

Forest Tenure and Local Well-being: Evidence from Indonesia

Monica Di Gregorio¹

July 2008

Paper prepared for the IASC 12th Biennial Conference

Governing Shared Resources: Connecting Local Experience to Global Challenges

July 14-18, 2008, Cheltenham, England

The fieldwork for this study has been undertaken during three visits in Indonesia between July 2005 and May 2007. Resources and support for the fieldwork were provided by the London School of Economics, the Central Research Fund of the University of London, the CAPRI (IFPRI) PhD Fellowship and the Center for International Forestry Research (CIFOR).

¹ London School of Economics and Political Science, Development Studies Institute, PhD Candidate

ABSTRACT

Indonesia possesses one of the most extensive areas of primary tropical forest. At the same time it has the highest deforestation rate worldwide. The typical pattern of economic development in the forest margins in Indonesia translates into logging exploitation first, followed by plantation development, with little concern about the needs of local communities. To a smaller degree conservation strategies are also pursued, but they are mostly geared toward global needs and objectives.

The constellation of property rights arrangements in the forest margins, with a mix of overlapping, uncertain, changing claims to land and resources, has a profound impact on the use and management of forests and on the well-being of people living in the forest margins.

This study is based on research conducted in 2006-2007 in 10 villages in two locations of the outer Islands in Indonesia. The two locations differ in term of forest cover allowing to compare outcomes in forest rich versus forest poor districts. Data used in this study refer to community level and household level information on local institutions, community and households related to property rights to forest resources, dependence on forest resources, local rules and regulations on forest use and were part of a more extensive survey work.

The aim of the study is to assess how conflicting legal frameworks and resulting actual property rights relations, affect forest management and well-being of local villagers, in two areas that present differing forest conditions.

Findings bring to light considerable differences between pre-logging and post-logging conditions in relations to property rights and well-being. The study also highlights that local needs are not always in line with both national policy guidelines as well as global conservation concerns. Although based on local level data, the results of the study are interpreted in the light of national policy processes and future economic development goals and strategies of the Indonesian government. Some important policy implications are drawn in particular with regard to statutory property rights arrangements in the forest margins in Indonesia and the role that these play in excluding local people from contributing and fully participating in national development strategies.

Keyword: Forest, Indonesia, property rights, legal pluralism, well-being

(I) INTRODUCTION

Indonesia possesses one of the most extensive areas of primary tropical forest. At the same time it has the highest deforestation rate worldwide. The typical pattern of economic development in the forest margins in Indonesia translates into logging exploitation first, followed by plantation development, with little concern about the needs of local communities. To a smaller degree conservation strategies are also pursued, but they are mostly geared toward global needs and objectives.

The constellation of property rights arrangements in the forest margins, with a mix of overlapping, uncertain, changing claims to land and resources, has a profound impact on the use and management of forests and on the well-being of people living in the forest margins. As in many other rural landscapes in the developing world, normative statutory property rights frameworks often do not reflect locally exercised rights. In particular, conflicting relationship between statutory and customary normative property rights arrangements affect how property rights regimes are expected to developed in the future, tend to lower security of tenure and are likely to affect both current and future livelihoods of villagers living in the forest margins. While the formal responsibility for forest management largely resides within the authority and responsibility of the Forestry Department in Indonesia, on the ground local property rights arrangements – only informally recognized by the state – largely determine the structure and the rules managing the landscape in the forest margins, and are largely based on local traditional heritage, although both systems influence each other.

Both, the constellation of statutory and locally exercised property to manage forest resources will ultimately affect well-being of local communities. At the local level property rights to forest resources serve a 5 different functions that all affect well-being of local users: a political, a social continuity, a subsistence, an economic, and a social security function.

The paper is organized as follows. First, I present shortly the main theoretical aspects of the study which focuses on the plural aspect of legal systems defining property rights arrangements. Second, I present the main features of statutory forest tenure and local customary (*adat*) forest tenure regimes, which illustrates how diverse normative property rights regimes to forest resources overlap. I then present evidence from 10 local communities on local institutions and actual exercised property rights. And finally, I present evidence of how these conditions differentially impact well-being of villagers in forest rich versus forest poor areas.

(II) THEORETICAL BACKGROUND FOR THE STUDY

(a) Legal Pluralism

Identified as the condition where ‘two of more legal systems coexist in the same social field’ (Griffiths 1986), the concept of legal pluralism can help us understand and analyse the dynamics of overlapping claims to natural resources.

As a response to legal centralization, legal pluralism does not see the state as the only authority which emanates regulations and possesses a legal system. First highlighted through legal anthropological studies, it was first developed by studies on colonial contexts. Researchers started to recognize that colonial law was introduced and often imposed on societies, which already possessed their own legal order. Instead of replacing an existing legal order this process created a condition of multiple legal orders coexisting (Merry 1988b; Moore 1986; Pospisil 1971). Merry (Merry 1988b) labels this approach as classical legal pluralism and indicates its main contributions to the understanding of legal

systems in societies through:

- the analysis of how different legal orders based on conceptually different structures interact
- the historical analysis of customary legal systems
- the analysis of the dialectic struggle to influence social behaviour of different legal systems.

Classical approaches to legal pluralism assert that co-existing multiple normative systems are embedded in relations of unequal power.

Among other norms, legal systems define and protect property rights arrangements in societies (Meinzen-Dick and Pradhan 2002). And different legal systems are likely to contain distinct definitions and structures of property rights arrangements (Okoth-Ogendo 1979). These considerations are particularly relevant for the study of forest tenure in Indonesia. First, because Indonesia's forest tenure structure is influenced by its colonial past. Second, because statutory and customary legal order coexist (Benda-Beckmann von and Benda-Beckmann von 2004), but often state rules have been imposed with the aim to reduce influence of local normative systems, bringing in the forefront the conflicting relationships between these two tenure systems.

Later studies of legal pluralism, in part criticized earlier work (Griffiths 1986) for seeing state law as superior to other normative systems, and for distinguishing only between statutory and customary law. In much more nuanced ways, these studies pointed to a much wider variety of normative systems as coexisting in any social field (Merry 1988b). Thus, any form of organization has its normative framework which can be considered a legal order. Moore referred to these as semi-autonomous fields (Moore 1973). According to Moor (ibid.: 720):

"The semi-autonomous social field has rule-making capacities, and the means to induce or coerce compliance, but it is simultaneously set in a larger social matrix which can and does affect and invade it, sometimes at the invitation of persons inside it, sometimes at its own instance."

Thus, the advantages of new legal pluralism approaches based on the notion of social fields sees diverse legal systems as (Merry 1988b):

- being independent from specific social groups
- being indifferent to claims of superiority of one system on the other or on the direction of influence

Consequently, new legal pluralism approaches highlight that legal system penetrate social fields but do not dominate them, which implies more space for resistance and autonomy of these legal systems. Through this new approach the work on legal pluralism was consequently extended from colonial realities to Western societies and any 'complex' society.

Classical and new legal pluralism traditions can be joined to depict situations where both dominance as well as more diverse and nuanced pluralist aspects might coexist (Merry 1988a) (Merry 1988b).

In this study, I draw from legal pluralism theory to explain forest tenure systems in two locations Indonesia. On the one hand, and in line with the classical tradition, I look at property rights arrangements between statutory normative system and customary systems as distinct and often in conflict. On the other hand, in line the new legal pluralism traditions, I present evidence that other social organizations, in my case non-governmental

organizations (NGO), also play a role in influencing normative as well as exercised rights to forest resources.

(b) Property Rights to Forest

Property rights can be defined “as claims to use or control resources by an individual or group that are recognized as legitimate by a larger collectivity and that are protected through law” (Wieber 1992 cited in Meinzen-Dick and Pradhan 2002).

Von Benda-Beckmann (1999) distinguishes four elements in property relationships: First of all the social entities holding the property relationships, second the object of the property relationship, third the relationship between holder and objects and the temporal dimension of property relations.

Rightholders may be individuals, families, lineages, villages, the state, businesses, or other collective entities. One fundamental difference which is likely to impinge on well-being is that in statutory and customary legal systems rights to forest resources pertain to different actors. Within the Indonesian statutory legal framework the ‘state’ is entrusted with managing forest resources for the well-being of its people, proposing a role of the state as caretaker of its people². In customary tenure system, resource rights are loosely linked to territorial areas, refer to actual use patterns, and are usually invested in lineages.

The object of property relationship might be both material and immaterial objects. Culture and ideologies affect conceptualization of property objects. In the case of natural resources for example different populations, cultures and organizations have different ways to associate social organizations, space and environment.

On the one hand, the statutory normative categories of forestland in Indonesia are distinguished according to function ascribed to land in part independently from actual vegetation (Benda-Beckmann von and Benda-Beckmann von 2004; Peluso 1992). State defined normative functions of forest reflect a specific state ideology about what the forest environment is for. Two main functional categories are present in statutory design of forest tenure, the first is economic and the second ecological. The economic development function given to forest areas covered with primary forest is mainly based on timber exploitation, and applies to the normative category of ‘production forest’. The second is an ecological conservation function, which applies mainly to categories of ‘protection forests’ and ‘conservation forests’. State ecological ideology focuses on maintenance of environmental services and biodiversity. Since the Suharto regime economic objectives have been prioritized through a development paradigm based on natural resource exploitation, compared to the ecological objectives.

On the other hand, local customary institutions have a significantly different conceptualization of the environment, which is closely linked to locally specified social organization. Compared to state law, they present a different, more refined, contingent and complex categorization of forest resources. For example, customary systems tend to distinguish specific resources, and different and multiple uses of resources within forests in the village territory (Howard and Nabanoga 2007). Customary property rights

² According to Art. 33 of the Indonesia Constitution of 1945. The annotations specify that: “The economy is based on economic democracy which envisages prosperity for everybody. Therefore, economic sectors which are essential for the country and which affect the life of the people, must be controlled by the state. Otherwise the control of production might fall in the hands of powerful individuals who could exploit the people. Hence, only enterprises which do not affect the life of the general population may be left to private individuals. The land, the waters and the natural resources therein are basic assets for the people’s prosperity and should, therefore, be controlled by the state and exploited to the greatest benefit of the people.” (GOI 1945).

arrangements serve five main functions: a political, a social continuity, an economic, a subsistence, and a social security functions, which tend to be strictly linked in customary systems (Benda-Beckmann von and Benda-Beckmann von 1999).

In terms of relations between rightholder and property we can distinguish among different bundle of rights (Benda-Beckmann von and Benda-Beckmann von 2004; Schlager and Ostrom 1992) between access, use, manage, and transfer, and the right to allocate property rights. Further, we can distinguish between primary and secondary or derived rights, which are extremely relevant in customary systems. Usually primary rights to forest resources are communal in nature, while derived rights can pertain to any village member (to sub-groups or individual) (Bruce 1988). If rights are contingent on specific conditions, negotiation might be required to translate a potential right in an exercised right.

And finally the temporal dimension of property relationship refers to the period for which the right is acquired.

(c) Forest Tenure and Security of Tenure

Adapting a definition of land tenure (Downs and Reyna 1988, p.9), forest tenure systems may be thought of as a set of rules – at some times customs, at others laws – concerning people’s rights to forest land and forest resources, together with the institutions that administer these rights and the resultant ways in which people hold these resources.

Many studies on land tenure, investigate tenure security³ as a crucial dimension providing incentives for efficient and sustainable management (Bruce 1988). However, security of tenure is important also for all other property rights discussed earlier, and will subsequently affect well-being.

It is usually recognized in the literature, that security of tenure can be assured by both statutory regulatory systems as well as customary systems, but in practice it is often investigated in relations to state rules (Pender et al. 2008; Place et al. 1994). Consequently, it is often assumed that individual tenure and breath of rights held by the same rightholder are good indicators for tenure security. Although there is a relationship between breath of rights and tenure security, in systems where some bundles of rights are held at the communal level and others at sub-group, family or individual level this might not necessarily be the case.

Also, tenure security investigations tend to focus on agricultural land and on economic incentives to put land into productive uses, and deal only marginally with sustainability/conservation issues, which they usually investigate in relation to long-terms economic benefits (Bruce 1993; Otsuka and Place 2001; Pender et al. 2008). Many studies tend to be biased toward a conception of land having a predominantly economic and productive function. What is often not taken into account, is that social security and social continuity functions also affect access to economic benefits (Benda-Beckmann von 1999; Berry 1988; Migot-Adholla and Bruce 1993). As we indicated earlier, functions of forest resources very much depend on cultural and ideological considerations and as objectives of access and use differ between statutory and customary systems, so will related characteristics that guarantee tenure security to right holders.

