradation. A commonly listed reason for the establishment of the community forest, mentioned during interviews and questionnaires, was to protect the area from conversion to palm oil. Previous to the community forest being established, the area was classified production and conversion forest, which meant that the government could convert the land to other land uses. Upon hearing of plans to create a palm oil concession in their forest, the community initiated that a part of their village should be converted to 'village forest' status; a change that was ultimately implemented in 2011 and which now protects the area from conversion for at least 35 years. Thus, despite the community forest being located in a village that is classified as 'convertible production forest', the area dedicated to the forest protection effort is shielded from conversion by its 'village forest' status.

The state forest

The second forest protection effort studied is the government initiated and led Gunung Tarak Protection Forest (referred to as state forest throughout this research). It is a legally recognized protection forest that consists of roughly 24,000 hectares of lowland and hilly forests (Flora Fauna International, 2010). The state forest is

connected to the Gunung Palung National Park at the Northern point, and is surrounded by seven villages, of which two were sampled for this research.

The Gunung Tarak Protection Forest is an important landscape for conservation, with a presence of 49 different species of mammals, including the endangered Bornean orangutan and clouded leopard (Flora Fauna International, 2010). Moreover, the state forest links the Gunung Palung National Park and the Sungai Putri Forest Block, and therefore has an important role as a wildlife corridor. Most people living in the communities surrounding the state forest belong to the Malay ethnic group and work as either farmers or plantation workers (Purwanto, 2016). Moreover, locals frequently use the protection forest for subsistence agriculture and logging (Purwanto, 2016).

Due to a range of issues (that are further touched upon later in this work) the state forest has experienced significant deforestation and forest degradation in the past decades (Purwanto, 2016), which poses a substantial threat to the area's biodiversity and people's livelihoods.

3.2. Research design and strategy

Research design

In social research, research designs are commonly used to "...provide a framework for the collection and analysis of data" (Bryman 2012, p. 46). Therefore, to help guide the research process, a *comparative research design* is used in this study. More specifically, within the comparative design, a *double case study approach* is applied.

In a comparative research design two or more cases are studied using similar or identical research methods (Bryman, 2012). Whilst those using this approach mainly aim to uncover differences and similarities, it has also been used to create deeper knowledge and understanding of a subject by studying it in more than one context (Hantrais 1995). In this research, livelihoods, values and perceptions, and participation in the community and state forests are studied in order to generate greater insight into the participatory practices used and different local attitudes towards forest protection efforts in the Gunung Palung landscape. Hence, the double case study approach facilitates this study by creating a more complete understanding of the current situation on the ground, whilst also encouraging a comparison between the community and state forests.

Mixed methods research

A mixed methods research approach involves acquiring both quantitative and qualitative data, and using both research methods in analyzing data. In this research, the combination of these strategies helps create a more comprehensive account of the research topic. For instance, through incorporating qualitative questions into the mostly quantitative questionnaires, I was able to gain more complete and explanatory data, as qualitative questions generated explanations for topics covered in the quantitative questions. In addition, the information gathered through qualitative interviews with key informants allowed for the triangulation of data, meaning information could be crosschecked between the questionnaires and interviews; increasing data validity, data robustness, and confidence in the findings (Silva & Wright, 2008).

Moreover, advocates of mixed methods research suggest that by using two research strategies, the limitations of each method are reduced, as the contrasting qualities between the methods help "...[reduce] the biases associated with each method" (Harkness, et al., 2006, p. 78). Hence, in application to this research, the limitations of each approach are counterweighed by the use of the other, where quantitative methods provide structure, scale and scope that solely qualitative research might lack, and qualitative methods ensure detail and data richness, something that is not always present in quantitative research.

Qualitative methods

Qualitative methods were used in two instances, through semi-structured interviews with key informants, and in the form of open-ended questions incorporated into the questionnaires. In both cases, qualitative methods were used with the objective to gain explanatory and descriptive data. For instance, regarding the interviews, qualitative methods allowed for the gathering of necessary context and background information about the community and state forest, as well as information on their management structure and design. Whereas the open-ended questions posed in the questionnaire helped gain explanations to answers given to certain quantitative questions.

Quantitative methods

Quantitative methods were used to gather data about the livelihoods of participants, their values and perceptions, levels of participation, and support towards the forest protection efforts. The quantitative strategy provided a more "...formal, objective, systematic process [through which to] examine relationships among variables" (Burns & Grove, 2005, p. 23). Through the systematic way in which questionnaires could be conducted, this method enabled me to reach a relatively large sample and cover a wide range of topics in a limited time frame.

3.3 Data collection and sampling approach

Questionnaires

In this study, questionnaires were used to gather data on local people's livelihoods, their values and perceptions towards one of the two forest protection efforts, and their degree of participation therein. In order to cover these topics, the questionnaires consisted of four separate parts. Each of these parts related to different research questions. Part A focused on the participant's livelihood, part B includes questions on people's knowledge of the protection efforts and their involvement, part C looks at the ways people value and perceive nature and the protection effort, while part D consists of questions that measure the degree to which the participant supports the effort.

As mentioned before, the questionnaires consist of both quantitative and qualitative questions. Where applicable, questions used a Likert scale (Bryman, 2012). Otherwise, questions were either open-ended or had fixed answers. The questionnaire was conducted like a structured interview, which reduced the chance of missing data, misunderstandings, or participants rushing through the questionnaire. Each questionnaire has 50 questions and took on average 45 minutes to conduct. An effort was made to make the questions simple and understandable to local people. However, at times this did prove challenging.

Purposive sampling was used to sample participants for the questionnaires. With purposive sampling, participants are sampled according to their relevance to the research questions or because the research questions indicate the units to be sampled

(Bryman, 2012). In the case of the questionnaire, the research questions pointed to the sampling unit: namely local people and their households. Hence, community forest, the sampling frame included all local people in the sub-village of Manjau, while for state forest, the sampling frame consisted of all local people in the sub-villages of Nek Doyan and Sumber Priangan, where 'local people' refers to people who live in these villages and are above 18 years of age. Furthermore, convenience sampling, a type of purposive sampling, was used when selecting participants in the field. Convenience sampling involves the sampling of participants that are "...available to the researcher by virtue of accessibility" (Bryman, 2012, p. 201). I chose to use a convenience sample for two reasons. Firstly, it allowed me to reach a large number of people in a limited amount of time, as convenience sampling encouraged meeting people without prior planning and therefore helped utilize my time in the field to the fullest. Secondly, convenience sampling was also used to avoid a biased sample. Although convenience sampling is not perfect in this regard, based on the experiences I had gathered from my first two field visits, I anticipated that using snowball sampling would result in meeting only an elitist or selective group of local people that the village representatives would introduce me to.

Semi-structured interviews

Semi-structured interviews were conducted with key informants such as implementers, monitors, and experts. As can be gathered from the topic guide (see Appendix Number 7.2), the purpose of the interviews was to gain a deeper understanding of the management and design of the two forest protection efforts and the degree and type of participation practiced. Although the topic guide was used to structure the interview, the researcher and/or participant were allowed to cover topics outside of the given frame. Through this semi-structured framework, participants were able to bring forth topics that were not planned for, but eventually proved valuable and of benefit to the research.

Considering the limited number of key informants for each case and the difficulty in reaching them, snowball sampling was chosen as the sampling method for the interviews. Snowball sampling involves sampling one or two people that are relevant to the study, who then propose other participants that are also relevant to the research, and so on (Bryman, 2012). Being an outsider to the area, in a place where not many people speak English or are accustomed to seeing or working with

foreigners, the snowball sampling technique was especially useful. Moreover, Indonesia has a culture where access is largely dependent on personal connections, therefore, through snowball sampling I was able to reach and meet with people, like government officials, that I would otherwise not have had access to.

Criteria for selecting research locations

The Laman Satong Village Forest (community forest) and the Gunung Tarak Protection Forest (state forest) were chosen as research locations because they represent two prominent and different types of forest protection efforts in the Gunung Palung Landscape. While I had originally planned to include the Gunung Palung National Park, I was eventually not able to do so for reasons of access. I therefore chose to study two other prominent forest protection efforts in the area.

The Laman Satong Village Forest is community-led, while the government is in charge of the Gunung Tarak protection forest. Choosing these contrasting forest protection efforts both encouraged comparison between the different tiers of forest protection practiced in Indonesia, and also ensures a more complete account of forest protection efforts in the Gunung Palung landscape.

Literature review

Throughout the process of this research, secondary data was collected through the review of literature. The literature review presents information on the geographic area and provides an introduction to forest protection and participatory methods in Indonesia. While the literature review proved valuable in terms of learning about forest governance and participatory practices in Indonesia in general, there is little to no relevant existing data on the two cases covered in this research. Therefore, in this research, the literature review is used to sketch more of a general understanding of forest protection efforts in Indonesia and Kalimantan, rather than focusing specifically on the two cases in question.

Online search tools like Google Scholar were used to locate the majority of literature. However, NMBU's university library also proved resourceful. Fore mostly, articles were selected on their relevance to the research question. However, when possible, an effort was made to use the most current literature available. Moreover, in order to ensure trustworthiness, the methodology used in articles was also briefly reviewed to verify the credibility and generalizability of findings.

3.4. Data analysis

To ensure the protection of data, data was organized while still in Indonesia. Questionnaire data was systemized using Microsoft Excel, and qualitative interviews were transcribed in Microsoft Word. Upon return to the Netherlands, data was analyzed. In the section below the methods used to analyze data in this research are described.

Questionnaires

Microsoft Excel was used to produce descriptive statistics and to create tables and charts from the quantitative data generated by the questionnaires, whereas the qualitative answers were coded and interpreted. The quantitative data analysis methods help provide an overview of the data and give insight into the distribution of answers in the sample. This in turn helps identify the commonly held values amongst participants, the popular beliefs about the forest protection effort, and levels of participation; information quintessential to answering the research questions. By contrast, the qualitative method of coding helped organize qualitative answers in order to better understand them and compare them between participants.

Semi-structured interviews

Coding is used as the main technique to analyze the data generated by the semi-structured interviews. To assist with data coding, interviews were first recorded and then transcribed. Recordings helped aid my memory of conversations, and transcriptions were used to facilitate coding.

Coding involves "...turning data into fragments" (Bryman, 2012, p. 577), where fragments refer to labels that denote different topics. The semi-structured interviews conducted in this research were therefore coded into different sets. In order to ensure all relevant topics were covered in the codes, pre-set and emergent codes were generated before, during and after data collection.

3.5. Validity and reliability

Throughout this research, measures were taken to guarantee data *validity* and *reliability*. Validity and reliability are "measures of the quality, rigour, and wider

potential of research" (Mason, 1996, p. 21), and are important factors in determining research integrity.

Translating the questionnaires and topic guides from English to Indonesian could have a potentially negative effect on data validity. In order to minimize this risk, the content of the questions were discussed in detail with the translator in meetings set up both before and during the translation process. This was done to confirm that the translator understood the meaning of the questions and felt confident about the translation. In addition, another person competent in both languages crosschecked the translation to confirm that the translated questions reflected their intended meaning, ultimately increasing research validity.

Furthermore, to ensure the consistency of measures, which is central to reliability (Bryman, 2012), and to guarantee research validity, questionnaires were conducted in the form of structured interviews. Conducting the questionnaires in this way increased the completeness of data, as questionnaires were conducted in a standardized way, which decreased the likelihood of misunderstandings as the researchers could explain questions where necessary. Moreover, to ensure the consistency of data collection, the same professional conduct was used and manner of asking questions applied during each questionnaire and interview.

3.6. Research ethics

Considering the ethical implications of measures is key to conducting sound social research, where at the heart of research ethics is the idea that harm to participants should be avoided at all costs (Bryman, 2012). In order to ensure good research ethics in this study, two measures were taken.

Firstly, *informed consent* was obtained from all research participants. Informed consent exists when research participants know enough about the study to make an informed decision on whether they want to participate or not (Bryman, 2012). First, research participants were briefed about the topic and purpose of the study, after which they were explicitly asked if they were willing to participate.