Moreover, security of tenure concepts tend to favor fixed and unflexible tenure systems (often statutory) compared to flexible system based on negotiation, often equating tenure security with the degree to which rights are clearly codified (Place et al. 1994). However, where social security and social continuity functions are important, and where variable climatic conditions considerable affect people’s livelihoods, flexibility of tenure systems,

³ Tenure security in agricultural systems has been analysed along 3 dimensions: breath (no. of bundle of rights held), duration and assurance (Place et al. 1994).

and contingent rights become more important for people's security (McCarthy and Di Gregorio 2007). Thus, more than tenure security, assuring access to forest resources providing continuous support to livelihoods, and a fall-back reserve when unfavorable conditions arise, might be more important to people living in the forest margins (Berry 1989; Blaikie 1989; Ribot and Peluso 2003).

Finally, where multiple legal systems provide for different proprietary arrangements, tenure security is affected by the degree to which these system contradict each other in identifying rightholders, assigning rights, and in the ways in which actual exercised rights interact with normative proprietary rule (Migot-Adholla and Bruce 1993).

It is not surprising then, that numerous studies find that tenure security is in fact not linked to enforcement of statutory rules (e.g. having a title to land), (Downs and Reyna 1988; Pender et al. 2008). For this reason asking about the 'perception' of users about tenure security, might provide a better assessment of actual conditions that people face (Kusters et al. 2007; Pender et al. 2008).

Summarizing, tenure security might have different connotations in systems privileging subsistence, social security and social continuity functions over economic functions, and has more communal features for forest resources compared to agricultural land. It differs according to which legal system people use to support their claims – e.g. statutory and customary - and is influenced by the degree of conflict in tenure rules of different legal systems.

With regard to forest tenure in the margins of Indonesia, there are a number of characteristics that are likely to affect the degree of security of local villagers with respect to various functions mentioned above.

First, broadly the degree to which statutory forest tenure systems and customary system differ. As for example:

- differences in conceptions about "what forest is for" and how concepts of forest functions contradict each other
- differences in 'who' is entitled to a specific resource, resulting in conflict over who the rightholder is (based on the fact that in the two different legal systems different entities have the authority to assign property rights)
- existence or lack of 'external claimants' in overlapping legal systems, and the ability/ inability to exclude external claimants from use
- degree to which conflicting property rights pertaining to overlapping legal systems are actually enforced

Moreover, breath of rights can affect tenure security, however this needs to be investigated contextually and without assuming that greater breath automatically indicates more secure tenure. In customary systems, where residual and derived rights are assigned to different sub-groups, the relevant indicator is not always not breath of rights held by an individual highholder, but by "bundles of owners" (Geisler and Daneker 2000).

In addition, the degree to which property rights arrangements assure access to forest resources in case of need, e.g. due to climatic, social or economic contingencies, provides security to local villagers.

And finally, more than the duration of a rights, the maintenance of property relationships beyond the lifetime of individual property holders, are crucial to ensure social continuity. Collective ownership of forest resources in part serves this function assuring social continuity among descendents. Conflicts between statutory and customary tenure systems do not only lead to tenure insecurity, but often contribute to weakening local customary forest management institutions more broadly.

(d) Customary Forest Tenure and Well-being

Property rights are crucial for well-being because they provide the rightholder/s with the rights to derive value from the resource, be it economic or of other nature.

According to the functional analysis of property rights depicted above, we can broadly link well-being the 5 main functions of property relations we identified. Thus, well-being can be seen in its political, economic, subsistence, social security and social continuity dimensions.

According to customary law, in Indonesia forest resources are under communal property, and villages draw political power from controlling land and being able to assign derived rights from forest resources. Decisionmaking power is usually assigned to local elites, be they customary leaders, village government elites or other powerful local figures (Benda-Beckmann von and Benda-Beckmann von 2004). In some villages there is a person or a group responsible for assigning use rights and solve disputes about land as well as forest resources. The level of inclusiveness in decisionmaking will depend on the local social and political structure.

In most areas where the customary leadership is still strong, land territory belongs to the direct lineage descendents who administer it for the village (Benda-Beckmann von and Benda-Beckmann von 2004). In Kalimantan, within village territories, traditional forest reserves used to be 'owned' by the local aristocratic leadership, and villagers could access these only for specific occasions and they as well as outsiders had to pay tributes to the aristocrats in exchange for use (Eghenter 2000). Effective control over resources also gives local authorities clout when negotiating with external claimants, state or businesses, over exploitation rights to forest resources. In this respect, recognition of customary forest tenure rules by state authorities, increase political negotiating power of villages and derived economic benefits (e.g. timber harvesting compensation fees). With the introduction of decentralization, district government have become key players, and with their support (of lack of support) to customary forest resource control, can affect the levels of compensation obtained from logging or mining concessions. However, power also accrues to single forest users that have access to local forest resources: e.g. often women produce weaved products for sale from rattan and are able to obtain cash for their work which can help them become more independent within the household.

The role of access to forest resources for subsistence needs is well established (Hedge and Enters 2000; Lacuna 2002; Qureshi and Kumar 1998). Forest resources do not only provide food, but specific important nutrients which are not always found in subsistence farming (Dounias and Froment 2006; Johns and Maundu 2006). In particular, fruits, meat and fish are 3 products that people often harvest from forest (Bennet and Robinson 2000). Moreover, valuable medicinal plants collected from forests are used by forest dwellers (Anyinam 1995), many of which are not domesticated (Shanley and Luz 2003). All of these factors contribute to better health conditions, which contributes to the fulfillment of basic needs, facilitates learning and allows for more productive work abilities (Colfer 2008).

Contribution of forest products to consumption needs spans from dietary needs, to construction of household items, tools, implements for farming, transportation and home building. Even if often not monetized they contribute substantially to living conditions and well-being of households, especially for people and in areas where opportunities for cash income are limited.

In terms of economic benefits from forest uses, much literature has focused on effects of forest on incomes. The literature is divided on the effects of forest resources on incomes.

Some indicating that opportunities are limited (Wunder 2001), others indicating that forest products can contribute significantly to incomes (Scherr et al. 2002). But access to the use of forest resources is crucial to accrue these benefits (Dewi et al. 2005). Forest products contribute to both consumption needs and cash income. If other opportunities for earning cash income are limited, forest resources can be crucial for cash earnings. This is particularly so for forest dwellers that are poor, have little access to agricultural land and little education. Agricultural cash earning opportunities tend to concentrate in specific time of the year. For many, collection of forest resources might be the only way to earn a constant flow of cash income, or retrieve cash in times of need (Ndoye et al. 1999; Wollenberg and Ingles 1998).

In many instances, more than raising cash income substantially, forest resources have been indicated as reducing vulnerability, which is extremely important to diminish the likelihood that people fall and remain trapped into poverty. The great majority of people living in the forest margins are farmers, whose harvest is dependent of climatic and pest conditions. Seasonal food shortages are common in the forest margins and forest products can provide needed substitutes (Wollenberg and Ingles 1998). Forest resources provide a fall-back resource in case of need. It is therefore not surprising that around the world traditional systems maintain forest reserves. These are often also used for future agricultural expansion and as reserves for building materials for village development. Forest tenure features that maintain and assure access to forest resources to village members are a sort of automatic mechanism to reduce vulnerability, which allows people to harvest more forest products when they are experiencing other shortages.

The social continuity function of property (Benda-Beckmann von and Benda-Beckmann von 2004) refers to the reproduction of the social structure, its related institutions, and the maintenance of the resource base into the future, and is therefore central to well-being. This is assured by the strong link between kinship and property relations in customary systems. Rules about membership in a social group determine rights to use local resources. But the social continuity functions is also reflected in norms that maintain harvest to sustainable levels, spiritual beliefs that protect specific forest resources, norms about harvesting techniques, can all contribute to maintenance of the resource base. Identity is usually the basis for membership in common property regimes, and the respect of sovereignty of lineages on forest resources by external actors as e.g. the state, is important to maintain the sense of identity of local villagers and of ownership of forest resources. The flexibility of customary forest tenure systems allows for adaptation, through change of existing and introduction of new rules for forest use geared at maintaining cultures and societies throughout time. However, a number of factors can reduce the ability of local institutions to adapt to change. Population pressure, commercialization of forest products, lack of territorial recognition by state authorities, increased encroachments by outsiders, all reduce the adaptive capacity of local communities, and consequently change the incentives that members have to maintain the resource base.

Within the land tenure literature, disruption of customary land tenure systems by state imposed rules has been shown to bring a number of problems (Downs and Reyna 1988) including: increased conflict and tension, concentration of land or excessive fragmentation, higher inequality and loss of access to land. However, these changes and the weakening of local tenure institutions are not explained by overlapping tenure systems alone, but are co-determined by other political, social, and economic changes which historically often accompany stricter imposition of state tenure rules on local communities.

(III) FUNCTIONAL FORESTS: STATE FOREST TENURE RULES

In Indonesia all forest⁴ is under the control of the state. Since colonial forestry law, state forestlands have been defined on the basis of political determinants, and not just vegetation conditions⁵. Control of the state over forest areas has expanded since Indonesian independence. At the beginning of the Suharto regime, many natural resource management laws were revised to firmly maintain land under control of the government to facilitate national development priorities based on natural resource exploitation. In 1967, through the Basic Forestry Law (BFL), the (at the time) Directorate of Forests⁶ gained *de facto* control over 75% of the countries territory, or 147 Mill hectares of state forest land (Ross 2001)⁷. The BFL⁸ separates forest (*hutan*) in 'state forest' (*hutan negara*) and 'private forest' (*hutan milik*)⁹, the first being composed of 'forest area' (*kawasan hutan*) and 'forest which does not have ownership rights attached' (*tidak dibebani hak milik*). 'Forest area' is categorized by assigned functions into 'production forest' (*hutan produksi*), 'protection forest' (*hutan lindung*) and 'conservation forest' (*hutan suaka alam, hutan wisata*) (see figure 1). The Department of Forestry (DoF), holds the mandate for the management of forestlands as well as the right to allocate forest resources, since it also determines which land falls under state forestlands. This double mandate, and the fact that state forest lands are politically determined units, *de facto* provide the DoF with the ability to *determine* itself the territory on which it exercises management rights: it is thus able to *assign* management property rights over forest, exercising the highest decision-making power on forest allocation decision, something that well exceeds the exercise of management rights alone. Despite, almost 40 years of intensive forest exploitation, today, the size of the state forest estate is still estimated at over 60% of the Indonesian territory (DoF 2004a).

After the fall of Suharto, many natural resource laws were revised. However, the fundamental development paradigm remained largely unchanged. The New Forestry Law (41/1999) maintains the main basic functional categories of state forestlands introduced by BFL in 1967.

'State forests' are to be managed by the Department of Forestry (DoF), while 'private forests' by the right holder, but under the guidance of the DoF. In state forest the three functional categories specify allowed uses and eligible users. Since 1967 normative rules require business licenses for virtually any kind of use of 'state forest'. The separation of forest by function is used by the DoF to assign user rights – in the form of business licenses - for timber logging concessions, mining concessions to foreign and domestic investors and especially during the Suharto era, to well-connected Indonesians, including the military. The size of state recognized private forests is negligible and completely absent in the outer islands of Indonesia.

⁴ Criteria for definition of forest are very vague and arbitrary defined by presence of forest cover and designation by the government.

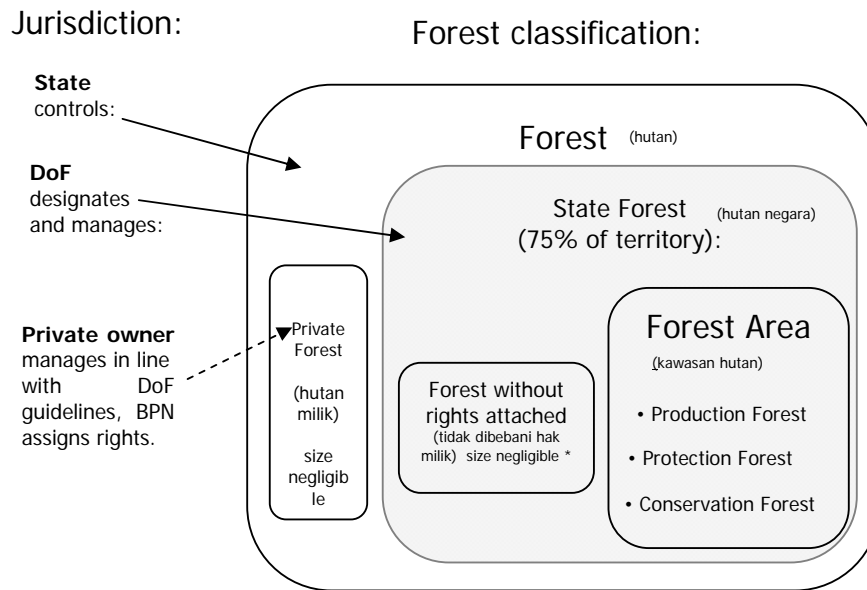
⁵ In line with the colonial forestry law 27, state forest areas are a political territorial unit, and might or not be actually forested.

⁶ Now the Department of Forestry (DoF).

⁷ From a legal point of view the case can be made that the BPN has jurisdiction over forest areas, since the MoF officially only has management rights (Contreras-Hermosilla and Fay 2005).

⁸ The basic forest classification and definition has not changed substantially from the BFL of 1976 to the New Forestry Law (NFL) of 1999, despite some slight changes in definitions.

⁹ Establishment of private forest is negligible in size. Data available from 2000-2005 indicate 100 ha of establishment of private forest in 2000, up to a cumulative value of 7,730 ha for a 5 year period in 2005 (MoF, statistikTable III.6.1. establishment of private-owned management model for the last five years, <http://www.dephut.go.id/>)

Figure 1: Forest Tenure Classification: the state's view**(e) Allowed forest uses**

'Production forest' allows for timber harvesting, planting, managing, and collecting timber and non-timber forest products if a permit is obtained. Permits can be given to individuals, cooperatives and private and state companies. In 'protection forest' timber harvesting is not allowed, non-timber forest product exploitation being allowed again with a license. Users can be individuals, cooperative, private and public enterprises, depending on the relevant forest classification, and they all need a business permit to use these resources (law 41/1999 part 3). In 'conservation forest' neither timber production nor NTFP collection is allowed, unless in specified 'special zones' or 'community management zones'. Thus, from the normative view, use of all forest resources is limited by the state defined functional category of forest and is restricted to license holders only (apart from special zones), which *de facto* limits and weakening of management rights even of recognized rightholders of forest (*hutan hak*).

One of the important roles of the DoF, for which the forest classification scheme is crucial, is the organization of productive activities within 'production forest' and 'conservation forest' areas. State organized exploitation of natural resources refers mainly to timber extraction, plantations, and extraction of mineral resources. The DoF is responsible for the allocation of concessions permits within production forest for timber exploitation. 61 million hectares of production and limited production forest plus almost 23 million hectares if we include convertible production forest (DoF 2004a; DoF 2004b) are earmarked for exploitation, plus another 30 million hectares of protection forest which allows mineral exploitation. As production forest has been divided up in big tracts of natural resource exploitation concessions, the DoF left it to the companies to solve possible conflicts arising with local communities (government regulation 21/1971).

(f) Limited rights for community forest management: the case of 'hutan adat'

State recognized community rights to forest are very limited in Indonesia in terms of rights entrusted in communities, occurrences of actual recognition and security of rights. In

this paper, I only discuss one form of community rights¹⁰, which was introduced with the NFL in 1999, and pertains to two of the communities studied: the institution of customary forest or '*hutan adat*'.

By definition a customary forest (*hutan adat*) is a "state forest [*hutan negara*] located in traditional jurisdiction areas" (Art.1, UU41/1999). It provides only very weak recognition of customary rights, since it refers to a territory, which is deprived of rights to land - and can therefore be considered within state forestland areas - thus negating that customary (*adat*) communities held any previous rights to these areas¹¹. Actual recognition of *hutan adat* since 1999 has only been recorded in a number of communities in central Sumatra, close to Seblat Kerinci National Park. In all instances recognition has occurred thanks to substantial work of environmental NGOs to document and help local communities with the extensive legal work required to apply for this type of recognition. It is important to note that by the end of the study, only recognition from district or provincial government was obtained. According to the NFL, each instance needs to be approved by the Department of Forestry and this has not yet occurred¹².

(IV) LOCAL FOREST TENURE RULES

Some will contend that it is not possible to draw a general picture of local tenure arrangements throughout Indonesia, given that local customary law (*hukum adat*), from which local property rights arrangements are derived, differs in various part of Indonesia. Here, I will provide only some general features that have been recognized to be prevalent throughout the archipelago. The aim is not to describe in detail any customary system, but to highlight some main features that distinguish exercised (*de facto*) tenure arrangements, which largely reflect normative customary rules by settled populations locally from normative (*de jure*) state defined property rights categories.

Adat, which is often translated from Indonesian as 'custom' (Holleman 1981), is based on kinship relationships and/or on territoriality¹³ and is culturally defined. As such been applied to specific cultural groups. These cultural groups were first termed '*rechtsgemeenschappen*' or 'legal communities' by the Dutch scholar Von Vollenhoven (Van Vollenhoven 1918)¹⁴ and today are best translated as *masyarakat adat* or simply customary communities. These can be interpreted as autonomous legal structures with their own legal system. *Hukum adat* (or customary law) refers to a variety of customary legal systems that are practiced by these customary communities throughout Indonesia, sometimes referred as the 'oldest' form of law (Haveman 2002).

(g) Territory, acquisition, and access to resources

¹⁰ One of the most used social forest schemes is HKM (Hutan Kemasyarakatan), which usually entail communal permits for planting of growing timber species often part of agroforestry schemes. However, while the management rights can be devolved for up to 25 years, in fact this has happened only in 1 instance so far. Much more common are 3-5 agreements which leave uncertainty about the rights of use once the trees become productive (see Campbell 2002; see HuMa et al. 2002; Pender et al. 2008).

¹¹ This is in contrast with the 1960 BAL which recognizes preexisting rights to land of communities (*hak ulayat*) and the possibility of delegation to *adat* communities of the authority to 'allocate' rights within their territories. Although BAL is still in force, occurrences of actual recognition of *hak ulayat* are not officially recorded.

¹² In interviews DoF officials have confirmed that no request for recognition has been filed with the DoF in Jakarta.

¹³ According to these two characteristics Hooker (1978) categories major *adat* systems into: localized and non-localized clan systems, regional communities of mixed clans, patrilocal clans, localized tribes, territorially-based tribes, and territorialized kinship-based communities.

¹⁴ these are also called 'jural communities' which, according to van Vollenhoven, derive legal autonomy from their representative authority and the communal property, especially land, over which they exercise control (Holleman 1981).

In the forest margins of Indonesia, customary communities usually control a - sometimes vaguely defined - territory that includes land, water and living species. This common village land is sometimes denominated with the Indonesia term *Ulayat* (Benda-Beckmann von and Benda-Beckmann von 2004) or right of avail (Holleman 1891). Within these village areas, two somewhat distinct proprietary systems refer to different resources. Planted and fallow land usually are further assigned in the form of usufruct rights to smaller social entities (sub-lineages), self-acquired ownership for cultivation is usually managed within sub-groups, families of household and can be inherited. Secondary derived, contingent rights and conditional rights and potential rights subject to recurring negotiation are also present. Mode of acquisition include common descendency, management efforts, investments and inheritance which co-determine which tenure rules apply to a resource. Self-acquired ownership pertains to farmed land, and is acquired through clearing and inheritance (rights derived from sometimes complicated kinship property relations) (Benda-Beckmann von and Benda-Beckmann von 2004). While in many *adat* systems sale and purchase of land is forbidden or limited to community members, nowadays these exchanges are becoming more common for self-acquired land especially if planted with perennials (Fortmann and Bruce 1988; Suyanto et al. 2001).

All of these usufruct rights in some form remain under or can revert to the broader communal property status in particular circumstances (e.g. in case of end of descendency). In fact, *ulayat* tends to remain as a residual and weaker right even in case of self-acquired land (Benda-Beckmann von and Benda-Beckmann von 2004).

Exclusion rules to *ulayat* apply to non-members, but entry can be negotiated by outsider in some cases, often against a fee payment (Benda-Beckmann von and Benda-Beckmann von 2004). Compared to resources from cultivated and fallow lands, forest resources are often more strongly under collective control. Still single, generally valuable forest resources, as birdsnest, specific trees, as well as parts of plants (Angelsen 1997; Howard and Nabanoga 2007) might be assigned to families or households and are sometimes considered self-acquired. Grave sites are sacred communal areas which are often marked and protected. Other protected forest areas which have limited access can be reserved to specific highranking sub-lineages, or as fallback reserve for village level future or specific needs. Some areas might be reserved for hunting or non-timber forest product collection activities, or for harvesting of timber for construction of community buildings (Eghenter 2000).

More generally some common features identified by Bruce (1988) on customary systems in Africa do apply to Indonesia as well. these are:

- a vertical dimension of social hierarchy, both within and between local societies
- a horizontal dimension of multitenure systems, where different tenure rules pertain to different resources and uses
- a historical dimension which is characterized by pervasiveness of change, and where social, political economic, demographic and other conditions affect tenure systems.
- where exercised tenure rights (compliant and deviant of local and/or statutory normative rules) in fact adapt and affect local normative rules.

(V) DATA AND RESEARCH SITES

(a) Data

The fieldwork for this study entailed both qualitative and quantitative data collection as well as observation through residence in the villages. Quantitative data collected for this study covers

community level (10 villages surveys) as well as household level information (139 household interviewed).

Information about statutory property rights arrangements are derived from 3 main sources: information about spatial planning and relative maps, which are prepared by Development Planning Agencies at different administrative levels¹⁵, information and maps from the forestry services (national, provincial and district level), from interviews with government officials and NGOs that worked on spatial planning issues in my sites and from semi-structured interviews with local key informants. It is important to note that there are often discrepancies between different government agencies (e.g. Forestry agencies and BAPPEDAs) and among the same agencies at different territorial levels (national, provincial, and district levels) about designation of land uses. Information about local land use is provided from mapping exercises undertaken with groups of key informants during the fieldvisits and interviews at the villages level. Access to previous work by local NGOs, The Center for International Forestry Research (CIFOR) and the WWF, which worked in some of the surveyed sites, was valuable especially for local resource mapping.

I have substituted codes for village names, and throughout the paper I refer to some salient village characteristics, a schematic summary of which can be found in appendix 1.

(b) Research sites

This study is based on research conducted during two visits between 2006 and 2007 in 10 villages in two districts of the outer Islands in Indonesia: Bungo district in Jambi Province in Sumatra, and Malinau district in the East Kalimantan province in Kalimantan. The selection of the district location was based on 2 criteria (see table 1). First, differing conditions of forest cover: the Bungo area presenting logged-over forest conditions and Malinau mainly primary forest conditions. Second, comparable overall landscape of property regime patchwork (all locations have substantial areas of their territories under state forest lands in the vicinity of protected areas and present overlapping property rights arrangements between state and local institutions). The subcriteria for selection of study villages within the districts were: villages at the margins of forested areas, and differences in (strong and weak) collective forest management institutions. Of the 4 villages selected in Bungo, 2 present newly formed forest protection areas recognized by district government as '*hutan adat*' areas (BBK and BBP), and managed by elected committees, while the other 2 do not have any formal forest protection institutions (BST and BLB). In Malinau, some villages surveyed present strong traditional institutions for forest protection (MP and MAH), while the other neighboring villages have less strongly asserted rights for forest protection. In the surveyed localities, both the newly instituted forms of collective management in Bungo and the traditional collective forest management institutions in Malinau, have been highlighted as success stories of Indonesia CBRM cases (Topp and Eghenter 2005; WARSI 2000).

In Bungo, the village BBK and BBP are part of the same *adat* territory and leadership, BST on the other hand has lost much of its *adat* traditions, while BLB has a strong *adat* leadership. In Malinau, *adat* leadership has long been the interface between local institutions and sub-district and district government. 5 of the surveyed villages (MP, MAP, ML, MK, MB) are under 1 *adat* territory that covers approximately the sub-district territory and 10 villages, the *adat* leadership residing in MP. On, the other hand, MAH is the centre of a more upriver neighboring *adat* territory, comprising 5 villages.

¹⁵ There are 3 levels of Development Planning agencies: national, provincial and district levels (BAPPENAS - Badan Perencanaan Pembangunan Nasional/ BAPPENA I - Badan Perencanaan Pembangunan Daerah1 / BAPPENA II - Badan Perencanaan Pembangunan Daerah 2). These agencies undertake a coordination role among government agencies responsible for land management (in particular forestry and land agencies) and are responsible amongst others, for the spatial planning at the different levels.

Table 1. Site selection criteria

	Bungo	Bungo	Malinau	Malinau
Forest cover	logged	logged	primary forest	primary forest
Property rights landscape includes	<ul style="list-style-type: none"> • State forestland areas including production, protection forest and conservation forest • Locally exercised common and private property regimes which differ from state rules 			
Local institutions for collective forest management	2 villages with newly instituted collective forest management institutions	2 villages without formal collective forest management institutions	2 villages with strong traditional forest management institutions	4 villages with weaker traditional forest management institutions
Village codes	BBK BBP	BST BLB	MP MAH	MAP ML MB MK

Most of the state production forest areas in the villages surveyed in Bungo were selectively logged since the 1980s. The last forest concession in the study area was active until 2001 and no nationally awarded logging concessions are active today. While in many areas in Bungo, logged over forest has been converted into palm-oil plantations, in the sites of my study no plantation is active yet, but government development planning documents reserves part of the territory for future oil palm development as well as extraction of coal. In the sites in Malinau, logging has just recently started the 2 most downstream villages surveyed (MAP, ML), and the landscape is dominated by primary forest. The two areas therefore present a good way to compare before-logging (Malinau) and after-logging conditions (Bungo).