Additionally, *confidentiality* was applied throughout the research. Confidentiality exists when research participants are not identifiable to anybody but the researcher (Bryman, 2012). To ensure confidentiality, the participant's names were only known to the researcher and translator and were referred to by number

codes once the data was systemized into Excel. Moreover, after having completed the research, all data will be destroyed by the researcher, leaving no way to identify participants.

3.7. Limitations and challenges

During the course of this research, one of the difficulties I experienced was in accessing key informants and implementers working in the state forest. As the government manages the state forest, its implementers are by and large government officials. In the field I learnt that as a result of an administrative change implemented in 2016, the implementers of the state forest had been moved from the district to the province level. This meant that the implementers were now located at least an hour flight away from the protection forest, making it especially difficult to interview them. Apart from physical access, my lack of credentials and limited connections in the area also restricted my ability to reach implementers. In consequence, I was not able to interview any sitting implementers. Instead, two implementers who had previously worked with the protection forest were sampled.

A further challenge faced was the language barrier. Although my translator provided good translations, it is inevitable that some data gets lost in translation. Not being able to understand participants directly therefore meant that only snippets of their stories would reach me, resulting in my overall understanding and account of the participant's stories and experiences being less complete than it would be if I spoke Indonesian.

Furthermore, the local people in the sampled research locations were often hesitant and skeptical of outsiders, this caused some people to decline participation and thus limited my access to research participants. However, this was mostly overcome by being especially polite when asking permission to speak to people and introducing the research topic extensively.

Lastly, despite dedicating much time to making the questions included in the questionnaire as simple as possible, throughout data collection it became apparent that some of the questions were not fully understood by all participants. In these instances, an extra explanation was provided to clarify the intended meaning to the participant. Here, choosing to conduct questionnaires like structured interviews proved

particularly useful, as misunderstandings could be identified and addressed on the spot.

4. RESULTS AND DISCUSSION

This chapter presents the results, findings and discussions of the research questions. Quantitative and qualitative data is analyzed using the methodological techniques discussed in Chapter 3, and the discussions are further informed by the theories presented in Chapter 2.

4.1. Local livelihoods and forest dependence in the community and state forests

In this research, the local livelihoods of people in the community forest and state forest are analyzed briefly in three stages with the intention to gain insight into important factors shaping participants' lives. First, the livelihood assets are uncovered, which include an analysis of the households human and natural capital access observed at the research locations. Secondly, the livelihood activities practiced are revealed, and thirdly, the livelihood outcomes are presented and discussed. This framework for studying livelihoods is based on Ellis's definition of livelihoods as comprising of "...the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household." (2000, p. 10).

In the "grand scheme" of this research, livelihoods are only briefly touched upon. The limitations of a relatively simplified reflection of the complex topic of livelihoods are therefore recognized at the outset. While an extensive livelihood analysis is not provided, as this is not in line with the central focus of the research objectives, livelihoods are still covered because they constitute an inherent part of people's lives and provide a stepping-stone in uncovering people's attitudes and perceptions; the topic studied in the remaining research questions of objective 1.

Despite livelihood analyses commonly being conducted at the household level, due to the increased practicality, and the intent of this research to cover livelihoods only briefly, data was gathered at the individual level. Studying livelihoods at the individual level increased feasibility, considering "...the household is an infinitely variable social arena, difficult to define in many cultural settings" (Ellis, 2000, p. 18).

Throughout the analysis, comparisons are made between the participants living near the community forest and those living near the state forest. Differentiating between participants helps outline possible variations between the conditions surrounding the community and state forest. For instance, there may be social, economic, environmental, cultural, or political variations that influence the way people live their lives. Apart from differentiating by community and state forest, ethnicity, gender, age, and education are also used as variables for comparison.

As an overview, Table 1 presents the demographics of the participants in the community and state forest. These characteristics help sketch a picture of the sampled populations in the CFA and SFA and their similarities and differences. These characteristics will be referred to throughout the analysis.

Table 1. Demographics of participants in the community and state forests areas, West Kalimantan, Indonesia 2017

| Male 56.7% 66.7% 61.7% Female 43.3% 33.3% 38.3% Age Under 25 years old 13.3% 6.6% 10% 25-40 years old 46.7% 46.7% 46.7% Over 40 years old 40% 46.7% 43.3% Ethnicity Dayak* 66.7% 10% 35% Malay 26.7% 50% 38.3% Java* 6.6% 26.7% 16.7% Other 0% 13.3% 10% Religion Catholic* 70% 13.3% 41.7% Muslim 30% 86.7% 58.3% Highest Level of Education Average Number of Years 8.4 7.5 8 Primary School 36.7% 50% 43.3% Middle School 13.2% 30% 21.7% High School 36.7% 16.7% 26.7% University 6.7% 0% 3.3% No Education | | Community | State Forest | |
|--|--|-------------|--------------|-------|
| Gender Male 56.7% 66.7% 61.7% Female 43.3% 33.3% 38.3% Age Under 25 years old 13.3% 6.6% 10% 25-40 years old 46.7% 46.7% 46.7% 25-40 years old 40% 46.7% 43.3% Ethnicity Dayak* 66.7% 10% 35% Malay 26.7% 50% 38.3% Malay* 26.7% 50% 38.3% Dither 0% 13.3% 10% Religion Catholic* 70% 13.3% 41.7% Muslim 30% 86.7% 58.3% 41.7% Muslim 30% 86.7% 58.3% 41.7% Muslim 30% 86.7% 58.3% 8 Primary School 36.7% 50% 43.3% Middle School 13.2% 30% 21.7% High School 36.7% 16.7% 26.7% University | | Forest Area | Area | Total |
| Male 56.7% 66.7% 61.7% Female 43.3% 33.3% 38.3% Age Under 25 years old 13.3% 6.6% 10% 25-40 years old 46.7% 46.7% 46.7% Over 40 years old 40% 46.7% 43.3% Ethnicity Dayak* 66.7% 10% 35% Malay 26.7% 50% 38.3% Java* 6.6% 26.7% 16.7% Other 0% 13.3% 10% Religion Catholic* 70% 13.3% 41.7% Muslim 30% 86.7% 58.3% Highest Level of Education Average Number of Years 8.4 7.5 8 Primary School 36.7% 50% 43.3% Middle School 13.2% 30% 21.7% High School 36.7% 16.7% 26.7% University 6.7% 0% 3.3% No Education | | $N_1 = 30$ | $N_2 = 30$ | N=60 |
| Female 43.3% 33.3% 38.3% Age Under 25 years old 13.3% 6.6% 10% 25-40 years old 46.7% 46.7% 46.7% Over 40 years old 40% 46.7% 43.3% Ethnicity Dayak* 66.7% 10% 35% Malay 26.7% 50% 38.3% Java* 6.6% 26.7% 16.7% Other 0% 13.3% 10% Religion Catholic* 70% 13.3% 41.7% Muslim 30% 86.7% 58.3% Highest Level of Education Average Number of Years 8.4 7.5 8 Primary School 36.7% 50% 43.3% Middle School 13.2% 30% 21.7% High School 36.7% 16.7% 26.7% University 6.7% 0% 3.3% No Education 6.7% 6.7% 5% | | | | |

^{*} Indicates a statistically significant difference between the CFA and SFA (p<0.05)

4.1.1. Human and natural capital

Livelihood assets refer to the implicit and explicit resources controlled by a person or household that can enable them to conduct certain activities and thereby create certain outcomes that help ensure subsistence. For instance, having education (human capital) or the lack thereof, likely influences the livelihood activities a person has access to and the subsequent livelihood outcomes. Uncovering participant's human and natural capital therefore helps shed light on their ability to access, sustain, and practice, sustainable livelihood activities and outcomes, while making the assumption that greater human and natural capital typically translates into a better standard of living.

Education is a type of human capital that can be viewed as an investment made to gain higher future returns (Ellis, 2000), for instance in terms of livelihood outcomes like higher income. Apart from its private returns, increased education may also result in public gains through for instance raising labour productivity (Ellis, 2000). Moreover, education is widely perceived as an important development indicator, contributing to increased human capabilities, freedoms and thereby a higher standard of living. Therefore, an individual's education is an asset that directly influences access to certain livelihood activities and outcomes.

In this research, the mean number of years of education is 8, which amounts to a student having completed up to middle school, where 43.3% of the participants completed their education up and till primary school, 21.7% up to middle school, and 26.7% up and till high school. Three respondents did not obtain any education, and two people went to university. When differentiating between the community and state forest, the average number of years that participants went to school in the community forest is 8.4 years, and the state forest is 7.5 years. However, this difference is not statistically significant. Considering that in Indonesia completing schooling up and till high school is compulsory, and primary and middle school are free while high school requires a small fee (ASEAN, 2014), it is questionable why just 30% of the total sample graduated with their high school degree, and 51.7% with their middle school degree. This may suggest insufficient regulation of state authorities and state funding, however it could also suggest that cultural norms may not prioritize education, as it is still common practice that young people participate in livelihood activities from an early age.

Whether girls and boys have equal chances in attaining education could weight-in on the levels of education experienced in the total sample, therefore, the average years of education obtained between males and females were compared. There is almost no difference in years of education between genders, with males obtaining on average 8.1 years of education and girls obtaining average of 7.7 years of education. A gender bias regarding access to education can therefore be eliminated as a plausible explanation for the relatively low levels of education.

Moreover, the relationship between education and income was examined to gain an understanding of the importance of education in relation to cash outcomes, which could in turn influence the perceived importance of education by local people. As presented in Table 2, there is a percentage increase of at least 56.7% between the incomes of people who obtained middle school education compared to those with only primary level education. This is a statistically significant difference, which suggests that participants who completed middle school have significantly higher incomes than those that completed only primary school. By contrast, the percentage increase between middle school and high school graduates is considerably lower at 7.4%, and is not statistically significant. Therefore, while people who completed middle school, on average, had higher incomes than those that completed primary school, this trend levels between middle school and high school graduates. There were just two people with university degrees, both of which reported being teachers by occupation. Table 2 shows that the average income of the university graduates is lower than that of the primary school graduates, implying that teachers are paid little.

Table 2. Average annual cash income by education, West Kalimantan, Indonesia 2017

| | Avg Annual Cash Income | |
|----------------|------------------------|-------|
| (USD) N=60 | | |
| Education | | |
| Primary School | 930.6* | 733.5 |
| Middle School | 1458.6 | 685.7 |
| High School | 1566.8 | 855.9 |
| University | 664.7* | 0 |
| No Education | 590.8 | 455.3 |

^{*} Indicates a statistically significant difference between cash incomes (p<0.05)

Natural capital refers to the natural resource base that is used by people for subsistence (Ellis, 2000). The land that people own is a form of natural capital and is used directly to cater for people's survival and livelihood needs. The findings presented in Table 1 reveal that 35 out of 60 participants own land, where 38.9% of those people own more than one type of land. Rice-fields and home-gardens are by and large the most popular types of land owned. From personal observations I gathered that gardens are most commonly used to grow a range of fruit and vegetable plants for subsistence, increasing household food security. A comparison between the community and state forest indicates that more people (20%) in the CFA own land than in the SFA, however this result is not statistically significant.

Overall, all but 5% of the total sample obtained some level of education. Although levels of education were quite low across the sample, this did not have a significant impact on people's cash incomes. Moreover, respondent's natural capital is relatively high, with more than half of the total sample owning land. Landowners experience higher natural capital, and are likely to experience more food and livelihood security. Moreover, land ownership may lead to less forest dependency; an issue further explored in section 4.1.2.

4.1.2. Livelihood activities for cash and subsistence

Livelihood activities refer to "...the activities that generate the means of household survival" (Ellis, 2000, p. 40). The data presented in Table 3 shows that the majority of participants in the sample are farmers or plantation workers. Merged, this means that 48.4% of the total respondents work in the agricultural sector. Moreover, 7 participants said they engaged in farming as a side-job. When considering these part time farmers, a further 11.7% of participants work in the agricultural sector. While farming is mostly practiced to produce food crops like rice, plantation workers, through my observations and conversations with participants, are all employed in the palm oil sector. Data shows that work on plantations is more lucrative than being a farmer (see Table 6). However, while working on a palm oil plantation may generate higher cash returns, the farmers are likely to be more food secure as they cultivate crops used as food sources. Moreover, considering palm oil plantations are monocultures built on previous forested landscapes, the plantation workers are frequently located further away from forests. This hampers their ability to obtain NTFP; further increasing their reliance on markets and cash for food. Lastly, Table 3

outlines that a large group of participants (26.7%) said they had no formal occupation. The only male respondent without a formal occupation said he was retired and all of the female respondents said they were housewives.