The two districts and site locations differ on a number of other very important characteristics. Compared to Malinau, Bungo has relatively small landmass, is highly populated and is relatively speaking less rich in natural resources. Population pressure is much higher in Bungo district (34.5 people/ km²) than in Malinau (1.2). The villages surveyed are in relatively low population density areas compared to the district average, but similarly to the district data, present substantial differences in population density ranges (2-15 people/km² in the Bungo sites versus 0.2-0.9 in the Malinau sites) (table 2). Apart from historical demographic reasons, government intervention in the form of transmigration programs has contributed to increased population density in 3 of the village locations Bungo locations. In the surveyed village areas transmigration programs occurred in 1997 and 2002 and at the time of the survey two new transmigration sites were being established.

GDP per capital in just over 4 Mill. Rp. in Bungo compared to over 13 Mill in Malinau. As a consequence districts and village per capital development funds are much higher in Malinau (Table 3). Thus, although my selected sites in Malinau are much more remote, than those in Bungo, many economic activities are well developed (e.g. trade despite high transportation costs).

Table 2. Population densities

District	Land area in km ²	Pop density: pop./km ²	
		district level	range in villages surveyed
Bungo	7,160	34.5	2-15
Malinau	42.620	1.2	0.2-0.9

Table 3. District GDP figures (year 2003) and district gov. expenditures (2004)

District	GDP (Mill.Rp.)	GDP/capita	% GDP from agr. and forestry	% GDP from mining	Per capital gov expenditures (IRp.)
Bungo	1,039,240	4,207,995	40	2	929,604
Malinau	585,325	13,207,984	55	10	6,318,938

source: Bungo Dalam Angka , BAPPEDA 2004 and Malinau Dalam Angka , BAPPEDA 2006

(VI) OVERLAPPING NORMATIVE PROPERTY RIGHTS RELATIONS

Table 4. Broad categories of overlapping statutory and customary property rights regimes

District	Village code	National Park	Protection forest	Production forest
Bungo	BBP	-	Territory	Hutan adat & territory (logged forest)
	BBK	Territory	Hutan adat	Territory (logged forest)
	BST	Territory	Territory	Territory (logged forest)
	BLB	Territory	Territory	Territory (logged forest)
District	Village code	National Park	Protection forest	Production forest
Malinau	MB	Tanah ulen	-	-
	MK	Tanah ulen	-	-
	MAP	Tanah ulen	-	Territory (active concession)
	MAH	Tanah ulen	-	Territory (concession area not active yet)
	ML	-	-	Tanah ulen (active concession)
	MP	Territory	-	Tanah ulen (concession area, not yet active)

Starting at the landscape level we can describe broad overlaps between statutory and local property rights arrangements (see table 4). In both Bungo and Malinau, surveyed communities are at the borders of national parks, some communities with territory within the park and some outside. Other statutory forestland categories included in the surveyed territories are production forest and protection forest (the latter only in Bungo), each category expressing statutory defined allowed uses¹⁶.

In Bungo, 3 of the 4 villages (BBK, BST, BLB) have territory under the state forestland classifications of production, protection and national park areas. On the other hand, part of BBP territory is within protection forest and part within production forest.

In Malinau there is no protection forest in the investigated sites. Two communities have territory almost exclusively within the national park (MK and MB). One community has exclusively land within production forest (ML). While the other 3 villages have some area in national park and some in production forest. *Tanah ulen* is within the national park boundaries in 4 villages and in production forest in the other two. The only active logging company in the area has already logged within *tanah ulen* in ML, and at the end of this study was about to negotiate terms of agreements to enter *tanah ulen* in MP village area. It is likely that here also large-scale logging will take place, the designation of *tanah ulen* providing a justification to request higher compensation fees.

In Bungo, *hutan adat* in BBK and BBP is officially recognized by the state. In BBK through a district government regulation and inclusion in the district level spatial planning, the area

¹⁶ Some areas fall outside of state forest land (KBNK Kawasan budidaya non-kehutanan) and might be reserved for local agricultural practices or future plantation development, but are not discussed in this paper.

is officially recognized and classified as state protection forest. On the other hand, in BBP the selected area was in production forest. Initially, the NGOs facilitating the recognition process intended to follow the same route for legalization, however this was not possible given the conflict with concession rights in the same areas. The research team was able to facilitate a different solution through the recognition of the customary *adat* authority and its territorial rights to *hutan adat*. This was ratified by a provincial level regulation (Pariyanto 2008). As a consequence this *hutan adat* in BBP would remain under the state classification of production forest.

Still, the main difference between the two *hutan adat* cases in Bungo and *tanah ulen* in cases in Malinau is that only the first are officially recognized by the statutory legal system. In the case of BBK, approval by the DoF in Jakarta would be required by law, but official recognition at the central level has not occurred, neither for this village nor for any other instance of *hutan adat* in Indonesia.

(a) Production forest

(i) Bungo sites

My sites investigation indicates marked differences emerging between the Bungo sites where concessions have been mainly active through the 80s and 90s and the Malinau sites where concessions have started to harvest timber more recently (only 2 villages are involved so far).

In all surveyed villages in Bungo, both government authorities as well as local villagers indicated that no compensation was paid by concessions in the past. From key informants accounts, cooption of village government and/or *adat* leadership was the preferred route to obtain tacit agreements for logging operations. Side-payments in cash or in kind, but limited in amount, were always part of the agreement. Companies did provide some services, mainly in terms of fuel for village electricity and contribution for buildings. However, no compensation was paid or reached villagers directly. Concessionaires usually used workers from other areas. Even local government officials indicated that they were not able to negotiate terms of agreements that would suit the communities.

The influence of *adat* leadership in the Bungo sites varies. The two villages that have newly instituted *hutan adat*, are part of the same *adat* territory, with a chief residing in one of the villages. In this village (BBP), *adat* leaders have substantial influence in village affairs, but there is tension about *adat* leadership roles between the two villages. In the second village (BBK), the *adat* leadership has been coopted by a powerful village head, who was able to obtain a 'government appointment' as local *adat* leader from the sub-district head, in contradiction with *adat* procedures. Within this village there is considerable conflict over *adat* roles as well as strong tension and at times resentment toward village government.

With the closing of large-scale logging operations, in this *adat* area local elites have developed their own logging operations, cooperating with the downstream village (BBP). The latter provides a truck for transportation and a number of village members specializing in house construction within the sub-district, while the most forest logging operations are undertaken in the former, upstream village. Key informants indicated that local logging for commercial uses is tolerated through side-payments, by state enforcement authorities within production forest areas.

In the third village (BST) the local *adat* structure is considerably active in village affairs. Logging for commercial uses is also wide-spread with 3-4 stable logging teams working all year around.

On the other hand, in the last village (BLB) *adat* authority – together with influential village

members - is much stronger than village government authority. Here the *adat* authority is very well respected. While local logging for commercial use occurred in the past, the *adat* leadership has imposed a ban of logging and on opening new land in forest for all villagers and is able to enforce it.

(ii) Malinau sites

One the other hand, in the Malinau research sites, large-scale logging operations are just starting. One concessionaire is active in 2 adjacent village areas (MAP and ML). According to local *adat* regulations the highest *adat* authority with jurisdiction over an areas roughly corresponding the subdistrict, is entrusted with the management of all territorial areas that are outside of areas actively used by single villages for daily subsistence activities. Local *adat* authorities lead the negotiations with concessionaires and officially represent local communities.

Although most production forest has long been allocated to concession holders, local people start perceiving forestland as 'state land' when concession holders actively start working within or near the village territory. In Malinau, perception of state control over forest areas in production forest is still minimal. Where concessions are not yet active (4 of the 6 communities) people perceive the forest within their village territory belongs to their village, although statutory rights might already be assigned to logging companies. Forest is almost always described as 'village forest' (independently of statutory forest classification).

Since the mid 90s, when the first logging concessions entered 1 of the *adat* territory (still far away for inhabited areas) surveyed here, local *adat* authorities have negotiated compensation fees with companies for logging activities for all 10 villages within the *adat* territory.

Although having an active logging concession in a village area does restrict the rights of villagers to harvest timber (at least species that are valuable to the timber company), other uses are informally permitted some people open and maintain dryrice fields in concession areas, and local villagers can hunt, fish and collect NTFP.

In Malinau, as in Bungo there is no specific district level regulation for compensation, so the amount of compensation depends very much on local negotiations. In the early nineties local communities did not have much bargaining power and no cash fees were paid to villagers. However, in 1996 the customary leadership complained about lack of compensation and 'fined' the logging company, requesting 2 billion Rupiahs in compensation for past logging activities downstream. A settlement of 400 million Rupiah plus a payment of 3,000 Rp. per every future m³ of logs extracted was agreed upon.

Within this context¹⁷, in 2003 about 30 villagers from MAP staged a protest action, headed by the local head of police, threatening to stop the work of logging company vehicles. The delegation headed by sub-district *adat* leadership, also went to the new district capital to bring the issue to the district head's attention. As a result, the company agreed to increase fee payments to 7,500 Rp. per m³ of extracted logs. Apart from at the wider *adat* territory, when the company enters a specific village area, additional cash compensation is paid to the single villages (to the village level *adat* authority). Village level compensation is

¹⁷ Malinau used to be part of the much bigger Bulungan district until 2001, when it became a district of its own. This separation also meant that Dayak people became the majority ethnic groups. They also gained considerable political thrust apart from an increased consciousness about their rights, partly through the event of *Reformasi* and the revitalization of indigenous identities in the archipelago. Direct elections of the district head introduced in 2001, brought a Dayak to lead the district.

negotiated by village level *adat* leaders and today varies between 10,000 and 15,000 Rp. per m³. Cash income is divided between all villagers on a per capita basis, villagers in areas where the company is active receiving village territorial fees in addition to *adat* territorial fees.

Apart from official agreements, often village authorities and sometimes single villagers approach the company to negotiate specific contributions to development projects. Apart from fees payments, the company always employs a number of local villagers as long-term as well as temporary workers, contributes fuel for village electricity, provides wood for village buildings and sometimes, for single villagers, payment for medical treatment, use of vehicles to reach areas within the concessions, buys vegetables and meat at prices that are higher than local market prices, and contributes to support local students to study in town.

(iii) Comparing Bungo and Malinau sites

In Malinau, state imposition of statutory forest tenure rules starting to occur 15-20 years after Bungo, and villages were able to negotiate more beneficial agreements with logging companies. Democratization processes since *Reformasi* at the national level, decentralization and the support of district government to local requests have also substantially contributed to higher compensation in Malinau today compared to the Bungo sites in the past. However, the long history of local *adat* leadership to mediate relationship with outsiders (including state agencies and government officials), translated in a strong although informal recognition of the role of local *adat* leadership. Together with the ability of local villagers to mobilize to claim rights to what they consider 'their territory', they have been able to assert stronger rights to local resources so far.

In Bungo, the lack of enforcement to harvest timber in production forest, strengthens villagers perceptions that they have the right to exploit these forest areas for timber extraction. However, they are also well aware that it is illegal to harvest timber for commercial purposes, and prefer not to disclose this information to outsiders. Lack of enforcement by the state, though can also be understood as a (conditional and precarious) form of recognition of locally exercised rights. The state tolerates local harvesting, and some government officials profit from the trade as well.

Timber harvesting in production forest here resembles an open access resource. Communities have either lost the ability or willingness to enforce timber harvesting rules, as exclusion of outsider became more difficult. Lack of ability to enforce exclusion is partly linked to state sponsored activities (former logging concession timber extraction and transmigration programs), which through their own extraction activities and land use changes, are the most marked 'external claimants' to local resources. These conditions have started a race, where logic says, that who extracts resources first will benefit most. A second reason that reduces villagers' ability to exclude outsiders is that they themselves undertake illegal activities (timber harvesting for sale) within forest areas. However, in part lack of local enforcement is also due to lack of interest to enforce exclusion. The assumption that communities will enforce statutory rules of exclusion toward outsiders under 'conservation' objectives, has been disproven in many studies (Bruce 1988).

In the one village site in Bungo (BLB) where *adat* authorities have introduced and are effectively enforcing both a logging ban on commercial timber harvesting and a ban on opening new agricultural land in forest, they also highlight that the village is not monitoring outsider's encroachment in forest areas. The logic they present is that since the forest belongs to the state, the state should monitor, enforce and sanction encroachers. Enforcement is not a costless activity, and if benefits from enforcement do not accrue to

the villages (local rights to forest uses that are valuable to villagers are not recognized), incentives to enforce state regulation will be absent. Local *adat* leadership complained about encroachment for agricultural use by neighboring villagers in forest areas. They also complained that state authorities have never done anything to prevent this from happening, despite reports were filed in the past. Local village authorities have indicated that if encroachment continues, and the state fails to enforce the limits on access vis-a-vis outsiders, local villagers might in the future decide to open forest for agricultural expansion themselves.

(b) Protection forest

Protection forest is found only in the Bungo sites village areas.