Table 3. Formal occupations of participants in the community and state forest areas, West Kalimantan, Indonesia 2017

| | Community Forest Area | State Forest Area | Total |
|----------------------|--------------------------|----------------------|-------|
| Occupation | $N_1=30$ | $N_2=30$ | N=60 |
| Farmer | 26.7% | 36.7% | 31.7% |
| Plantation Worker | 16.7% | 16.7% | 16.7% |
| Teacher | 10% | 0 | 5% |
| Government Official | 6.7% | 0 | 3.3% |
| Shop Keeper | 3.3% | 3.3% | 3.3% |
| Trader | 0 | 6.7% | 3.3% |
| Electrician | 0 | 6.7% | 3.3% |
| Mechanic | 3.3% | 3.3% | 3.3% |
| Army/Police | 3.3% | 0 | 1.7% |
| Carpenter | 3.3% | 0 | 1.7% |
| No Formal Occupation | 26.7% | 26.7% | 26.7% |

^{*} Indicates a statistically significant difference between the CFA and SFA (p<0.05)

Moreover, the degrees to which participants farm food for subsistence were studied. It was found that 58% of the respondents live in households that grow some of the food they consume themselves. The majority of these people stated that the food they grow represents up to 20% of their household food consumption. However, when a distinction is made between the community and state forest, 76.6% of the people in the CFA grow food for consumption, while only 37.9% of the people in the SFA do so. This statistically significant difference suggests that people in the CFA are more reliant on small-scale household level farming for subsistence, and therefore, potentially experience more food security than those in the SFA.

In line with the previous paragraph on farming for subsistence, the degree to which participants gather forest products for cash and subsistence was studied. Overall, the data indicates that participants rely heavily on the use of forests for collecting building materials, food, and income. As presented in Table 4, 56.7% of participants reported being dependent on the forests for some of their food, with the majority of these participants relying on the forests for 0-20% of their food

consumption. People in the CFA are significantly more dependent on the forests for food than those living in the SFA. This difference in results may be linked to forest access, as it became clear during my time in the field that the inhabitants of the CFA lived significantly closer to the forests than those in the SFA. Moreover, there were visibly fewer forests surrounding the SFA. Instead the land near the SFA was largely degraded and barren, or marked by palm oil plantations, making it more difficult for people in the SFA to reach intact forests.

Table 4. Forest dependence for food, building materials & income, West Kalimantan, Indonesia 2017

| | Community Forest Area | State Forest Area | Total |
|---------------------------|--------------------------|----------------------|-------|
| | $N_1 = 30$ | $N_2 = 30$ | N=60 |
| Food* | 76.7% | 36.7% | 56.7% |
| Around 0-20% | 40% | 20% | 30% |
| Around 20-40% | 6.7% | 6.7% | 6.7% |
| Around 40-60% | 20% | 10% | 15% |
| Around 60-80% | 6.7% | 0 | 3.3% |
| Around 80-100% | 3.3% | 0 | 1.7% |
| Building Materials | 96.7% | 90% | 93.3% |
| Around 0-20% | 23.3% | 40% | 31.7% |
| Around 20-40% | 13.3% | 13.3% | 13.3% |
| Around 40-60%* | 43.4% | 13.3% | 28.3% |
| Around 60-80% | 16.7% | 20% | 18.3% |
| Around 80-100% | 0 | 3.3% | 1.7% |
| Income | 33.3% | 23.3% | 28.3% |
| Around 0-20% | 10% | 0 | 5% |
| Around 20-40% | 16.7% | 13.3% | 15% |
| Around 40-60% | 6.7% | 6.7% | 6.7% |
| Around 60-80% | 0 | 3.3% | 1.7% |
| Around 80-100% | 0 | 0 | 0 |

^{*} Indicates a statistically significant difference between the CFA and SFA (p<0.05)

Regarding dependency on the forests for building materials, 93.3% of the participants were found to use the forest for this cause. Table 4 shows that the participants in CFA generally gather more building materials from the forests than those in the SFA, however, this difference is minimal and not statistically significant. Hence, the majority of participants in both locations used the forests to obtain some

building materials, something that was reaffirmed by observations in the field, as most houses were made from wood, bamboo, rattan and banana tree leaves.

Lastly, 28.3% of participants rely on the forest for some of their income, of which the majority uses the forests for generating roughly 20-40% of their income. Again, people in the CFA are more dependent on the forests for income than people in the SFA. While I did not ask about the specificities of the income collected from the forests, it likely comes from selling rattan or fruits to traders.

In total, all but 3 participants (95%) stated that they are dependent either on the forests for some food, building materials or income. 28.3% of participants use the forests for all three causes, and can therefore be considered highly dependent. These findings emphasize not only that gathering forest products is a commonly practiced livelihood activity, but also that the forests are indispensible to people's livelihoods. Hence, for long-term livelihood security in these areas, it is quintessential that the forests are managed sustainably and kept intact.

4.1.3. Cash income

Income is one type of livelihood outcome secured through formal and informal livelihood activities. Total income typically consists of cash plus subsistence income, however given the focus of this research and the limiting time and resources at hand; only data on cash income was collected. It is recognized at the outset that working with only cash income is a limitation, especially considering this disregards all the services and resources that are exchanged and contribute to people's livelihoods that do not involve cash. Overall, the concept of income used encompasses the sum of money gathered from both formal and informal livelihood activities.

As can be gathered from Table 5, the average annual cash income across the sample is 1161.5 USD. The high standard deviation suggests that there is a large variation in cash incomes reported by participants. When comparing these figures with the Word Bank's poverty line for Indonesia, which positions people living with less than 1.25 USD per capita as poor and with less than 2.00 USD per capita per day as near poor, 14% of the 50 respondents who reported incomes are considered poor, and 28% 'near poor'. According to this framework, the 'near poor' face a genuine risk of sliding into poverty (Indonesia Investments, 2017); hence, one fourth of the total sample is vulnerable to poverty. Considering this, upholding the resources on which

the poor depend for cash and subsistence, such as the forests, becomes increasingly important.

Moreover, the incomes of the two main occupations that participants are engaged with are compared in Table 6. The data reveals that plantation workers earn significantly more than farmers. Apart from that, there is also less variation in the incomes of plantation workers compared to farmers. Assuming farmers are more vulnerable to environmental and/or market shocks than plantation workers, they may also experience more insecurity regarding their livelihood outcomes.

Table 5. Annual cash income variation between the community and state forest areas, West Kalimantan, Indonesia 2017

| | Community Forest Area | State Forest Area | Total |
|-----------------------------|--------------------------|----------------------|--------|
| | $(N_1=27)$ | $(N_2=29)$ | (N=56) |
| Average Annual Income (USD) | 1179.7 | 1182.8 | 1161.5 |
| Standard Deviation | 773 | 695 | 815.8 |

^{*} Indicates a statistically significant difference between the CFA and SFA (p<0.05)

Table 6. Annual cash income variation between farmers and plantation workers, West Kalimantan, Indonesia 2017

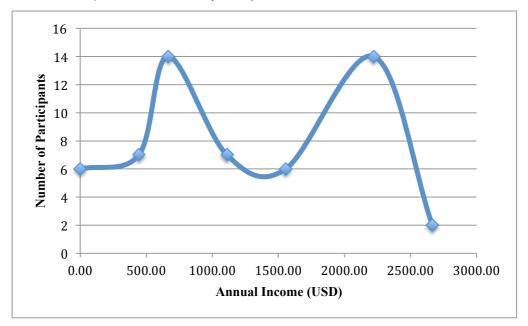
| | Farmer Plantation V | |
|------------------------------|---------------------|------------|
| | $(N_1=19)$ | $(N_2=10)$ |
| Average Annual Income (USD)* | 1188.2 | 1820.2 |
| Standard Deviation | 741.9 | 504.2 |
| | | |

^{*} Indicates a statistically significant difference between farmer and plantation worker (p<0.05)

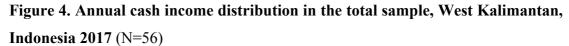
Figure 3 presents a line graph plotting participant's average income against frequency. The line graph shows that the average incomes of the total respondents do not follow a normal bell shape curve, but rather displays two distinctive peaks. The peaks imply that there is a relatively large part of the sample that is poor and earns around 600 USD a year, and a large group that is less poor and earns roughly 2200 USD a year. As reported in Table 6, the farmers earn considerably less than the plantation workers. This finding is reflected in Figure 3, where the two distinctive peaks represent the farmers and plantation workers. Apart from the main peaks in average earnings, there is a small minority earning less than and more than those

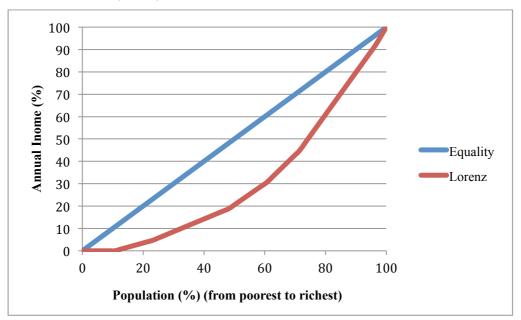
figures. However, the peaks in this graph might be exaggerated due to the fact that averages were generated from income ranges.

Figure 3. Average annual income variation in the total sample, West Kalimantan, Indonesia 2017 (N=56)



Furthermore, when looking closer at the income distribution, potential income inequalities must also be considered. The Lorenz curve displayed in Figure 4 is a means through which to show income distributions, and thereby the income inequalities across the total sample. The graph illustrates that the 10% richest participants earn 20% of the total income. Moreover, the 20% poorest participants earn just 5% of the income. This suggests that there is inequality in the income distribution of participants. A finding also reflected in the overall high standard deviations of average incomes figures throughout this section.





To investigate the social factors that may impact cash outcomes, Table 7 compares cash income against ethnicity, gender, age, and education. When evaluating the average annual income in relation to ethnicity (calculations including people that earn 0), the data reveals that the income earnings of people with the Dayak ethnicity are significantly less compared to the other ethnicities. Observations gathered from field visits in the CFA, however, showed that the Dayak represent not only the majority ethnicity (at 66.7%) in the CFA, but also held more power in the village and its affairs. For instance, the former village chief who is still an influential figure in the village is of Dayak ethnicity, and the current village chief, although he is Malay, is married to a Dayak woman and converted from Islam to Catholicism. This observation was reaffirmed by participants that live in the CFA and spoke of a 'group of Dayak men' that held power. Considering the social position of the Dayak in the CFA, it is notable to find that this social status does not translate into higher cash incomes; suggesting there are other factors that influence their significantly lower cash incomes. Dayaks, for instance, are less frequently employed as plantation workers than the Malays, and considering the former pays roughly 600 USD more per year (see Table 6), type of occupation could be one plausible explanation for the lower cash incomes of the Dayaks. However, values and attitudes are also likely of influence here, where the Dayaks may attach a different degree of importance to cash incomes. During the field visits this came to light, for instance, in my interaction with the village chief. During my time in the field, I was kindly invited to stay at the home of the village chief and his family. After my three-day stay I offered some compensation for the food and shelter. This gesture upset the village chief, and he responded, "making new friends is priceless". This experience reaffirmed the fact that there exist many activities that are exchanged between people but do not involve a cash exchange. Therefore, it is important to keep in mind that while the Dayaks may have lower incomes than the Malays (and others), cash incomes do not account for the food sources that are gathered or grown for subsistence, nor the activities and goods that are exchanged without the institution of cash ever coming into play. Reemphasizing a key disadvantage of solely focusing on cash incomes.

Table 7. Variation of cash income by ethnicity, gender, and age, West Kalimantan, Indonesia 2017 (N=56)

| | Average Annual Cash Income (USD) | Standard Deviation | |
|------------------------------|-------------------------------------|--------------------|--|
| Ethnicity | | | |
| Dayak* | 911.3 | 532.7 | |
| Malay | 1321.7 | 914.7 | |
| Java | 1470.2 | 828.7 | |
| Other | 1410.8 | 768.1 | |
| Gender | | | |
| Male | 1370 | 776.1 | |
| Female (Total Sample)* | 891.5 | 769.2 | |
| Female (Income Earners Only) | 1149.2 | 677.8 | |
| Age | | | |
| Under 26 years old | 1362.3 | 863 | |
| 26-40 years old | 1170.3 | 812 | |
| Over 40 years old | 1175.4 | 749 | |

^{*} Indicates a statistically significant difference between variables (p<0.05)

The comparison of income across gender (see Table 7) shows that males earn considerably more than females. However, in the second set of calculations, when the females who earn 0 are eliminated from the equation, female average annual income climbs to 1149.2 USD with a standard deviation of 677.8 USD. Therefore, although females do earn less than males, the difference at 221 USD per annum, is not very

large or statistically significant. Nevertheless, the income gap does point to an economic division between men and women living in the CFA and SFA.

Lastly, the incomes across ages are relatively the same. Although Table 7 does show that the youngest age group obtains the highest incomes, this difference is not statistically significant or substantially larger. Moreover, with the standard deviation being the largest for this group, this also means that they experience the greatest variation in incomes.

4.1.4. Ethnicity

Throughout the livelihood analysis there have been some variations between the community and state forest areas. However, when looking deeper, location is not the sole factor influencing variations. As presented in Table 7, there are significant differences in income across ethnicities. This increased my interest in the variable, especially considering ethnicities are so dispersed across the community and state forest areas (see Table 1). Therefore, I conducted a brief analysis of ethnicity against education, land ownership, subsistence agriculture, and forest dependence.

The data presented in Table 8 shows that there are significant differences between the ethnicities across the studied variables. Regarding average number of years of education, there are significant differences between the Dayak and Malay ethnic groups, where the Dayak respondents obtained on average 2.6 more years of education than the Malay respondents. This is a particularly interesting finding considering the Dayaks were found to earn considerably less than the other ethnic groups, re-emphasizing the earlier finding that education has no significant impact on cash income. Similarly, concerning land ownership, there is a significant difference between the percentage of Dayaks and Malays owning land, with the Dayaks owning at least 36.3% more land than Malays. Apart from owning more land, the respondents belonging to the Dayak ethnic group were also found to grow more food for subsistence themselves, with significant differences between the Dayak and Malay as well as the Dayak and Java ethnic groups. Lastly, regarding forest dependence, the Dayak were found to be considerably more reliant on the forests for food than the other ethnic groups.

From this data, one gathers that ethnicity does account for significant differences in livelihoods. People belonging to the Dayak ethnic group, on average, go to school longer, are more likely to own land, grow more food for subsistence, and,

are significantly more reliant on the forests for food than people of other ethnic groups. Therefore, despite the Dayaks earning significantly less cash income than the other ethnic groups, they seem to collect more subsistence income. Re-emphasizing the inherent limitation of focusing solely on cash income as a measure. Although subsistence income was not overtly measured in this research, the data presented in Table 8 points to the fact that people belonging to the Dayak ethnic group collect more subsistence income than the other ethnic groups, ultimately, highlighting a difference in livelihood practices between ethnicities.

Table 8. Education, land ownership, growing food for subsistence and forest uses across ethnicity, West Kalimantan, Indonesia 2017 (N=60)

| | Dayak | Malay | Java | Other |
|----------------------------------|----------------------|------------|------------|-----------|
| | $N_1 = 21$ | $N_2 = 23$ | $N_3 = 10$ | $N_4 = 6$ |
| Education | | | | |
| Average Number of Years | 91 | 6.41 | 8.6 | 9 |
| Land | | | | |
| Those who own land | 80.1%1 | 43.5%1 | 50% | 83.3% |
| Grow Food for Subsistence | | | | |
| Yes | 85.7% _{1,2} | 39.1%1 | 30%2 | 83.3% |
| No | 14.3% | 60.9% | 70% | 16.7% |
| Forest Uses | | | | |
| For Food | $90.5\%_{1,2}$ | 43.5%1 | 20% | 50%2 |
| For Building Materials | 95.2% | 87% | 100% | 100% |
| For Cash Income | 33.3% | 30.4% | 10% | 33.3% |

Corresponding number indicates statistically significant difference between ethnicities (p<0.05)

4.1.5. Summary of findings

Overall, the analysis of livelihoods has revealed interesting findings about the sampled population and how they live. As a whole, findings show that participants have relatively low levels of education and cash income, yet relatively high levels of land ownership and forest dependence. In general, respondents rely heavily on the forests for some of their food, building materials, and income. The most frequently listed occupations were farmers and plantation workers, which underlines a trend of people working in the agricultural sector. While cash incomes were found to be similar across locations, there are significant differences when comparing between ethnicities. The analysis of ethnicity found that the Dayak ethnic group is more heavily reliant on other sources of subsistence than solely cash income. Ultimately,

studying participant's human and natural capital, livelihood activities, and cash outcomes, presented essential base line data that helps create a better understanding of the sampled population and how they live their lives and use the forests. The characteristics uncovered in this section will be referred to and used in the sections to follow.

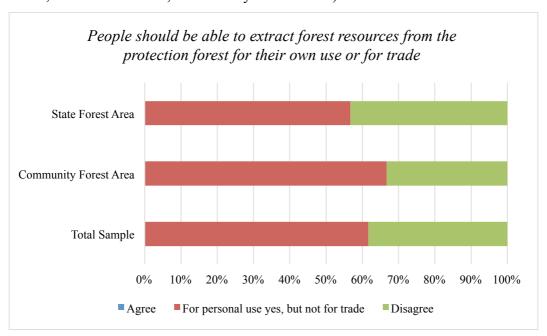
4.2. Local people's values, perceptions and support towards the community and state forest protection efforts

In this research, values were studied to give insight into the attitudes and perceptions of the inhabitants living in the CFA and SFA towards the forest protection efforts surrounding their village. In addition to this, the level of local support towards the forest protection efforts is studied. Similar to the previous section on livelihoods, findings and discussions are merged.

4.2.1. Values and perceptions

In line with utilitarian and anthropocentric thinking, participants were first asked about their views towards extracting forest resources from the protection forests for personal use and/or trade. This question helped gain insight into respondent's attitude towards the forests by uncovering what they perceive as acceptable behavior. As outlined in Figure 5, none of the respondents think that people should be able to extract forest resources for both personal and economic use. Hence, none of the participants have entirely anthropocentric views; instead, the majority (62%) of respondents believe forest resources can be used for personal use but not for trade. Considering the high reliance of most participants on the forests for resources (as seen in Table 4 in section 4.1), it is logical that the majority of participants want to collect forest resources from the CFA and SFA despite its protection status. Moreover, the extraction of NTFPs, at least to some extent, is common practice and generally accepted behavior. Hence, the majority of participants see the protection forests as a place where one can freely gather forest products; now, simply exempting the gathering of large quantities for trade. Furthermore, as the rules in both protection forests allow local people to extract some forest products in restricted amounts, but not in great capacities for trade, the data shows that peoples' perceptions are by and large in line with local rules. However, there are also respondents (38.3%) that are of the opinion that the forests should neither be used for personal consumption nor trade. This percentage group is highest in the state forest, which is likely due to the fact that the respondents in the SFA are less dependent on the forests for food and income, subsequently influencing their interests and answers.

Figure 5. Participant's perceptions towards extracting forest resources from the community and state forests, West Kalimantan, Indonesia 2017 (Total sample N=60, State forest N=30, Community forest N=30)



Furthermore, all participants reported that the protection forests hold educational value. There were only slight differences between respondents who agreed and strongly agreed with the statements measuring educational value. During data collection, one of the implementers of the community forest stated that educating people is in fact one of the central aims of the CFA. Moreover, all participants in both locations agreed that the protection forests are valuable locations for scientific research to take place. This was confirmed during my time in the field, as I was never challenged or abused for doing research; instead, most people reacted enthusiastically.

Concerning 'therapeutic' value, the total sample either agreed or strongly agreed to the statement that the forests have the ability to contribute positively to people's sense of physical and emotional well-being, and, that the forests contain natural remedies for healing. This is not surprising as many participants in the field

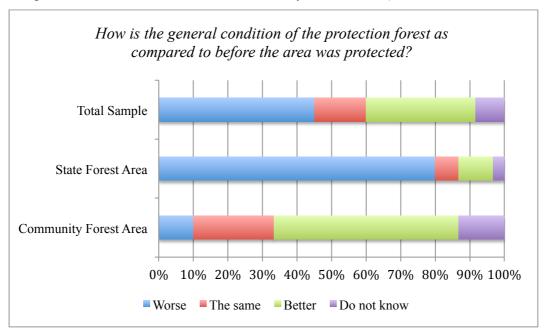
told me that people learn about the healing and medicinal properties of particular forest species from their family members and ancestors, and then apply this knowledge when seeking remedies themselves.

The analysis of spiritual value revealed that all participants felt that the forests in the CFA and SFA are a place that is of spiritual importance to them. However, significantly more people in the CFA (86.7%) said there are places in the community forest that have spiritual value to them then than people in SFA (56.7%) said about the state forest. The higher level of spiritual value held by people in the CFA could be due to variations in religion and ethnicities across the two areas (see Table 1 in section 4.1), or rather, due to the fact that the community forest holds a well-known religious shrine (the Maria Cave) and the state forest does not.

Lastly, aesthetic value and existence value were measured. All participants in the CFA and SFA agreed that the community and state forests have environments of significant natural beauty. Moreover, relating to existence value, all participants agreed that there is a need for the forests surrounding their villages to be conserved through an initiative like the community and state forest, and that they are satisfied these exist.

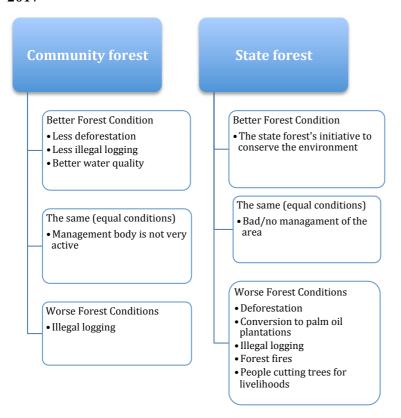
Apart from exploring a range of "intangible values", the perceptions of local people were studied. Firstly, the perceived forest conditions since the development of the community and state forests were examined. Figure 6 shows that there are some variations between responses. 45% of the total respondents stated the forest condition had gotten worse, while 31.7% stated forest conditions got better. This suggests that, in general, perceptions about the forest conditions since the establishment of the community and state forests are not very good. However, when comparing the perceptions between the community and state forests, it is apparent that there are considerable differences in perceived forest quality, with significantly more (statistically significant at p<0.05) respondents in the SFA reporting the forest condition is worsening compared to respondents in the CFA. Therefore, while the vast majority of participants in the CFA said the forest condition had become better since its establishment, participants in the SFA emphasized how the forest conditions worsened.

Figure 6. Participant's perceived forest condition since the establishment of the community forest and state forests, West Kalimantan, Indonesia 2017 (Total sample N=60, State Forest N=30, Community Forest N=30)



As a qualitative follow up, participants were asked to elaborate on their answers regarding the forest condition over time. The most frequently listed reasons for respondent's answers have been listed in Table 9. Commonly listed reasons by participants in the SFA for the worsening forest conditions were deforestation as a result of forest fires, illegal logging, the conversion of land to palm oil plantations, and the use of forests for livelihoods. In particular, many respondents in the SFA emphasized the problem that forest fires pose for the state forest. They said forest fires arise because people are burning trash or use fire as a method to deforest an area purposively. The barren land that is left after a fire, in turn, makes the forests even more prone to fires; leading to a cycle of forest fires that occur at least 'yearly'. Another frequently listed reason for forest conditions worsening in the SFA and CFA was bad or no observable forest management. With little on-the-ground management or monitoring, the likelihood of illegal logging or palm oil plantations encroaching into the protection forests increases. Both of these were listed as reasons for worsening forest conditions in the SFA, while those participants claiming the forest condition in the community forest had worsened said this was due to illegal logging. Reasons given by people who said the forest condition in the community forest improved were better water quality and the reduction in deforestation and illegal logging.