Villagers' perception is that this area 'belongs to the state' and is off-limits for local (more so for commercial) timber harvesting activities is quite marked. This is due to the fact, that enforcement of statutory prohibition to harvest timber in happening at least to some extent in protection forest compared to production forest areas. An increase in monitoring of illegal logging is due to an number of events: first, a commitment by the current Indonesian President to combat illegal logging activities, in part pressured by international agreements, foreign donors, and influential Western conservation agencies. Second, the vicinity to Seblat Kerinci National Park and district level agreements to monitor illegal logging (also part of past NGOs project related to park management). Consequently, the Forest Police Services (*Polisi Kehutanan*), stepped up patrols, investigations in response to reports, and actual convictions of villagers harvesting timber in protection forest as well as within the Park (PHKA 2007). However, this seems not to happen in production forest areas. This might also show the ability of local villages to put forth their interests, and state agencies might not enforce regulations in production forest to avoid raising conflicts. On the other hand, local villagers are afraid to cut timber in protection forest even for own use¹⁸.

(c) National Park Management Realities in the Study Sites

In the two national parks areas in Bungo and Malinau, while normative statutory regulations are similar, actual implementation of statutory access and use rules differs quite considerably at the moment. These differences affect local perception of property rights arrangements (and tenure security). In addition past activities by environmental conservation NGOs relating to documentation and redefinition of land tenure arrangements also affected claims and perceptions about property rights arrangements, influencing statutory tenure rules as well as local perceptions.

(i) Bungo sites

In Bungo, some of the surveyed communities have part of their territory within Seblat Kerinci National Park (*Taman Nasional Kerinci Seblat* TNKS). The park was established in 1982¹⁹ (Werner 2001), and declared national park by the MoF in 1992²⁰. In 1999, the official delineation of the boundaries completed the gazettement – setting the area to

¹⁸ In one of the villages a person was arrested for extracting timber in protection forest.

¹⁹ by a decree of the Ministry of Agriculture and based on a UNDP/FAO proposal.

²⁰ SK Menhut No. 1049/Kpts-II/1992.

1,375,349 hectares²¹. TNKS is the first National Park in Indonesia to have been fully gazetted (PHKA 2003). With the official boundaries established, enforcement can be undertaken by the relevant agencies. Management and enforcement of park regulations is under the mandate of the Kerinci Seblat National Park Agency (*Balai Taman Nasional Kerinci Seblat* - BTNKS), which was first established in 1984 (Lusli 1996) and responds to the central DoF's section of the Directorate General for Forest Protection and Nature Conservation (*Direktorat Jenderal Perlindungan Hutan dan Konservasi Alam* - PHKA). Forest policing activities are supported by the provincial forestry services. Nonetheless, enforcement activities are limited by low number of guards and extremely limited funds. Encroachment has been extensive since the establishment of the park in some locations partly due to agricultural expansion, government related projects (e.g. transmigration), and legal and illegal logging (World Bank 2003). In terms of management, the MoF indicates that the park's 'zoning plan', is still not adopted (PHKA 2007).

From 1996 to 2002 funding for a total of 46 Million \$US (PHKA 2003) was injected in TNKS under the Integrated Conservation and Development Project (ICDP) project sponsored by World Bank, The Global Environmental Facility (GEF) and the Indonesian Government. Aimed at biodiversity conservation and maintenance of forest cover in bufferzone areas, it covered 4 main areas of activities: park management (including policing activities), area and village development, monitoring and evaluation and support for training. Village development activities were mainly undertaken by WWF and a local NGO network (WARSI)²². 72 villages were included in development activities, which were geared at providing development support in exchange for local conservation efforts. Development help was contingent on the production of a village level regulation (Village Conservation Agreement *Kesepakatan Konservasi Desa* KKD) where the village would agree to: respect the boundaries of the park, monitor park boundaries within the village against encroachment (including outsider encroachment) and develop a management plan based on sustainable use practices (PHKA 2003; PHKA 2007).

The project reduced the target of 134 village agreements to 75, because of slow progress. Only 26 villages met an agreement within the project timeline, and 46 reached an agreement by the end of the project, according to a World Bank evaluation, and these were pushed through approval because of 'implied contractual obligations with facilitated villages' (World Bank 2003). 3 agreements were dropped because of evidence of violations, while for the others, once the project ended in 2002, neither further technical support nor monitoring was in place. The World Bank estimates that very few of these agreements are actually effective (World Bank 2003). Since the agreements involved land use rights changes, a number of state agencies had to endorse the agreements. The process required from 3 to 5 drafts and mayor delays in acceptance of agreement indicate resistance by park management authorities and by the Ministry of Forestry (World Bank 2003). The legal status of KKD agreement is also problematic (World Bank 2003).

All 4 villages from Bungo in my study have either an area of their territory within TNKS or are in the (suggested) 'bufferzone' of the park. 3 of the 4 villages (BBK, BBP, BLB) were part of the ICDP project.

ICDP and hutan adat

One of the village activities included in ICDP was the identification of forest areas of high biodiversity and environmental value to be set aside as customary forest (*hutan adat*),

²¹ SK Menthut No. 901/Kpts-II/1999. In 2004 the area was expanded by 14,160 ha.

²² In total 4 NGO were directly involved in project activities: Flora and Fauna International (FFI), WWF Indonesia, the Indonesian Biodiversity Foundation (Kehati), and WARSI (PHKA 2003).

outside of park boundaries. One of the aims was to reduce pressure on the park area. This process also entailed an agreement between TNKS management and villages that included conservation measures, limited sustainable use, village level enforcement and sanctioning mechanisms. *Hutan adat* forests were to be managed by an elected council. By the end of the project 20 such forest had been established (PHKA 2003).

As mentioned earlier *hutan adat* has been included in the statutory legal system through the New Forestry law (41/1999). Environmental NGOs were involved in the policy process that led to this next law, although they did not endorse the final version presented by the MoF and approved by the people's assembly (Di Gregorio 2006).

In one of my village sites (BBK) *hutan adat* was established during the ICDP project in 2001. The neighboring village BBP established its *hutan adat* in 2006, under the facilitation of CIFOR (Center for International Forestry Research). The procedure to establish *hutan adat* involved participatory village meetings and the establishment of a management committee formed by representatives of village and customary leadership, youth and women. Rules about forest use in *hutan adat* were established by villagers facilitated by NGOs and codified in a written village regulation (*Peraturan Desa PERDES*)²³. In BBK 3 distinct *hutan adat* areas close to 3 of the 4 *dusun* (sub-village settlements) were established, while in BBP one area was selected for *hutan adat*. In BBP because the selected area was in production forest assigned as concession to a logging company (although not active anymore), the NGOs project had to follow a different procedure set by the Ministry of Forestry²⁴, and obtaining recognition at the provincial level for the customary *adat* authority in the area, under whose authority *hutan adat* would be managed. Provincial recognition was obtained in 2007 (Pariyanto 2008), but for both locations the Ministry of Forestry in Jakarta has not yet issued its approval, which statutory law indicates as necessary for full recognition.

GPS measurement and establishment of community forest boundaries were undertaken by villagers as well. In both locations *hutan adat* areas are divided in 2 distinct areas: one area where villagers can harvest forest products (timber and NTFP) in a limited fashion (community use *hutan adat*), a second area serves environmental services and conservation functions (protection *hutan adat*) where collection of FPs is either not permitted at all or limited to some NTFP. Table 5 presents the main normative local rules (written rules) for *hutan adat* in BBK and BBP. One main distinction relates to the absolute prohibition to collect any forest product in BBP protection *hutan adat*, compared to limited use of NTFP in BBK. One shared rule in 'community use *hutan adat*', is that extraction is restricted to household consumption needs (sale is forbidden and heavily sanctioned).

Table 5. Normative Local *Hutan Adat* and Forest regulations (written and codified):

	BBK	BBP
established	BBK <i>Hutan adat</i> 2001 (WWF, WARSI)	BBP <i>Hutan adat</i> 2005 (CIFOR) – village level, provincial approval 2007
Recognition by district government	2002 (SK no.1249)	2007 recognition of ' <i>masyarakat hukum adat</i> ' (customary legal authority)

²³ Legal specialists working on the NGOs project, have then brought together all information to draft the local village regulations, which has been approved by village government, and a proposal for a district and provincial level regulation which recognizes *hutan adat* areas in BBK including it in the district special plan, and *masyarakat hukum adat* (customary village law) in BBP. BBK district level regulation was approved by the district government in 2002 and BBP customary law was approved in 2007. Given the legal expertise needed to prepare the documentation for approval it is not possible for villages without support of NGOs to undertake the process alone.

²⁴ Surat Edaran Menteri Kehutanan 57/2004.

Size <i>adat</i>	<i>hutan</i>	1137 ha (protection area) 1170 ha (use area)	377,39 ha (protection area) 402,6 ha (use area)
Protection <i>Hutan adat</i>	Permitted uses	<ul style="list-style-type: none"> ○ Collection of fruits ○ Collection of honey ○ Coll. medic. plants 	None apart from enjoyment of environmental services
	Forbidden / restricted uses	<ul style="list-style-type: none"> ○ Open fallowland ○ Clearing forest ○ Timber harvesting 	<ul style="list-style-type: none"> ○ Open fallowland ○ Clearing forest ○ <u>Timber and NTFP</u>: collection not permitted
	Sanctions	<ul style="list-style-type: none"> ○ 1 buffalo, 250 kg rice, 100 coconuts, ○ Rattan and timber confiscated + used for village needs 	Same as in community use <i>Hutan adat</i> , see last cell
Community use <i>adat</i>	Permitted uses	<ul style="list-style-type: none"> ○ Contribution of 25,000 Rp. per m3 for village use only ○ collec. of FP only for consumption ○ honey and fruits can be collected by tree owner, but contribution to village 	<ul style="list-style-type: none"> ○ Permission from HA management committee for any use needed: ○ <u>Timber</u>: for home building and village buildings (permission needed) only timber diameter > 80 cm ○ Each tree removed required 5 new seedlings max for home building 5 m3 per hh ○ Contribution of 25,000 Rp. per m3 ○ Max 50 m3 per year for village needs ○ Seizing timber that is harvested without or in excess of permission, used for village development ○ <u>NTFP</u>: permitted collection for villager welfare (fruits, honey 10% contribution), only for consumption
	Forbidden/restricted uses	Open fallowland Clearing forest Cut fruit and honey trees	Open fallowland Clearing forest Cut fruit and honey trees
	Individual. family ownership in <i>Hutan adat</i>	Fruit trees, fallow land, honey trees	Fruit trees, fallow land, honey trees
	Sanctions	<ul style="list-style-type: none"> ○ Fine 2,5 Mill Rp. for timber, rattan extraction without permission and seize FP become village ownership ○ <i>Adat</i>: 1 goat, 50 kg rice 	<ul style="list-style-type: none"> ○ For clearing or selling land, cut timber without permit: 1 goat, 50 g rice, min. fine 2.5 Mill Rp seized FP) ○ For selling timber or NTFP (collected with permission: 1 goat, 50 g rice, twice value of timber of NTFP collected, seized FP) ○ With permit: If cut timber <80 cm, no replanting, or exceeds limit (5 m3), or damages trees: graduated sanction depending of offence

On the other hand, in the village of BLB, under the ICDP project, the village produced a KKD village regulation on forest management in 2000. With respect to protection forest and TNKS areas the agreement included community commitment to refrain from harvesting both timber and NTFP. On the other hand, the agreement also included the request that the forestry department would review the borders of protection forest, which was established in 1991 without community involvement and which included treegardens and fallow lands claimed by community members. Forestry authorities have not revised protection forest boundaries by the time of the fieldwork (7 years after the agreement).

Over time though, a number of changes have occurred in relation to village level regulation in *hutan adat* management in BBK and forest management in BLB.

In BBK a subsequent village regulation has allowed village government to gain control over decision-making about *hutan adat* areas. The responsibilities of the elected *hutan adat* management committee, have passed under the control of village government. In this village this can be seen as part of a progressive concentration of power under a dominating village head, who, as I mentioned earlier has also managed to be appointed as village *adat* leader by the sub-district government. Although disputed at the village level, it provide addition power for the village head in negotiations with sub-district and district level authorities. According to key informants, *hutan adat* regulations are not always respected, and rules on prohibition to harvest timber are not enforced on villagers.

On the other hand, in BLB, where the KKD on forest conservation had substantial approval of the local *adat* leadership, over time the willingness and ability to enforce restriction of timber harvesting has also undergone changes. With regard to FPs, shortly after the agreement the regulations on prohibition to collect timber and NTFPs from protection forest and park area were unilaterally deleted from the village agreement and not implemented for a few years, while local logging for use as well as selling continued. However, in recent years the local elite involved in timber harvesting and sale came under strong social pressure from local *adat* institutions which started to embrace the KKD commitment in the hope to be able to reap future (economic) benefits derived from conservation strategies. For a number of years now the local *adat* elite has been able to enforce a ban on timber harvesting for sale throughout the village. NTFP collection is less regulated and is not perceived a threatening forest conditions. The outcome of the KKD in BLB is today highlighted as one of the (few) success stories of the ICDP program to gain commitment to conservation strategies. Nonetheless, there are considerable tensions between NGO and state view of 'forest conservation' strategies versus local conservation strategies. While the KKD agreement includes the commitment of the local community to monitor, report and implement sanctions on encroachment in the park, local authorities only implement restrictions on forest uses with respect to villagers. They do not feel responsibility to monitor external encroachment, as they feel that the state should be responsible for monitoring state forest land. This is largely based on the perception that protection and TNKS forests 'do not belong to the village' but are state land, and villagers cannot be expected to monitor and sanctions external encroachment in these areas.

Summarizing two trends are apparent. First, the orientation of local elites seems important in determining the commitment to sustainable forest uses or adoption of conservation strategies, as both need effective enforcement which can often be delivered only with support of influential villagers. In BBK, the village head has been able to coopt the management control over *hutan adat* areas, and conservation activities are not actively

undertaken in this or any other forest areas²⁵. On the other hand, in BLB operational rules has been adapted over time to preferred village forest uses, and some new conservation strategies have been adopted by villagers, mainly in the hope of future economic gains from conservation. It seems that, while the efforts of NGOs to established *hutan adat* for conservation purposes, villages' cooperation to their establishment is more geared toward asserting communal rights claims to these areas, compared to conventional conservation objectives. Moreover, village rules never embrace 'pure' conservation strategies, but where limits to forest access exist, these refer to sustainable use, which usually includes the opportunity to benefit economically from resource. The concept of biodiversity conservation and environmental services function of local forest areas, which NGOs often assume reflects villagers' preferences has been shown not to reflect local realities. In the case of BLB, the village that has so far most shown a propensity to introduce new conservation strategies under the ICDP programme, has clearly done this is the expectation that future economic benefits will be reaped by the village, through schemes as payments for environmental services (A project by the World Agroforestry Program undertook at study on the potential for payments for environmental services).

Other general forest rules

With respect to forest areas outside *hutan adat*, for the most part access for collection of NTFP in forest areas is open to all villagers although specific resources have diverse norms of use.

Timber, which is the most economically valuable resource in Bungo, seems not to be specifically regulated in the 3 of the 4 villages surveyed outside *hutan adat* (BBK, BBP and BST). Harvesting of timber of commercial use is a widespread organized activity, which involves a few teams of loggers in the villages. Illegality (local logging for sale) results also in difficulty of enforcing a ban on outsiders is also linked to the fact, that local villagers cannot report outsider encroachment to authorities when they themselves harvest extensively for sale, which is considered illegal.

Within forest areas, other user norms and derived rights are also present. For example management rights to honey trees in forest can be assigned to single individuals or families. Rights are claimed upon discovery of a honey tree in the forest, clearing the areas around the tree and telling people in the village about the discovery. Where the honey is collected different shares are given to the owner, the person that climbs the tree to collect the honey and people that follow the trip to the forest. Planted trees can also be individually or family owned (more often found in secondary forest) and belong to a person, family and the heirs of the person that planted them.

In the past, timber trees used to be claimed by individuals, by carving a sign in the trunk of the trees, as in Malinau today. However, this rule has all but disappeared in the Bungo area, since the increase of local logging for sale. Today, timber harvesting seems to be completely free access. The only way to claim a tree is to actually fell it. Still, where local logging teams operate there is informal coordination of logging activities.

Opening land in forest for cultivation is a right of all 'original' (*asli*) village members. Villagers do also rent and buy fallow land in Bungo from owners. On the other hand, any village member has the right to open land in forest for agricultural use, except transmigrants originating from other areas. Given the importance of rubber cultivation, forest land is increasingly opened for planting perennial, and there is evidence that opening forest to assert individual rights to land has also become a speculative exercise, as people try to assert rights to land for future small-scale oil palm development.

²⁵ It is too early to assess the situation in BBP, where the *hutan adat* regulation has only been recently approved.

(ii) Malinau sites

In Malinau, all villages surveyed in this study are within or bordering the areas of another major national park in Indonesia: Kayan Mentarang (*Taman Nasional Kayan Mentarang* TNKM). The area was surveyed by WWF and declared a Nature Reserve in 1980 and covers 1,360,500 ha. In 1996, the status was changed from reserve to national park to allow limited uses by local communities. Despite the fact that the nature reserve was established before TNKS, the boundary delineation process is not yet completed and the responsible park management agency (*Balai Taman Nasional Kayan Mentarang* (BTNKM) was only established in 2007²⁶.

As a consequence, law enforcement of park regulations has not yet started.

This is an important distinction with TNKS, where park enforcement activities have been underway for more than 10 years.

WWF and the rediscovery of Tanah ulen

WWF is the main conservation organization working in the TNKM area. A first project funded by the Ford Foundation (1991-7) had 4 main goals: research local knowledge of forest, investigate human-nature interaction, in the area, train local researchers, and document local land tenure practices (Eghenter 2002). Under this project WWF undertook participatory community mapping starting in 1992, and brought to the attention of outsiders a local custom related to protected areas (*tanah ulen*) (Eghenter 2002). Community maps were used to represent local descriptions about local land tenure arrangements. *Tanah Ulen*, which can be translated as 'restricted land' (Eghenter 2000), was first interpreted by conservationists as a local expression of biodiversity conservation strategy. In a second phase of WWF's work (Danida funded 1996-8), more attention was given to investigate this assertion and to work with communities to develop new conservation strategies (Eghenter 2002). At the end of the project in 1998, all communities around the park boundaries had produced their maps of customary village area and main uses of forest resources, which are aimed to be used to amend the park boundaries, and as much as possible match zoning of the park areas to local management arrangements. Most villagers know about the park since many activities have been undertaken by WWF in these areas, but many think WWF to be responsible for park management, as opposed to the state park management agency (BTNKM). This is not surprising given that state enforcement is not yet active, and BTNKM was only recently established. One of the first objectives of BTNKM is to finalize the delineation process of TNKM (personal communication, July 2008 head of BTNKM). Revisions of current park boundaries, 'zonation', and management planning, needs to be approved by the PHKA section of the MoF in Jakarta.

There are clear distinctions in the implementation stages and the interaction of villagers with state and conservation organizations between TNKS and TNKM, which affect people's perception of land tenure arrangements, their perceptions of security of tenure, and compliance with regard to statutory national park regulations. In terms of state rules, the main difference is between at least limited enforcement of regulations in TNKS, and absence of enforcement in TNKM. In terms of interaction with conservation NGOs, in

²⁶ The BTNKM office is in the district capital city of Malinau a 1 hour flight from the actual park, with no direct river or road transportation.

TNKS the focus of park related activities has been on exchange of development support against commitment to conservation strategies by communities, with mixed outcomes according to the funding agency (World Bank 2003). On the other hand, in the TNKM area the focus has been the mapping local perceptions of land tenure, codifying them and lobbying to integrate these as much as possible in statutory park regulations (although not yet implemented).

Local Tanah Ulen forest regulations

From historical investigation (Eghenter 2002) and key informants interviews it seems that in the surveyed area *tanah ulen* was first established in the two villages (MP and MAH) that are the centres of the local *adat* elite, which correspond to historical locally dominating ethnicities. The *adat* territory of Pujungan comprises 10 villages in the MP headed *adat* area and that second of Hulu Bahau comprises 5 villages, and has a center MAH). In these 2 villages *tanah ulen* used to be a forest reserve under the control of the local aristocracy. It is likely that some neighboring villages later established their own *tanah ulen* to reciprocate exclusion from neighboring forest reserves (personal communication village head MAP and MK), while most certainly in some villages where ethnic minorities are concentrated (ML and MB) *tanah ulen* was adopted at the time of WWF involvement in community mapping exercises that codified local forest use rules. Codification itself is not a neutral exercise (Barry and Meinzen-Dick 2008; Peluso 1995). Boundary definition in customary system tends to be linked to membership, uses of specific resources, contingencies and changes along these as well as temporal dimensions. Local perceptions of boundaries do not resemble a line on paper, which is often the translation of boundaries that mapping exercises use. Moreover, WWF's work did not only codify local rules, but contributed to establish new forest tenure rules in some area. As mediator between western conservation strategies related to the establishment of the national park, and community aspirations, resulting codified rules are not always completely embraced by local communities. WWF also participated in the movement for the revitalization of customary institutions and supported the formation of FoMMA (Association of customary communities of the Mentarang area) the organization representing local customary communities.

Only one of the villages (MAH) has written rules related to forest management, which were codified at the time of WWF's work in the area. WWF has been particularly active in this village, because of local responsiveness. Here WWF also helped to establish a research/ecotourist station within *tanah ulen*. Managed by WWF for a number of years, now it is under the responsibility of the formally established *tanah ulen* management committee. Some funds for management activities are still provided by WWF, but are likely to be phased out. In the other villages, rules have not been codified in written form.

Forest rules in Malinau, are based on communal use rights and individual use rights to specific forest resources. One NTFP that is particularly regulated is '*gaharu*' (derived from infected *Aquilaria* trees), which is an extremely valuable aromatic wood. In table 6 I present some of the rules related specifically to *tanah ulen* with regard to villagers and outsiders. *Gaharu* rules for outsiders apply to the whole village territory (further discussed in a later section).

All *tanah ulen* sites surveyed are opened to hunt and fish for communal celebration (usually Christmas, New Year's and Harvest celebrations) for a few weeks per year. Timber harvesting remains restricted unless customary leaders or village meetings sanction extraction of timber for village building, but usually timber is harvested outside *tanah ulen* also for these occasions. In general, even in *tanah ulen*, which is the village area where FP extraction is the most regulated, some local uses are permitted for

villagers. In the 5 villages part of the same *adat* territory of Pujungan, *gaharu* cannot be extracted by villagers, unless this is sanctioned by customary leadership and villagers in case of a contingent need. In the last village (MAH), part of Hulu Bahau *adat* territory, most uses, excluded timber harvesting, are allowed for villagers within *tanah ulen*. In most villages actual enforcement sees graduated sanctions that are negotiated for each offence, depending on offender, degree of offence and wealth.

Table 6. Normative Tanah ulen forest regulation:

	MAP	ML	MK	MP	MB	MAH (written rules)
established	traditional	facilitated by WWF	Adopted from MAP	Adopted from MAP	Facilitated WWF	by traditional
Recognition by district government	Process of recognition of WWF codified community management areas within the park boundaries currently underway (pending approval from MoF of park 'zonation')					
<i>Tanah ulen</i> restricted uses *	-Exclusion of outsiders (can receive permission to access) -Opened once a year for village uses (hunting, NTFP, timber) -No land clearing, timber, gaharu, rattan collection -Open to villagers for hunting, fishing, fruit collection	-Exclusion of outsiders (can receive permission to collect gaharu if they pay fees) -No timber harvesting unless 'open' once a year -Need permission to access gaharu and rattan	-Exclusion of outsiders No timber harvesting, no gaharu (unless 'opened' once a year) -Allowed for villagers fishing and hunting	-Exclusion of outsiders Opened once a year for village uses (hunting, NTFP, timber) -Permission needed for villagers to cut timber -No coll. of gaharu, rattan, clearing, hunting	-Exclusion of outsiders -No timber harvesting, rattan, fish or hunt -Gaharu can be collected by villagers but permission needed	-Exclusion of outsiders Timber harvesting only if sanctioned by village meeting -Free access of villagers for gaharu, fishing, hunting, NTFP (according to need)
Sanctions in <i>tanah ulen</i> Outsiders *	For gaharu: -monetary fine and seizing of gaharu	For gaharu: - monetary fine and seizing of gaharu	For gaharu: -monetary fine and seizing of gaharu	For gaharu: -monetary fine and seizing of gaharu -Other access and uses warning and request to leave the area	For gaharu: -seizing of gaharu and/or fine/contribution	For gaharu: -seizing of gaharu and food, leaving enough only to exit the village area
Sanctions TU villagers for gaharu	-For gaharu: 1 'parang' seizing of gaharu, or forced to sell gaharu	-Graduated sanctions (according to wealth)	-Graduated according to offence, and conditions of offender	-Graduated and negotiated depending on offence	-Graduated sanction (according to wealth)	- (free access for villagers)
Rules existing for	TU set up 4 years after	No (settlement	TU set up around 20	Yes	No	Yes

*Sanctions for outsiders changed in July 2007, as presented later in the section, but were not yet implemented at the time of the fieldwork.

me than 20 arriving in established in years ago
 years? area (MP 1996-99, no
 already had *tanah ulen* in
 TU) previous
 location)

Other general forest use regulation

A considerable number of other forest use regulations apply to all village territories, as well as to single forest resources within the village territories. Here I only highlight a few that are most relevant to the study. Most are embedded in social norms, allow for extraction for consumption, but also for sale, and contain rules assuring sustainable use. Need for formal permission for extraction by villagers is rare, but villagers have to abide to informal rules of limits of extraction usually related to consumption needs (except for *gaharu*).