Table 9. Reasons for perceived forest condition by local people since the establishment of the community and state forests, West Kalimantan, Indonesia 2017



4.2.2. Local support towards the community and state forests

Local support is measured by examining the extent to which a participant is engaged with the community or state forest and by analyzing the benefits and disadvantages listed by participants towards the protection forests. Insight into the degree to which local people support the community and state forests is quintessential to creating an understanding of local people's current relationship to the protection forests, and potential willingness to participate in the future.

As mentioned previously, all participants agreed that there is a need for the forests surrounding their villages to be conserved, and that they are 'satisfied' that initiatives like the community and state forests exist. However, when asked if participants had ever visited the protection forests, just 48.3% of the total sample said they had. 73.3% of respondents in the CFA having been to the community forest, and

23.3% of respondents in the SFA having been to the state forest. This is a statistically significant difference that could be due to reasons of legal access, differing values and norms, varying levels of forest dependence, or people's actual knowledge of park boundaries, among other things. Recreation, monitoring, and gathering NTFPs were the main reasons listed by respondents in the CFA for going to the community forest, whereas, recreation and collecting fruits were the main reasons stated by respondents in SFA for going to the state forest.

Moreover, when participants were asked if they had been involved with the protection forests in any way, the vast majority of participants said they had not. Highlighting a general lack of local involvement and participation. Figure 7 shows that there is a significantly higher rate of local involvement in the community forest than the state forest. The participants who reported being involved with the community forest said they had contributed either to decision-making, rule making, monitoring, or by informing local people of the protection forest. Furthermore, the participants who had not previously been involved were asked if they would want to get involved in the future, to which almost all participants (85.4%) responded yes. Hence, the data presented in Figure 8 highlights the desire of most participants to become involved with the community or state forest. The lower involvement of people in the state forest compared could be due to management being less participatory; a topic that will be further explored in section 4.3 of this research. Comparably, when participants were asked if they think local people should be involved with the protection forests, all participants either agreed or strongly agreed. Implying that, regardless of respondents actually being involved or not, there is a general consensus among respondents in the CFA and SFA that there should be local involvement.

Figure 7. Involvement of local people with the community and state forests, West Kalimantan, Indonesia 2017 (Total Sample N=60, State Forest N=30, Community Forest N=30)

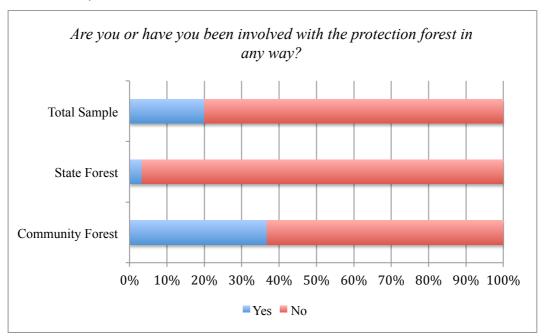
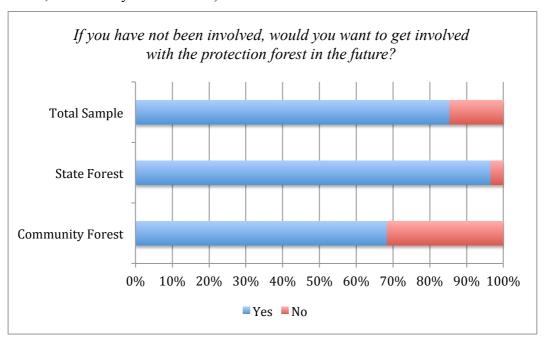


Figure 8. Desire of respondents to become involved with the community and state forests, West Kalimantan, Indonesia 2017 (Total Sample N=48, State Forest N=29, Community Forest N=19)



Lastly, the benefits and disadvantages of the community and state forests as perceived by respondents in CFA and SFA are presented. Regarding the community forest, the main benefits mentioned were related to the protection forest's role in conserving biodiversity and providing essential ecosystem services. Specific examples of benefits mentioned were fresh air and water, the availability of forest fruits, the forests role in regulating temperatures, and keeping the "beautiful" and "good views" intact for people to enjoy. Another benefit mentioned, was how the protection forest helps keep deforestation or unsustainable extraction in check, where a number of respondents mentioned explicitly how the community forest protects the forest from conversion to palm oil plantations. Yet, by contrast, a key disadvantage mentioned was that it is still possible for people to extract resources for personal use at unsustainable levels, where some participants pointed to there not being enough regulations to keep this in check. Moreover, two participants, one of whom happened to be working as a monitor for the community forest, said that the managing body of the community forest is not doing a good enough job. One reason given for this was because they do not compensate monitors as promised. Lastly, disadvantages like the protection forest being dirty, and not being able to grow rice plantations for food and income, were also mentioned. Overall, it is noteworthy that at least 63.3% of the respondents in the CFA listed only benefits and no disadvantages, indicating quite a strong level of local support for the community forest.

Similar to community forest, concerning the state forest, the main benefits mentioned were the protection forest's role in conserving biodiversity and providing ecological services. More specifically, benefits included, the forests providing fresh air, water, and forest products, as well as conserving flora and fauna, and being an aesthetically beautiful area that is "a great place to relax". Interestingly, at least 93.3% of the respondents of the SFA listed only benefits. This is a statistically significant difference when compared to the CFA, and could translate into a higher level of local support towards the SFA than the CFA. However, considering the previous analysis on forest condition shows how the majority of respondents in the SFA reported the forest condition getting worse, the large percentage of respondents mentioning only benefits could be a reflection of respondent's strong desire to mitigate bad practices and conserve the forests through an initiative like the state forest. The two respondents, however, that did list disadvantages said that there is not enough

management and monitoring in the SFA and therefore persistent logging and deforestation can (and does) occur within the boundaries of the protection forest.

4.2.3. Summary of findings

I find that there is a general consensus across the sample that the forests and forest protection initiatives have educational, therapeutic, spiritual, aesthetic, and existence value. In fact, most, if not all, of the sampled participants experience a deep connection with the forest. While this connection may at times be overt and directly observable, it is also covert and "intangible", with people experiencing many and varying relations to the forests. Moreover, the data reveals high levels of local support towards the CFA and SFA. All of the participants were satisfied that the protection forests exists, and more than three fourths of the respondents who had not been involved with the initiatives in the past stated they were interested in becoming involved in the future. In addition, the majority of the sample advocated for more local involvement, where local involvement in the past was found to be low, particularly in the SFA. Low levels of involvement did not, however, translate into negative perceptions towards the protection forests. In fact, the vast majority of participants mentioned only benefits when asked about their perceived benefits and disadvantages of the protection forests. However, by contrast, the analysis of perceived forest condition found that 45% of the total sample thought the forest condition had worsened since the establishment of the community and state forest. Despite this, local support towards the community and state forests remains high and attitudes are largely positive. This is likely a reflection of participant's strong desire to mitigate deforestation and forest degradation in the forests that they value.

4.3. Participation in the community and state forests

This section presents an account of the prevalence and nature of participation in the community and state forests. The main objective is to gain an understanding of the extent to which the establishment, management, and design of the protection forests are inclusive of local people and their interests. Data was primarily collected through the use of semi-structured interviews with implementers of the community and state forests, although survey data is also used.

4.3.1. Local participation in the establishment, design and management of the community forest

The establishment of the community forest

Local people initiated the establishment of the community forest, where the idea to protect the forestland was initially proposed by the former village chief. In a personal conversation with the former chief (18/03/17) he mentioned that he became motivated to protect the forests upon hearing about potential plans for the village forests to be converted to palm oil plantations. As he recognized the reliance of the community on the forests, and the importance of them in providing valuable ecosystem services, he urged the community to consider applying for a change in land tenure status, from conversion to community forest. Although the former village chief largely drove the establishment of the community forest, other villagers were involved by having the option to attend meetings or by being consulted individually (as was the case with the landowners as discussed later in this section). The dominant role of the former village chief was reinforced by the accounts of interviewees who pointed out that while decisions regarding the establishment of the community forest were made collectively in village meetings, local power holders like him, participated most. Nevertheless, survey data shows that at least 46.7% (14 out of 30) of respondents said that they had been involved with the establishment of the protection forest in some way; involvement that most likely entailed attending village meetings.

Once decisions about the establishment of the community forest had been discussed and agreed upon in village meetings, village officials approached the local NGO Jajasan Palung for help. Jajasan Palung assisted the villagers with legal matters surrounding the request to government to change the land status from conversion to community forest. The process of legalization took almost 6 years, and was completed in 2011 when the Ministry of Environment and Forestry (MoEF) approved their claim and granted the land community forest status for 35 years (after which a new request has to be submitted and approved). Hence, at present, the community forest operates under this agreement; meaning the management rights are with the local people on a concessional basis while the state retains ownership over the land.

While the formal forest access and use rules are determined by the state and presented in the Basic Forestry Law of 1967, historically, and especially among the Dayak ethnic groups, rights structures based on customary law greatly influence

forest management (Fox, 1993). In fact, in the community forest, the rules in use are largely based on customary rights. For instance, although the state by law owns the land on which the community forest was established, the villagers themselves use customary law to organize tenure rights. However, because customary law is subordinate to state law (Fox, 1993), the customary landowners do not experience full ownership as the state keeps authority over transaction rights.

In the process of establishing the community forest, the former village chief consulted those people that owned parts of the forest based on customary law. In the process of consultation, he presented the benefits of transitioning to a community forest, and asked for their permission to use their land. While the community forest would not result in landowners' loss of customary land rights or ability to obtain forest products, it does however mean that landowners are expected to abide by certain rules. One rule, for instance, stipulates that landowners can no longer use the land for rice plantations or farming practices. However, it remains unclear whether all customary landowners actually gave formal consent to the community forest. Instead, it is likely that power relations influenced this process, where some landowners may have been pressured to give consent to avoid 'losing face' with the village chief. In fact, when conducting the survey, I came across one respondent who owned land in the community forest and took the opportunity to ask him about his views. The respondent said it upset him that he can no longer convert the land he owns into for example a rice plantation without being sanctioned or lose his reputation. Hence, one can question the extent to which landowners were actually supportive of the community forest to begin with. Despite the process through which landowners were asked for permission being potentially coercive, by virtue of owning the land that was appointed for the community forest, the landowners did gain membership rights and were also involved, at least to some degree, in the establishment of the community forest.

The design of the community forest

As with most well functioning institutions, there should be rules and regulations in place that limit certain activities and behaviors and encourage others. Regarding the community forest, the forest is divided into two zones, a use-zone and a protection-zone. While local people are allowed to extract non-timber forest products in unlimited amounts and timber up to 50 cubic meters per year from the

use-zones, the protection-zones are off-limits to timber extraction. In addition, no agricultural activities are allowed to take place in the community forest. As revealed in section 4.1 on livelihoods, local people rely heavily on the forests for some of their food, and building materials. The fact that the rules of the community forest permit villagers to collect forest products and even gather a regulated amount of timber suggests that the rules are tailored to local people's needs and environment. Hence, the rules are shaped by and with the resource users interests in mind, and clearly signify the extent to which resources can be used. According to Ostrom (1999), when rules are tailored to the needs of resource users, the institution is more likely to last and be sustainable. Hence, because the use rules are shaped to local people's way of life and are perceived as clear by them, there is congruence between the appropriation and provision rules and local conditions. However, when asked if local people have a say in modifying rules, most interviewees said that while villagers could give feedback in meetings, rules are generally shaped by village officials and customary leaders. Therefore, despite resource users being able to attend meetings in which collective decisions are made about use-rules, respondents highlight how a small group of powerful villagers usually take control in these meetings. In turn, limiting the ability for true collective decision-making to take place, and increasing the risk that use-rules, in the long term, become unsuited to local people, which could lead to institutional failures (Ostrom, 1999). Lastly, when the surveyed participants were asked if they know about the rules, or had been informed about them, just 43.3% (13 out of 30) said they had. This suggests that the majority of respondents are in fact unaware of the access rules and rules-in-use, and that these are not communicated well. Moreover, considering most people in this community rely on the forests for forest products, the poor communication of rules and regulations could inspire illegal activities and forest degradation.

For rules to have effect, there must be people that monitor the resources, as well as graduated sanctions in place (Ostrom, 1999). Thus, according to Ostrom (1999), long-enduring institutions are characterized by regular monitoring activities carried out either by resource users, or people accountable to the community. In the community forest, certain local people are tasked with monitoring activities, where monitors observe the forest condition and keep an eye out for potential violators and violations. The managing body, the LDPHD, selects monitors through an informal process that has led to mostly acquaintances and friends of LDPHD members

participating in monitoring tasks. While monitors were promised a small compensation for their service, one monitor said that, as of yet, he has not been compensated. To ensure accountability, monitors have to report what they see in village meetings. Yet, the act of monitoring happens quite infrequently, where one interviewee said it occurred just 5 days a month. Overall, while the community forest has some indicators of a robust monitoring framework, there are also elements that deviate from the design principles of Ostrom (1999). The biased process of choosing monitors and the irregularity of monitoring activities, shed light on the difficulties associated with creating a robust monitoring structure.

According to implementer's accounts, conflicts are dealt with using customary law, which entails that the customary leader, chief of village and religion leader, resolve conflicts and decide on punishments during village meetings. Hence, the power holders in the village decide whether the violator will receive a warning or a more severe punishment. Sanctions are then given depending on the severity of the violation. Although, according to the interviewees, to date all conflicts have been solved locally without the need for sanctions. In the case that a problem cannot be solved locally, the interviewees described how the customary leader would take the case to the police or government; highlighting the presence of a nested enterprise (Ostrom, 1999). Lastly, when interviewees were asked if they thought this system was functioning well, all of them said they thought it was. Overall, I got the impression that, although present, the structure for conflict resolution in the community forest is quite informal. Given that conflicts are solved through conversations between the violator and power holders, and sanctions granted using customary law and as a last resort. Ultimately, creating a conflict resolution process that is neither rapid nor lowcost. Therefore, the process reflects a critical institutionalist approach, that suggests conflicts are more often resolved in non-confrontational ways, based on what power holders perceive rather than a strict formal structure, and that sanctions are negotiable rather than fixed (Cleaver & Franks, 2005).

The management of the community forest

Village officials, particularly the village chief, are in charge of the community forest. However, the legal body responsible for the implementation and management of the protection forest is the LDPHD. The LDPHD consist of a group of 18 villagers that are appointed by the village chief. All interviewees stated that decisions are made

in open meetings with village officials, the LDPHD, and local people. From talking to LDPHD members I got the impression that they were genuinely interested in local people attending meetings, where one interviewee stated local people can help bring them new ideas. However, some interviewees also said that despite the fact that local people attend meetings, their contribution is limited to presenting thoughts and ideas. As a result, local people hardly speak up and the real power lies with just a few male village officials and LDPHD members. One interviewee who participated in the management of the community forest since 2001 was particularly critical of the power relations in village meetings. This interviewee argued that, in village meetings, just six people actually have power. These six men include the current and former village chiefs, the customary chief, and three respected elderly members of the LDPHD. Surprisingly, the interviewee did not list the head of the LDPHD, and I suspect this could be due to his young age. Additionally, the interviewee said that women in particular, do not have much power, and despite the fact that they attend meetings, do not speak up. Ultimately, his point was summed up when he said, "participation to these men means people go to the meetings, but do not give actual opinions or input".

Participation in the community forest

The data reveals that participatory practices undoubtedly do exist within the community forest. However, the nature and characteristics of participation practiced are diverse, with some elements of its design and management practices being more inclusive than others. This section will provide a reflection on participation in the community forest using Ostrom's (1999) design principles and Pretty's (1995) typology of citizen participation as guiding tools.

As discussed previously in the Theory Chapter of this research, Ostrom's (1999) design principles relate to participation in the sense that a robust and long enduring institution has a greater ability to adopt participatory practices. Table 10 lists Ostrom's (1999) design principles and describes their presence in the community forest. The table shows that all the design principles are revealed, at least to some extent, in the community forest. This demonstrates that, in general, the community forest is a robust institution that has a structure in place that caters to participatory practices.

However, Ostrom's (1999) rather economical approach to studying institutions largely overlooks the importance of power relations in affecting the way the forests

are managed and designed. Neglecting the role of power relations in studying design principles reduces the validity of Ostrom's (1999) model, especially considering the data points to power relations influencing the presence and operation of the design principles in the community forest. For instance, time and again it was found that a small local elite had the upper hand in management and design processes, and was hesitant to share its power; resulting in limited and superficial forms of local participation.

Moreover, as critical institutionalists like Cleaver (1999) point out, participation is rarely straightforward, and is likely influenced and shaped by existing social norms and inequalities. These factors, in turn, hamper the ability of participatory practices to be empowering for those participating (Cleaver, 1999). In the community forest, those that were involved with the initiative were mostly men of Dayak ethnicity. Although women and people of Malay descent were technically allowed to participate, and many did attend village meetings, their participation was limited. As power holders were mostly male and Dayak, they either kept positions of power among themselves, or favored people similar to them. Thus consciously or subconsciously favoring some and excluding others.

Table 10. Institutional characteristics of the community forest, West Kalimantan, Indonesia 2017

| Design Principle | •Prevalence in the Community Forest | |
|--|--|--|
| 1. Clearly Defined Boundaries | •Resource boundaries are clearly defined using signs, however, the distribution of these is scarce and not all people are aware of the forest boundaries. •Access rules and use-rules are made by the community using customary law and the input of resource users. Having said this, they are shaped mostly by power holders and are unclear to many respondents. | |
| 2. Congruence between Rules and Local Conditions | Yes. Rules consider local people's needs and the area's ecological conditions. | |
| 3. Collective-Choice Arrangements: can those impacted by rules contribute to modifying them? | •Technically, yes. However, in practice <i>power relations</i> affect who can participate and how. | |
| 4. Monitoring | Monitors consist of local people and report findings in village meetings. | |
| 5. Graduated Sanctions | •Yes | |
| 6. Conflict Resolution Mechanisms | •Yes | |
| 7. Minimal Recognition of Rights to Organize | Yes. Local decisions are legitimate and not overruled by external authorities like the government. | |
| 8. Nested Enterprises | The community forest exists in a larger network of government and NGOs. For instance, if a conflict cannot be resolved locally, it is passed on to government authorities. And, NGOs advise local people. | |

When applying Pretty's (1995) typology of participation, participation in the community forest does not exclusively fit one category, but instead is characterized by multiple. For instance, while participation in the community forest on the one hand is 'self-mobilized', 'manipulative' and 'passive' forms of local involvement also exist. Self-mobilized participation occurs in the sense that local people independently initiated the protection forest and are in charge of important decisions pertaining to the community forest. However, the analysis of decision-making in village meetings, revealed 'manipulative' and 'passive' forms of local involvement. Manipulative participation occurs when people are seemingly included in an initiative, for instance by attending village meetings or being part of boards, yet they are given no power to make meaningful contributions (Pretty, 1995). Meanwhile, passive participation exists in a situation where there is only one-way communication from power holders to citizens (Pretty, 1995). In the case of the community forest, both of these involvement

types surfaced in interviewee's accounts of village meetings, in which there was mention of a small group of local men that held all the power, and thereby shaped the outcomes of village meetings the most. Moreover, the local community was essentially consulted about the protection forest through one-way information sharing in meetings. Although those local people that attend meetings are allowed to voice their opinions and give feedback, most interviewees said that this rarely happens. For instance, one interviewee blatantly said, "the participation of local people basically means the consultation of people".

4.3.2. Local participation in the establishment, design and management of the state forest

Following the analysis of the community forest, the state forest is explored using a similar structure. Once again, the focus is on revealing the design and management of the state forest, and on discussing the extent to which these are inclusive of local people.

The establishment of the state forest

The state forest was first established in the year 2000 when the Ministry of Environment and Forestry (MoEF) located in Jakarta defined the area as a protection forest. The MoEF is ultimately in charge of the protection forest and has the upper hand in decision-making. However, it appointed the District Forestry Department and later the provincial level Forestry Department with the management responsibilities. Hence, at present, the state forest's management is very centralized, with no active officials working on the ground. One interviewee was particularly critical of this centralized management system, stating the distance between the implementers and the state forest makes governing the forest increasingly difficult.

In regards to local involvement during the establishment of the protection forest, the interviewees revealed that local people were only consulted once, namely in the process of creating the boundaries of the protection forest. However, when probed about the specificities of this collaboration, the interviewees did not know much. After a moment of silence, one interviewee continued by saying that direct contact with the government did not actually happen; instead the consultation of local people was done through NGOs like International Animal Rescue (IAR) and Indonesian Forest and Climate Support (IFACS). These ambiguous answers raise

questions about any actual involvement of local people in creating the boundaries at all, let alone in other issues related to the establishment of the protection forest. Survey data points to further non-participation in the establishment process, where just 1 of the 30 local people surveyed said they had been involved in this process, and this person happened to be the village chief.

Regarding the resource boundaries, the interviewed implementers said the boundaries of the protection forest are marked using signs, and that local people are informed about the boundaries through consultation. However, when local people were asked if they know where the protection forest boundaries are, only 10% (3 out of 30) said they did. This highlights poor communication between implementers and local people, and raises questions about the extent to which local people were actually consulted. Moreover, despite having driven past large areas of the protection forest boundaries during my time in the field, I did not come across any signs.

The design and management of the state forest

The Gunung Tarak protection forest is owned by the state and managed by state authorities, which means that the access and use rules are devised based on the rules and regulations presented in the Basic Forestry Law of 1967. These laws stipulate that it is illegal for local people to extract timber products from the protection forest, and local people are only allowed to extract non-timber forest products (NTFP) if they submit a request to the MoEF and get a certificate that permits them to do so (Fox, 1993). When asked if the local people had this certificate, the interviewees said they did not, suggesting that all resource extraction from the state forest, at present, is technically 'illegal'. This underlines how the access rules considerably limit the resources local people can extract from the state forest. This is worrying as survey data (presented in Table 4 in section 4.1) points to the fact that local people rely on the state forest to obtain a variety of products for subsistence.

When asked if local people are informed about the rules and regulations, interviewees stated they are, but did not specify in what way. However, considering the earlier revelation that the Forestry Department did not actually consult communities directly about the establishment of the protection forest, the extent to which communities are successfully informed can be questioned. Moreover, as one interviewee stated, it is difficult to disperse information when state officials are located far from the state forest in the District and Province offices; and therefore

local people may not always be clear on the rules of the protection forest. This is supported by survey data, which outlines how just 7% (2 out of 30) of respondents said that they had been informed about the rules of the state forest. Moreover, those respondents, who said they had been informed, were informed by NGOs rather than the state. Despite access rules largely prohibiting resource extraction from the state forest, data shows that local people and outside companies still extract timber (illegally) from the state forest. Therefore, the ways that agents (local people and outsiders) interact with the state forest oppose access rules, and institutional failures have led to the 'rules-in-use' mirroring an 'open access for all' mentality.

Relating to the monitoring of the protection forest, according to one interviewee, monitoring occurs once or twice a year and is conducted by the Province Forestry Department. Monitoring entails forestry officials going to areas in the protection forest that they can reach by motorbike and checking the forest condition there. Upon returning to their offices, they write reports, which the interviewees are not privy to and could not read after completion. The lack of regular monitoring and the fact that there are no real measures in place to ensure the accountability of monitors means that monitoring is not very effective and rather conducted in vain, if at all.

Lastly, in response to questions regarding the mechanisms in place to deal with conflicts, one of the interviewees said these do not exist. However, another interviewee described how conflict situations are dealt with locally at first and if this does not solve the problem, the local police are involved. Furthermore, regarding potential sanctions or punishments, both interviewees' accounts point to the fact that there is no structure in place for sanctioning violators. This is the case as there are no implementers on the ground (instead, they are in their offices in Ketapang and Pontianak), and as one interviewee stated, "...the police do not care about regulating the Gunung Tarak forest". The lack of adequate conflict resolution and sanctioning mechanisms has meant that when agents disobey access rules they experience no consequences. These institutional failures ultimately jeopardize the long-term sustainability of the forests on which people rely, and the state aims of forest protection.