In terms of economic value of FPs in Malinau, *gaharu* is the most valuable forest product. It is not surprising, that *gaharu* is the most regulated FP within village territories. Normative customary rules regarding *gaharu* harvesting have evolved over time reflecting the attempt to adapt to the development of markets for *gaharu*, increased encroachment by outsiders, and increased scarcity. Since the early nineties, considerable pressure from market demand (Wollenberg et al. 2001) has brought to stricter customary rules on exclusion of outsiders as well as local harvesting. Outsiders used to be allowed to collect *gaharu* against payment of a fee to the local villages. Enforcement however, is not always easy. In particular, in village areas where logging companies are active or where they work close to villages' territorial borders, it becomes increasingly difficult to monitor extraction (as people working for concessions extract *gaharu* while working on logging operations and other outsiders arrive via logging roads, bypassing villages). Over time, rules related to *gaharu* extraction have become stricter, seizing of *gaharu*, seizing of food reserves of outside collectors, and monetary fines for those avoiding to report and pay fees to local villages have become the norm. And, while in the past outsiders could receive permission to collect *gaharu* from villages, against a variable monetary fee contribution, in 2007, a customary *adat* meeting in Pujungan (comprising MAP, ML, MK, MP and MB) set a new rule which completely excludes outsiders from entering the village territories to collect *gaharu*, and imposed extremely high fines for those not complying with this rule. *Gaharu* can be collected by villagers, and villagers within the same *adat* area can still receive permission to harvest in neighbouring villages, but if they do not ask permission or pay village fees, disputes between villages can become quite heated. Sanctions are stricter vis-a-vis outsiders compared to villagers, or people from neighboring villages.

Other forest use regulations that have existed for a long time relate to trees in forest and to hunting. Wild fruit trees can be harvested by anyone, but it is forbidden to cut branches in particular for trees that are close to the settlements, and if it is possible to climb the tree. In forest areas further from settlements, tree branches can be cut if there is not other way to collect fruits. Some fruit trees in particular, including durian, are considered especially valuable. Sanctions are usually graduated in relation to offender, degree of the offence and type of tree. Other trees that are forbidden to cut are damar trees, providing valuable resin, once sold to outside markets, but today mainly used to seal boats.

Single timber species can be claimed by villagers, through identification of the tree and a sign carved in the trunk, which indicates that the tree is owned by someone. Sanctions for cutting a tree belonging to someone else vary from payment of a fine (valuable items, e.g. *parang* (small machete) or money), and usually for timber trees, the timber is divided between the person that cut the tree and the owner.

Honey trees remain under communal property with villagers having the right to collect honey, but this activity is not undertaken routinely in my Malinau sites.

Hunting is a widespread activity in Malinau, and is undertaken for both consumption and

for sale. A number of customary rules pertain to methods, timing and locations of hunting, and it is customary to always share the meat with hunting party members as well as other villagers.

Clearing forest for shifting cultivation is allowed in all primary forest outside *tanah ulen* within village areas and often allowed with permission in neighboring villages. Most years, villagers open fallow land for agricultural cultivation, which has already individual claims attached, and people that do not own land in the area, can 'borrow' land for cultivation. Any member of the village has the right to open land in forest for agricultural cultivation. However, opening land for agricultural use (in fallow or forest) is a collective decision, often made at the sub-village level.

(d) Discussion and interaction of normative forest tenure systems

Normative customary rules related to forest resources use show some similarities as well as important differences between the Bungo and Malinau sites. Forested territory is communally owned by village members, who can harvest resources for own use as well as for sale. Some forest resources can be claimed by households or individuals, who are entitled to the complete economic benefits related to their management and collection efforts, although part of the products collected for food are often shared. There are customary rules about harvesting methods of NTFP resources (e.g. fruit trees) that are geared to the preservation of the source of the product. For some products, implicit customary norms restrict collection to consumption needs, although these rules are increasingly threatened by commercialization of forest products. Outsiders are usually not entitled to collect local forest products, but can often receive permission by villages, usually upon payment of a collection fee.

Forest products that are of high economic value, and are scarce tend to be increasingly regulated by customary rules. This is certainly true for *gaharu* in Malinau, but seems not to be the case in Bungo with regard to timber for sale.

Customary and statutory rules differ on a number of grounds. First, the entitled subjects differ, the state claiming rights to local forest resources and exercising the right to allocate local forest products to outsiders (e.g. logging companies), which are perceived as external claimants by local users. This undermines the ability of customary systems to enforce exclusion rules, which are at the heart of social continuity function of customary systems and serve also sustainable use objectives. Second, local users tend to be excluded from direct harvesting for sale purposes. Collection for consumption is tolerated although not formally sanctioned by the state in production forest, and less so in protection or conservation forest areas. However, the tension between customary and statutory rules becomes apparent only when the state starts enforcing statutory rules in forest areas. Only at this time state tenure rules start to affect the resilience of and often undermine customary tenure systems. This usually occurs when logging (or other) concessions start extracting resources in production forest, and when state agencies start enforcing exclusion rules in protection and conservation forest. The situation is quite different in Bungo versus Malinau. In Bungo villagers have been exposed for more than 20 years to state enforced forest rules in production forest, at a time where there was very little (even informal) recognition of local rights. Enforcement in conservation forest started around 10 years ago (although enforcement activities are constrained by funding) and only more recently in protection forest. In the Bungo sites, today, protection and conservation forest, is perceived to be state land restricted for local uses, with possibility of incurring in severe sanctions. The more villagers perceive the state to control forest land, the less they feel

responsible for any enforcement of rules. On the other hand, production forest, after years of timber exploitation by outsiders, has today become close to open access at least for timber harvesting activities. Since the state focuses on criminalization of illegal logging activities, villagers perception of the illegality to extract timber for sale is quite high. Undertaking an 'illegal' activity also reduces their ability to exclude outsiders, since there is no collective institutions able to support their claims.

On the other hand, in Malinau, a stronger local customary leadership has been able to negotiate compensation from timber companies for villagers. Moreover, concession tolerates extraction of forest products by villagers in concession areas. Compensation in the forms of fees paid by concession to villages can be seen as a form of informal recognition of community rights to forest areas in production forest. On the other hand, in Malinau, there is no active enforcement yet of state rules in conservation forest. However, at least village elites know that in the national park areas uses are, at least on paper, quite restricted according to state law. They know for example that no timber concession can be granted in national park areas. From interviews it is clear that village leaders seek economic opportunities for villages and

most leaders of villages that have substantial territory within the national park, have indicated their wish of 'exit' the national park area (see appendix 1), in order to be able to negotiate compensation for 'granting permission' to logging concession to extract timber. This despite the fact, that all villages have signed the participatory maps delineating suggested national park boundaries. In a somewhat ironic way, in Malinau village leadership 'prefers' to have land under 'production forest', because of possibility for monetary compensation for logging activities, compared to 'conservation forest', because they do not perceive any benefits but only constraints to local uses in these areas. What they seem less aware of is that once logged, the future of production forest is likely to be conversion in plantation, which not only tends to wipe out community rights to this land, but means that forest resources themselves will completely disappear in these areas. This might be also a reason why in fact in Bungo people are starting to clear forest land just to claim individual rights to land, something that is alien to customary tenure rules, and might partly explain why local logging is not regulated.

Thus, in Bungo we witness that imposition of state rules undermines customary rules related to the management of forest resources, and undermines the incentives and ability of local communities to enforce rules related to sustainable use of some forest resources (timber in particular). The depletion of forest resources, facilitated by increases in externally driven exploitation, population pressure and at times government policies has brought villagers to increasingly rely on 'illegal' activities for cash income derived from forest.

In Malinau this has not yet occurred, but customary institutions are under threat as the state increasingly asserts rights to production forest areas, which will decrease the ability of communities to exclude other outsiders as well.

Conservation NGOs are other organizations that have and are impacting tenure systems in the site locations. They have mediated the establishment of *hutan adat* and brought to the attention of state authorities and lobbied for recognition of *tanah ulen* institutions in Malinau. They facilitate and negotiate tenure rules with communities and mediate and lobby government agencies to amend statutory tenure system.

However, it is not only the imposition of state rules, or the intervention of NGOs that affects customary institutions. Since state enforcement tends to come together with, commercialization, facilitated access to market and increased encroachment by outsiders, all these forces in fact act together in straining the adaptive capacity of customary tenure systems.

(VII) EXERCISED RIGHTS: EVERYDAY USE OF FOREST RULES

This section investigates exercised rights and local perceptions of rules about forest use (statutory and local rules) in the survey areas. Information is derived from household surveys and is geared toward eliciting local knowledge and understanding of how main rules to forest resources are actually exercised on the ground. While forest rules and norms cover an extremely complex and varied spectrum, in the household survey we only asked for a few major rules. Here I report results about questions related to the existence of rules prohibiting to cut trees/collect NTFP and hunt in certain areas, to where these prohibitions are in place, as well as to the existence of rules prohibiting to cut specific trees (in any areas), collect specific NTFP or hunt any specific animal²⁸.

(a) Areas With Prohibition to Fell Timber, Collect NTFPs and Hunt

Table 7. % respondents that indicated that in the village area there is an area where it is forbidden to: cut trees, collect NTFP and hunt

district	village	Cut trees	Collect NTFP	Hunt
Bungo	BBP	80	50	55
	BBK	91	52	38
	BST	63	12	5
	BLB	67	0	0
Malinau	MB	100	100	50
	MK	50	100	25
	MAP	80	90	0
	MAH	100	39	31
	ML	33	0	0
	MP	100	93	93

In terms of specific areas with restrictions on FP collection, most people indicated that restrictions exist for timber felling. On average 74% of respondents in Bungo and 83% in Malinau indicated that there are rules about an area of the territory where it is not permitted to cut trees²⁹. In Bungo, perception of such a rule was higher in the two locations (BBP and BBK) where there a newly instituted community forests (*hutan adat*) (80 and 91%) compared to the other two villages (63 and 67%) (table 7). In Malinau, the two villages with longest tradition of *tanah ulen* (MAH and MP) have amongst the highest levels of perception of such prohibition (100%).

Existence of areas where collection of NTFPs is prohibited was reported in most villages with the exception of BLB in Bungo and ML in Malinau. One important difference between Bungo and Malinau sites with respect to NTFPs is the collection of *gaharu* in Malinau. While in Bungo NTFPs do not compare in terms of economic value to timber harvesting, *gaharu* - still relatively plentiful and harvested in Malinau - can be extremely valuable (depending on quality), and has become more strictly regulated over time. It is not surprising then, that in Malinau more respondents (avg 70% compared to 29% in Bungo) indicated area restrictions in terms of collection of NTFPs. Still in Bungo as for timber,

²⁸ lack of rules related to prohibited areas or species to harvest. collect, should not be understood as absence of regulation, as more limited regulation of uses (contingent, related to specific uses etc. might still exist).

²⁹ The question did not distinguish between cutting trees for own use or for commercial use.

perception about prohibition to collect NTFPs in certain locations is higher in the two villages that have *hutan adat* (50 and 52%) compared to the other two villages (12 and 0%).

In Malinau, in 4 of the 6 villages surveyed (MB, MK, MAP, MP) between 90 and 100 % of respondents indicated there is an area where NTFPs can't be collected (mainly referring to collection of *gaharu*). The lowest response - just under 40% - is from MAH, here *gaharu* collection in *tanah ulen* is only prohibited to outsiders. While in the first 4 cases, villagers are not allowed to collect *gaharu* in *tanah ulen*, in MAH, villagers are allowed to collect any NTFPs in the area, but they should ask permission to village authorities in advance. In the last community (ML) no such role was perceived to exist. ML and MB are villages of ethnic minority (appendix 1). MB is located at a distance from other villages although economically dependent on MP, and displays similar rates of responses for timber and NTFPs. On the other hand, ML is a vassal village to MAP, *tanah ulen* has been adopted in part because neighboring villages did have this institutions, but it seems that restriction on areas to fell, collect NTFP or hunt is quite low. Both these villages did not use to have their own tradition of *tanah ulen* in the past.

With regard to hunting, in 3 out of 10 villages respondents indicated that there are no areas where hunting is forbidden (BLB in Bungo and MAP and MP in Malinau). In other villages variation of responses is high and going from 5% in BST to 93% in MP.

Overall, restrictions on locations where to cut trees are perceived as present by the majority of villagers, followed by restriction on locations to collect NTFP and to a lesser degree areas where hunting is prohibited.

The following tables (8, 9 and 10) indicate where, in terms of statutory tenure classification these prohibitions apply on the ground.