As mentioned previously, the MoEF in Jakarta is in charge of all the planning and decision-making related to the state forest. However, when asked if local people are ever involved in planning and decision-making, interviewees said they were,

given that some important decisions were made (such as the establishment of forest boundaries) in collaboration. However, as the interview went on it became apparent that such collaboration, in reality, entailed that the government presents their plans to village officials. This highlights a 'passive' style of participation characterized by one-way communication from the state to local people. Moreover, when asked if local people could give feedback, the interviewees said they could but until now this has not happened. Furthermore, not one local person holds a seat in a management body. Overall, local people are grossly underrepresented in all processes of the state forests' management. However it must be noted that, generally, interviewees' answers regarding the management of the state forest were ambiguous; it was not uncommon for participants to provide conflicting answers. This could be due to the fact that the management processes are not clearly established to begin with, or rather that communication from Jakarta to the Province and District level is ineffective.

Participation in the state forest

The analysis of the state forest shows that limited local involvement occurs. In fact, it is questionable whether local people's interests are considered at all in the establishment, design, and management of the forest. As can be gathered from Table 11, the state forest exhibits just a few of Ostrom's (1999) design principles, and those that it displays are not practiced entirely according to mandate. For instance, while monitoring does occur, it is done infrequently and monitors are not accountable to local people. The shortcomings in the design and management of the protection forest shed light on numerous institutional failures, which in turn affect the lack of robustness and local involvement in the state forest.

Despite the state forest largely showing no participation, there are attempts at 'passive participation'. As implementers describe, every now and then, local people are informed through one-way communication. Yet, because local people do not get the chance to give feedback, in my opinion, this still reflects non-participation. Despite there being non-participation in the state forest, survey data indicates that all but one of the participants said they desire to get involved with the state forest in the future. The strong desire of local people to get involved highlights the potential for more local involvement, and that the lack of it is due to exclusion rather than people's own agency.

Table 11. Institutional characteristics of the state forest, West Kalimantan, Indonesia 2017

| Design Principle | •Prevalence in the State Forest |
|--|--|
| 1. Clearly Defined Boundaries | Resource boundaries have been defined using signs, however, the distribution of these is scarce. Access rules reflect government law, but are not clear to local peope. Use-rules do not exist, landscape is treated as free access to all. |
| 2. Congruence between Rules and Local Conditions | Rules are not in congruence with local conditions as they neglect local people's reliance on the forests. While there are appropriation rules, there exist no provision rules. |
| 3. Collective-Choice Arrangements: can those impacted by rules contribute to modifying them? | These were absent. Local people have no say, and all the power is with the state forestry departments. |
| 4. Monitoring | Monitoring exists though happens infrequently and is conducted by government officials who are not accountable to local people and their environment. |
| 5. Graduated Sanctions | •There are sanctions but because of infrequent monitoring, violators are hardly ever found, and experience no consequences. |
| 6. Conflict Resolution Mechanisms | •No |
| 7. Minimal Recognition of Rights to Organize | Implementers say this exists, though local people's models are subordinate to state law. |
| 8. Nested Enterprises | •No. The government is the only body involved with the state forest. |

4.3.3. Summary of findings

Overall, the analysis of the community forest revealed that the community forest institution is robust and has the right foundation for participatory practices. Moreover, participation is present in the community forest, not least because the effort is a product of local people's own initiative. However, when looking deeper, it becomes apparent that not all types of local involvement are genuine. This is largely the outcome of a small local elite that controls the community forest and is hesitant to share power. Thus, ultimately the community forest is a long enduring social institution that hosts' some degree of participatory practices in its design and management, however, the characteristics of participation practiced vary in their soundness. The state forest, on the other hand, is an institutional failure that lacks robustness in various elements of its design and management. The distance between

the implementers and state forest has led to general confusions across the board and the ill implementation of on-the-ground practices. Moreover, there exists no genuine participation in the state forest. Apart from one or two cases of 'passive participation', the degree of citizen involvement is minimal to non-existent. The lack of local involvement is influenced by the poor design of the protection forest, outlining how a robust design is quintessential to fostering effective participation in institutions.

4.4. A comparison of local people's interaction with two different forest tenure regimes

Apart from looking at local people's perceptions towards and interactions with the protection forests, this research has been shedding light on the way the community and state forests are managed and designed, and the effect this has had on those people most affected by them. In some instances there were no observable differences between the responses of participants living in the SFA and the CFA, and at other times, differences were quite significant. It is the intent of this section to provide an overview of local people's interaction with the protection forests by merging data presented in previous sections, and by looking specifically at notable differences between the two tenure regimes, as well as the implications of these.

The people living around the community and state protection forests interact with the forests in a variety of ways, seeing as the forests represent an inherent part of people's livelihood. Most evidently, as presented in section 4.1 on livelihoods, participants rely on the forests for some of their food consumption, building materials, income, and to collect natural remedies for healing. These dependencies exist in both the community forest and the state forest areas. However, there are differences in rights of access to the forests, which impede respondent's ability to use the forests, particularly in the state forest. For instance, while forest use is permitted in the community forest, timber extraction in the state forest is illegal, and the gathering of NTFPs is only allowed if citizens get permission from the government. Although the rules in the state forest limit forest access in a formal legal sense, and because rules are not being properly enforced, people in the SFA still extract forest resources. Hence, in the state forest, the rules and regulations do not have real effect on altering people's interaction with the state forest area. Moreover, while the rules in the

community forest are adapted to local people's needs, this is not the case in the state forest. Although one might initially assume the state forest's authority approach of limiting resource extraction would result in better forest conditions overall, the opposite was found to be true. Data of perceived forest condition reported by local people showed that the state forest conditions are getting worse while the community forest conditions are improving. Therefore, although the rules regarding the state forest intend to protect the forests, in reality, due to bad communication from the state to local people and poor law enforcement it has in fact resulted in a situation where people and companies consciously or subconsciously neglect rules and approach the state forest as 'open access for all'.

When comparing those people living in the community and state forest areas, the household data do reveal some differences in their reliance on the forests. People in the CFA were generally more reliant on the forests than people in the SFA. The lower reliance of people in the SFA could be the result of the stricter rules and regulations regarding resource use in the state forest. However, considering that the vast majority of people in the SFA said they were not familiar with the rules, and the fact that respondents still extract resources from the forests despite it being illegal; this difference is more likely due to the different livelihood strategies measured. Considering people in the SFA are more reliant on cash rather than subsistence income. Yet, these differences could also be attributed to forest quality and the forest resources available. Apart from using the forests to obtain forest products, both the respondents in the CFA and SFA said they use the forests for recreation and as a place of worship. In the community forest, there are structures in place, like paths and even a religious shrine, which cater to these uses, while this is not the case in the state forest. Overall, the ways that people interact with, perceive, and value the forests are generally the same across the CFA and SFA. However, the way that the community and state forests cater to these uses/needs are completely different.

The analysis of participation in the establishment, design, and management of the protection efforts gave further insight into the ways local people are considered in the community and state forest, and the way they interact with them. The data shows that in the community forest local people are very much part of these processes, although local power holders do have the upper hand in decisions and are selective in sharing their power. Nevertheless, at least one third (36.7%) of the respondents living in the CFA said they had been involved with the community forest. In contrast, in the

state forest local people were not part of the effort at all, being included merely through consultations that involve one-way information sharing from the government to the people. Moreover, when survey respondents in the SFA were asked if they had participated, all but one respondent said they had not. Nevertheless, across both the community and state forests, respondents stated being pleased that the efforts exist, recognizing the role the protection efforts have in conserving the environment on which they rely. In relation to the SFA, this finding is particularly interesting, as 80% of people in the SFA said the forest condition had worsened since the establishment of the state forest. Therefore, despite recognizing a decline in the forest conditions since the establishment of the state forest, people were still glad the initiative exists, and moreover, they were interested in being involved with the protection forest in the future. These findings imply that in the state forest, there is no participation and forest conditions are worsening; yet participants remain incredibly eager to participate. However, when considering this, one must note that local people's support towards the state forest is likely triggered by necessity rather than choice, as the forests on which they rely are rapidly degrading. On the other hand, in the community forest, where participation exists, forest conditions are improving, but the desire amongst people to participate in the future is smaller than in the SFA. Hence, in the case of the community forest, there are respondents that practice their agency through nonparticipation, as they simply do not desire to get involved in the future; challenging the popular notion in the PD discourse that participation is always desired by local people and beneficiary to them (see Cleaver, 1999; Vedeld, 2017). Instead, the willingness of people to participate may in fact be influenced by the state of the forest condition and the need for their participation. In the case of this research, the presence of bad forest condition translated into a greater desire amongst local people to participate, and vice versa.

Ultimately, data indicates significant differences in design aspects of the community and state forest. The nature of these institutions, and the principles that shape their functioning, undoubtedly influence people's ability to interact with the forests. For instance, while the community forest incorporated almost all of Ostrom's (1999) design principles for robust and long enduring institutions, the state forest met almost none. In fact, when studying these processes in the state forest it became apparent that, among the implementers of the state forest, there was significant confusion about the on-the-ground management and what it entailed. Furthermore, in

many cases it became clear that practices were simply not robust or even established. For instance, despite there being rules and regulations in the state forest, there are no monitors on the ground to enforce these rules. The apparent differences in design and management strategies between the CFA and SFA may indicate a correlation between the robustness of the forest protection effort and the extent of participation. In the more robust and participatory community forest, there was greater and more genuine participation, whereas the opposite is true for the state forest. Therefore, the varying levels of citizen participation between the community and state forests may in fact impact the effectiveness of forest conservation.

Overall, both participants in the community and state forest areas interact with the forests in a multitude of ways, value the forests greatly, and depend on them significantly. The community forest was found to be more robust and well functioning than the state forest, more inclusive of local people, and better at meeting its aims of forest protection. On the other hand, the state forest lacks a robust and well-executed design and management framework, does not engage with local communities living around the protection forest meaningfully, and has worsening forest conditions. Although these differences between the community and state forests are notable, in many regards local people's interactions with the community and state forests also resemble each other. This resemblance in interaction is the outcome of the similar livelihood activities and values measured.

5. CONCLUSION

In line with research objective 1, the livelihood analysis showed that the communities' studied had low levels of human capital and cash income, yet high levels of natural capital, suggesting that people living around these efforts are relatively poor, and that they depend highly on the environment to secure their livelihoods. While the majority of participants work in the agricultural sector, it is not uncommon for people to have side-jobs. Most people cultivate some of their food for consumption themselves and rely on the forests for a range of forest products. Hence, the forest dependence is high across the sample, where low-income earners were found to rely the most on the forests. Considering this, safeguarding the forests and inclusive management practices become of paramount importance to sustaining local people's livelihood practices.

Using Harmon and Putney's (2003) framework for analyzing "intangible values", the values and perceptions of people living in the community and state forest areas were studied. Data revealed that respondents value the forests greatly, and ascribe both educational, therapeutic, spiritual, aesthetic, and existence values to them. Further, all of the participants were satisfied that the protection forests exist, and the vast majority of participants mentioned only benefits when asked about pro's and cons. With the most common benefit mentioned being the role of the protection forest in conserving valuable ecosystem services, and one common disadvantage mentioned was the lack of regulation which may encourage unsustainable resource use. Even in the case of the SFA where forest conditions were perceived to be worsening since the establishment of the state forest, local people supported the initiative and showed a willingness to get involved. This indicates how local people are particularly interested in their conservation because they rely on the forests and value them.

Concerning the second objective, the analysis found that the community forest largely adheres to Ostrom's (1999) framework for robust and long-enduring institutions, and renders an environment conducive to participation. Whereas, the state forest only vaguely incorporates some of Ostrom's (1999) design principles, and hosts no participation. Although not completely perfect, the community forest has a design and management structure in place that functions fairly robustly, is operated by resource users, and has led to improving forest conditions. Yet, despite local people

having the opportunity to participate in the community forest, participation is not always genuine as there is a small local elite that largely controls management processes and who is hesitant to share power. In contrast to the community forest, forestry officials in the District and Province office (located 65km and 250km away) run the state forest. And while access rules have been clearly developed on paper, the distance between state implementers and the forest has led to general failures in their implementation. This has created on the ground realities that oppose access rules and have led to institutional failures that hamper the durability of the effort, its ability to protect the forests, and the possibility for local involvement. The degree to which local people were included in the establishment of the protection forests is in line with the above trends; where local people themselves initiated the community forest, highlighting self-mobilizing participation, whereas they were largely excluded from the establishment of the state forest. However, here it must be noted that although theory has proven a helpful tool throughout this research, especially in simplifying inherently complex topics and assuming their commensurability, it is this same simplicity for which they can be critiqued. Further research could therefore consider studying these topics from a more critical stance, potentially using ethnographic methods to revise important dimensions such as power, gender, and ethnicity in regards to forest protection in more depth.

Overall, there are apparent differences in the institutional soundness, degree to which local people are involved, and general interaction of local people with the community and state forests. Notwithstanding its informal nature and being largely based on local systems of governance, the community forest management structure encompasses a range of design principles that makes it sustainable and inclusive of local people. Although local participation in the community forest has lacked genuineness at times, occasionally being passive and manipulative in nature, the protection effort undeniably nurtures a strong relationship with its resource users. In contrast, the state forest basically fails in its implementation of design principles, and it is far removed from on-the-ground realities and resource users. Although the access rules attempt to limit forest degradation, due to failures in implementation and poor law enforcement, the effect is the opposite; and deforestation and bad forest practices are still commonplace in the state forest. Therefore, I conclude, that if the state forest wants to improve its forest condition, things have to change. Even though the community forest is not a best practice example, it does highlight the potential for

local involvement in forest protection in the region. Moving forward, there is a need for further studies exploring ways in which forest protection efforts in Indonesia can become more robust, while at the same time nurturing community involvement and ensuring local interests are represented and local knowledge applied.

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7. APPENDIX

7.1. Questionnaire

This questionnaire is part of a study on the perceptions of local people towards and participatory nature of two forest protection efforts in the Gunung Palung Landscape. The data obtained from this questionnaire will be used in support of writing my master thesis at the Norwegian University of Life Sciences (NMBU).

Part A: Participant Information and Livelihood

| 1. Gender | | | | |
|---------------|---------|---------------------------|-----------------|----------------|
| Male | Fema | le | | |
| 2. Age | | | | |
| 3. Ethnicity | | | | |
| 4. Religion | | | | |
| | | ou lived in this village' | | |
| 6. Education | | Num | ber of Years | |
| 6b. Highest l | | | <i>y</i> | |
| _ | ool (a) | Middle School (b) | High School (c) | University (d) |

| 7. Occupation | | | | | |
|---|--|--|--|--|-----------------------------|
| Farmer (a) Trader (b) Plantation Worker (c) Government Official (d) Army/Police (e) | | | | | |
| No Occupation (f) | | | | | |
| Other | | | | | |
| | | | | | |
| | | | | | 8. Average income per month |
| Rp. <500.000 (a) Rp. 500.000 - Rp. 1.000.000 (b) Rp. 1.000.000 - Rp 1.500.000 (c) | | | | | |
| $Rp.\ 1.500.000 - Rp\ 2.000.000\ (d)\ Rp\ 2.000.000 - 3.000.000\ (d)\ Rp. \ge 3.000.000\ (e)$ | | | | | |
| 8b. Do you have any other source of income aside from your job? | | | | | |
| 8c. If yes, what? | | | | | |
| | | | | | |
| | | | | | |
| 9. Area of owned land/plantation: | | | | | |
| a. Rice field:ha | | | | | |
| b. Dry rice:ha | | | | | |
| c. Garden:ha | | | | | |
| d. Other type: | | | | | |
| 10. Types of monoculture plantation cultivated most in your village (can be more than | | | | | |
| one): | | | | | |
| Rubber (a) Cocoa (b) Oil palm plantation (c) Coconut (d) Fruit (e) | | | | | |
| Other | | | | | |
| 11. Types of food crop cultivated by you or your community (can be more than one) | | | | | |
| Rice field (a) Dry rice (b) Corn (c) Beans/soy (d) Vegetables (e) | | | | | |
| Other | | | | | |

12. Roughly how much of the food you eat have you or your family grown yourselves?

0-20% (a) 20-40% (b) 40-60% (c) 60-80% (d) 80-100% (e)

13. I am dependent on the forests for food

Yes No Don't know

13b. If yes, roughly how much percent (%) of your food intake comes from the forests?

Around 0-20% (a) Around 20-40% (b) Around 40-60% (c) Around 60-80% (d) Around 80-100% (e)

14. I am dependent on the forest for building materials

Yes No Don't know

14b. If yes, roughly how much percent (%) of your building materials comes from the forests?

Around 0-20% (a) Around 20-40% (b) Around 40-60% (c) Around 60-80% (d) Around 80-100% (e)

15. I am dependent on forest products for some or all of my income

Yes No Don't know

15b. If yes, roughly how much percent (%) do forest products account for my overall income?

Around 0-20% (a) Around 20-40% (b) Around 40-60% (c) Around 60-80% (d) Around 80-100% (e)

| 16. I benefit from the development of palm oil plantations in Laman Satong |
|--|
| Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e) |
| 16b. If agree, how? If disagree, why? |
| |
| |

17. My standard of living has improved with the development of more palm oil plantations in Laman Satong

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

Part B: Background and History

18. To what extent were you involved in the establishment of the Laman Satong protection forest?

Very involved (a) Involved (b) Don't know (c) Slightly involved (d) Not involved (e)

19. Did you have to move during the establishment of the protection forest?

Yes No Don't know

20. Since its establishment, have you been involved in the Laman Satong protection forest?

Yes No Don't know

20b. If yes, what activity have you been involved in? (Can be more than one)

Decision-making/Rule-making (a) Monitoring the protected area (b) Other

21. Do you know where the boundaries of the protection forest are?

Yes No Don't know

22. I have been informed about the rules of the protection forest, how it can be used, and by who

Yes No Don't know

22b. If you answered yes, do you think these rules are clear?

Yes No Don't know

23. There are sanctions in place for people who do not follow the rules of the forest protection effort

Yes No Don't know

| 23b. If yes, do you think these sanctions are fair? | | | | |
|--|--|--|--|--|
| Yes No Don't know | | | | |
| | | | | |
| 24. Local people can influence the way the Laman Satong protection forest is | | | | |
| managed | | | | |
| Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e) | | | | |
| | | | | |
| 25. How is the general condition of the Laman Satong protection forest as compared | | | | |
| to before the area was a protection area? | | | | |
| | | | | |
| Better (a) The same (b) Don't know (c) A little worse (d) Significantly worse (e) | | | | |
| 25b. Why do you think this is? | | | | |
| 250. Wily do you tillik tills is: | | | | |
| | | | | |
| | | | | |
| | | | | |
| 26. How much is traditional (adat) knowledge respected/used in your village? | | | | |
| | | | | |
| Very much (a) Much (b) Don't know (c) A little (d) Not at all (e) | | | | |
| 27. How much do you respect/use traditional (adat) knowledge? | | | | |
| 27. How much do you respect use traditional (adat) line wieage. | | | | |
| Very much (a) Much (b) Don't know (c) A little (d) Not at all (e) | | | | |
| | | | | |
| 28. Are you aware of the benefits of conserving Laman Satong's forests? | | | | |
| Yes No Don't know | | | | |
| Yes No Don't know | | | | |
| Part C: Values and Perceptions | | | | |
| | | | | |

29. Protecting the environment and animals is more valuable than the benefits people get from extracting and using forest products in this area

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

30. Nature and animals are only valuable because of their use to humans

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

31. People should be able to extract forest resources from the Laman Satong protection forest for their own use or for trade

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

- 32. It is important to protect the environment because it provides valuable ecosystem services
- 33. The Laman Satong protection forest is a place where people can learn about the environment by interacting with nature

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

34. Natural areas, like the Laman Satong protection forest, are valuable locations for scientific research to take place

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

35. How important is culture and/or traditional activities for you?

Very important (a) Important (b) Don't know (c) Somewhat important (d) Not important (e)

36. The protection forests of Laman Satong are a place where culture and/or traditional activities are practiced

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

37. The protection forests of Laman Satong should be conserved because they hold immense cultural value

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

38. How important are spiritual practices for you?

Very important (a) Important (b) Don't know (c) Somewhat important (d) Not important (e)

39. Are there areas in the Laman Satong protection forest that have spiritual value for you?

Yes No Don't know

39b. If yes, does the Laman Satong protection forest give you access to them?

Yes No Don't know

40. The environment of the Laman Satong protection forest has the ability to improve people's sense of physical and emotional well-being

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

41. Protecting the forests in Laman Satong is important to protect resources that provide natural remedies for healing

Very important (a) Important (b) Don't know (c) Somewhat important (d) Not important (e)

42. I am satisfied that the Laman Satong protection forest exists in this area to protect the environment

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

43. The Laman Satong protection forest conserves an environment of immense natural beauty

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

44. I believe local people are capable of managing the protection forests of Laman Satong

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

45. Local people should be more involved in managing the protection forest of Laman Satong

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

Part D: Degree of Local Support

46. What do you perceive as the main benefits and/or disadvantages of the Laman Satong protection forest for you or your community?

| Benefits | Disadvantages |
|----------|---------------|
| | |
| | |
| | |
| | |
| | |

47. I think it is necessary to conserve the environment and its social and environmental value through the Laman Satong protection forest

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

48. Because of the Laman Satong protection forest the protection of the environment in the area has improved

Strongly Agree (a) Agree (b) Don't know (c) Disagree (d) Strongly disagree (e)

49. Have you ever visited the Laman Satong protection forest?

Yes No Don't know

49b. If yes, what was the purpose of your visit?

50. Are you or have you been involved with the Laman Satong protection forest in any way?

Yes No Don't know

50b. If not, do you want to get involved with the Laman Satong protection forest in the future?

Yes No Don't know

7.2. Interview Topic Guide

Section 1. Background

- 1. What is your role in the community/state forest?
- 2. What is the history of the community/state protection forest, when and by who was it established?
 - a. What were the reasons for its establishment?
 - b. To what extent were local people involved in the planning and establishment of the protection forest?
- 3. Who holds the authority in the community/state forest?
 - a. Who is authorized to use the landscape and how?

Section 2. Management and Participation

- 4. What are the management objectives of the community/state protection forest?
- 5. Has local knowledge been used in shaping management?
 - a. Is local knowledge respected?
- 6. Who has the right to participate in decision-making?
 - a. Are local people members of decision-making bodies?
 - i. At what level do they make decisions?
- 7. Who implements decisions?
 - a. Are local people employed in the implementation of plans?
 - i. Do you think this is functioning well?
- 8. Are special efforts made to consult local communities?
 - a. Are citizens informed about plans/decisions that affect them?
 - i. How are they informed?

- b. Do citizens get the chance to give feedback?
- 9. Are local citizens consulted for their local knowledge, thoughts, perceptions or opinions?
 - a. If so, what is done with this information once gathered?

Section 3. Institutional characteristics

- 10. Are the protection forest boundaries clearly defined?
 - a. Are boundaries of those authorized to use it clearly defined?
- 11. Do there exist specific rules that regulate resource extraction/use by local people?
 - a. Do you think these rules are functioning well?
- 12. Can those people affected by the rules of the protection forest participate in changing them?
- 13. Are there measures for monitoring the protection forest conditions?
 - a. Are monitors accountable to local people or do they consist of local people themselves?
- 14. Are there sanctions in place for those people who violate rules?
 - a. Are these sanctions graduated?
 - b. Do you perceive these to be reasonable?
- 15. Are there mechanisms in place to deal with conflict? If so, please describe these mechanisms.
- 16. Do power holders interfere when local people develop their own institutions in relation to the forest protection effort?
 - a. Do power holders and/or the government view such institutions developed by local people as legitimate?

Section 4. Summing up

- 17. Overall, how inclusive of local people do you think the community/state forest is?
- 18. Do you believe the community/state forest is functioning effectively and achieving its objectives?