Table 8. Areas where cutting trees is forbidden (% of total respondents)

district	village	<i>Hutan adat Tanah ulen</i>	National Park	Protection Forest	Production Forest
Bungo	BBP	80		60	0
	BBK	76	10	81	0
	BST		2	61	0
	BLB		11	67	0
Malinau	MB	100	0		
	MK	50	0		
	MAP	80	0		0
	MAH	100	0		0
	ML	33			0
	MP	100	0		0

Table 9. Areas where collection NTFP is forbidden (% of total respondents)

district	village	<i>Hutan adat Tanah ulen</i>	National Park	Protection Forest	Production Forest
Bungo	BBP	45		5	0
	BBK	38	10	5	0
	BST		0	12	0
	BLB		0	0	0
Malinau	MB	100	0		
	MK	100	0		
	MAP	90	0		0
	MAH	38	0		0

	ML	0		0
	MP	93	0	0

Table 10. Areas where hunting is forbidden (% of total respondents)

district	village	Tanah ulen Hutan adat	National Park	Protection Forest	Production Forest
Bungo	BBP	100		64	0
	BBK	100	0	100	0
	BST		0	2	0
	BLB		-	-	-
Malinau	MB	100	0		
	MK	100	0		
	MAP	-	-		-
	MAH	75	0		0
	ML	-			-
	MP	100	0		0

In terms of locations where such prohibition apply, we can note the following: first, the highest percentage of respondents indicated such prohibitions within community forest areas (*tanah ulen* and *hutan adat*). Second, production forest was perceived as relatively unregulated in terms of FP extraction (no respondent perceived that production forest had any harvesting prescription, contrary to normative statutory rules). Protection forest (only present in Bungo) on the other hand was perceived as off-limits for timber by an average of 67% of respondents, and to a lesser degree for hunting and collection of NTFPs. Perception about prohibition to collect FPs in national park areas is quite low in general (2-10% of respondents) and only present in Bungo., while in Malinau no such prohibition is perceived in national park areas.

The variation within Malinau about prohibition to cut timber in *tanah ulen*, matches quite closely the reconstruction of the history of *tanah ulen* in the area with the centres of customary government (*adat besar*) (MAH and MP) displaying the highest response rates. In all more recently established *tanah ulen*, perception of prohibition to cut timber is much lower than in the customary centres, which seems to support the conclusion that in the other villages *tanah ulen* is a more recent phenomenon.

With respect to the differences between perceived rules in production forest, protection forest and national park areas, perception about prohibition to collect FPs matches quite strongly key informant reports about enforcement of statutory management rules, in particular in relation to logging prohibition.

On paper, timber harvesting and collection of NTFPs for sale can only be undertaken with a license, and hunting is prohibited in national park areas. However, there is little enforcement of these regulations in any of the villages surveyed, except in Bungo in protection forest areas and to a lower extent national park areas. For NTFP collection and hunting in particular, the state does not implement these restrictions in any of the surveyed locations. The only exception might be that, where patrols occur to control timber harvesting activities in protection forest or in national park areas in Bungo, restriction on NTFP collection might also be enforced on a sporadic basis. But there has never been anybody sanctioned by the state for illegally collecting NTFPs. Interestingly, none of the respondents in Bungo or Malinau, indicated that it is prohibited to hunt in the national park area, which in fact from the state point of view has amongst the most restrictive protection rules (at least for protected species). Production forest is also perceived as open to

hunting.

In both Bungo and Malinau, there is no enforcement of timber felling prohibition by state forest services within production forest. On the other hand, in protection forest in Bungo state enforcement occurs (forest police - *polisi kehutanan* - patrols protection forest if they receive a report of logging activities happening in the area), and sanctions, including arrest, are enforced. National park areas are more remote and patrols are rare (and made more difficult by the lack of roads). Still, the forest services consider the national park areas off-limits for any logging activity, and in Bungo patrols do occur from time to time.

In 3 of the 4 surveyed villages in Bungo where local logging is undertaken for commercial use, loggers indicate that they prefer to log in production forest, because it is 'allowed' to log there.

In Malinau, in surveyed villages there is almost no enforcement to date by forest police in any of the areas. This is due to 2 factors. First of all, village level logging for commercial use outside the villages is almost non-existent, because it is not an economically viable activity at this moment. River transportation is too costly and there is still plenty of timber downstream. Second, with regard to national park restrictions, there is no state enforcement and patrolling activity. Even forest development projects sponsored by district forest services always rely on local contractors, with almost no supervision.

With respect to NTFPs (except for ML where free access for villagers to NTFP collection is the norm) in Malinau all respondents referred to regulations within *tanah ulen*.

These patterns seem to support a few statements. First, perception, knowledge and likely implementation of customary normative rules is stronger compared to statutory rules. Second, villagers are more knowledgeable and aware of rules within community forest areas, be they newly instituted (*hutan adat*) or traditional (*tanah ulen*) compared to state forest lands. And both are more marked in Malinau compared to Bungo. Third, perception of prohibition in state forest areas is closely related to enforcement activities by state agencies. In Malinau statutory regulations are not yet implemented in many areas (national park and production forest areas without active concession), and sense of community ownership of village territory and related forest resources is stronger. Finally, to date less restrictions on access to collection of FPs imposed by the state tenure frameworks are present in Malinau compared to Bungo, but this might change as large-scale logging reaches communities and park management activities start to be enforced.

(b) Prohibition to collect specific forest products

In terms of timber species and NTFP in general, statutory law does not indicate specific species that can't be harvested. Prohibition is mainly based on area classification. Consequently, all related reports mainly relate to customary rules.

On the other hand, in relation to wildlife, state regulations on specific species, as tigers in Bungo, clouded leopards in Malinau and hornbills in both locations, exist.

It is important to remember that household data here presented refer only to species which cannot be harvested at all. However, there are numerous customary norms related to limits that are not discussed here, so that absence of a specific rule regarding prohibition to harvest or hunt does not correspond to lack of management rules overall.

Table 11. % respondents that indicated that there are specific species of trees that can't be cut (customary regulations) or specific animal species that can't be hunted

district	village	Specific trees	Specific animal

Bungo	BBP	80	20
	BBK	100	29
	BST	83	15
	BLB	89	33
Malinau	MB	100	50
	MK	100	25
	MAP	100	10
	MAH	54	62
	ML	100	0
	MP	86	7

Table 12. Animal species that can't be hunted

district	village	tiger	hornbill	clouded leopard	monkey	cobra	orang-utang	rhino
Bungo	BBP	X						
	BBK	X						
	BST	X						
	BLB	X						
Malinau	MB		X	X				
	MK						X	X
	MAP					X		
	MAH		X		X			
	ML							
	MP						X	

In all villages surveyed, the vast majority respondents indicated that there are customary regulations about specific trees that cannot be cut (117 out of 139), the lowest incidence in MAH. Interestingly, the two customary centers in Malinau (MAH and MP) have both among the lowest percentage of respondents indicating that such rules exist (table 11). Both villages have not yet experienced large-scale logging operations, and forest resources are plentiful. Apart from lack of pressure on forest resources, a reason for relative low percentages of positive responses might be that they also sub-district centers and a higher % of people rely on incomes outside forest and agriculture.

In Bungo, respondents indicated mainly single fruit species, and in particular durian and honey trees were by far the most cited species that cannot be felled. Both are valued in household diets, as well as for their economic value as people sell fruits and honey in town markets.

In Malinau, respondents indicated that prohibition to cut specific trees relates to all locally valued fruit species, regulations change slightly according to tree location (close to village or deep in the forest - for example branches of trees can be cut in forest away from the villages if it is impossible to climb the tree).

With respect to timber species for building material, in Bungo no prohibition was reported. On the other hand, in Malinau, some respondents indicated that trees that have a sign on them ('atep', 'silong' or 'sip') can't be cut. As indicated earlier, it is customary that when people look for wood for building, when they select a tree in the forest and claim it for own use, they carve a face or similar sign on the tree, and nobody else can fell it. A similar rule existed in Bungo in the past, but is not practiced anymore. It seems that the expansion of local logging for sale in Bungo has rendered this rule obsolete, and harvesting of timber species has largely become an open access activity (at least in production forest), thus contributing to the extinction of customary rules of timber harvesting.

With respect to hunting, perception about prohibition to hunt specific species is much lower compared to cutting specific trees. In terms of prohibition to hunt specific species, on average only 25% of respondents indicated that such prohibitions exist.

Wildlife is much more abundant in Malinau compared to Bungo, where only a very small fraction of households indicated that they hunt sporadically. According to state regulations, the highest response rate is in villages that have areas of the village territory within the national park in Bungo (BBK and BST).

In Malinau, the villages where logging concessions are active or bordering the village area have the lowest % of respondents indicating that there is a prohibition regarding wildlife hunting (MAP, ML and MP). In these areas logging personnel is also known for hunting in their spare time in production forest areas.

The highest response rate (62%) was in MAH, the only village that has written customary regulations about protection of wildlife species, which is also the village that has been most actively involved in WWF work around the national park (including dissemination on information regarding protected species in the park). Overall in Malinau 5 out of the 6 villages have part of their territory within the national park, but responses that such rules exist are highly variable among these villages (from 7-62%).

In terms of species (table 12), in Bungo only 1 animal - the tiger - was perceived as off-limits for hunting. Interestingly, the Kerinci National Park Management Agency has relied for a number of years now, on an independent tiger response team, that seems very effective at identifying and responding to poaching activities. The response team is entirely funded by international donors, although forest police provides personnel.

In Malinau, respondents indicated a variety of species as off-limits for hunting, including the hornbill, the clouded leopard, monkeys, the cobra, the orangutang, and the rhino. The clouded leopard is a protected endemic species found only in Borneo, and has received much attention from WWF campaigns. However, locally hunted for meat and skin, only 1 respondent indicated it as a protected species.

Hunting activities are widespread in all Malinau sites, where there is a strong hunting tradition and game is still plentiful. Still it seems that through WWF activities villagers have at least some knowledge of park regulations regarding hunting, although these are rarely adhered to by villagers. On the other hand, few people hunt in Bungo and informants indicate that there is little game to hunt today. This is reflected also in local diets, in Malinau people eat plenty of meat daily especially during hunting season, while in Bungo villagers rarely eat meat, despite the fact that they have more livestock holdings compared to villagers in Malinau.

While we asked if there are any specific NTFPs that cannot be collected anywhere in the village territory, prohibition was not reported in any of the villages. This largely reflects normative customary rules, which largely allow for collection of all NTFPs by village members (although collection might be restricted in some areas). Again state regulation on collecting of NTFPs are neither enforced nor perceived to exist in all study locations.

In summary, far less people indicated that rules of prohibition to hunt specific species exist (avg 25%), which is mainly a statutory rules, compared to prohibitions to cut specific trees (84%), which is predominantly a customary rule, while no prohibition reported for specific NTFPs (except in relation to outsiders).

(c) Collection of Forest Products: Differences by Location and Resource Type

In terms of where forest products are collected, we asked respondents to differentiate by location where they harvest FPs. They could distinguish between production forest,

protection forest, and local community forest (*hutan adat* HA or *tanah ulen* TU). However, villagers are not always able to distinguish according to statutory forest classification. Therefore, one further choice, broadly termed ‘village forest’ was given, which might overlap with any of the other statutory forestland categories, and was used if respondents indicate it or were not able to identify any of the other categories as adequate. We also included collection of forest products from fallow. According to customary tenure rules, fallow land is individually or family owned, eventually reverting to the community/lineage if not claimed. Fallow can also overlap with statutory forestlands. Consequently, responses do not indicate actual location according to statutory rules, but villagers’ perception about the location where collection occurred.

(iii) Location of timber harvesting

Table 13. *distribution of occurrences of FP harvesting between timber and NTFP (last 12 months)*

district	% occ.NTFP of tot occ FP	% occ.timber FP of tot occ FP	Total
bungo	85	15	100
malinau	89	11	100

In terms of occurrences, timber harvesting represents 15% of forest product collection activities, and 11% in Malinau. Collection of NTFPs occurs much more often in both locations compared to timber harvesting.

Table 14. *Location of timber harvesting as % of total occurrences (by district)*

district	Produc. F.	Protect.F	Vill. For.	HA/TU	fallow	TOTAL
bungo	31	3	36	0	31	100
malinau	0	0	82	0	18	100

Table 15. *Location of timber harvesting as % of total occurrences (by district)*

district	Produc. F.	Protect.F	Vill. For.	HA/TU	fallow	TOTAL
bungo	10	7	29	1	52	100
malinau	7	0	56	3	34	100

In Bungo respondents indicate that just under 1/3 of timber harvesting occurs in production forest, 1/3 in ‘village forest’ and just under 1/3 in fallow land (table 14). Only 3% occurs in protection forest. Village forest here indicates, either forest lands that are not under any of the other categories (and closer to settlements in Bungo sites) or more likely the perception that the forest area belongs to the village independently of where it is located according to statutory categories.

In Malinau, respondents distinguish only between collection in village forest and fallow, with 82% of timber harvesting occurring in village forest and 18% in fallow areas. In Malinau, villagers are less aware of statutory categories of forest areas and where the boundaries are. Production forest is usually not accessible for logging by villagers in active concession areas (2 village areas), while in other villages production forest is labelled as such only on paper. Similarly, borders of national parks are not yet demarcated (in the Bungo sites wooden poles or trees with easily detected red leaves demarcate national

park areas and in some areas have been put in place by villagers themselves under the ICDP program). Thus, even if in Malinau WWF activities have raised awareness of the presence of national park areas and some villagers have been involved in mapping exercises, on the whole villagers are less aware of where the actual boundaries are. Also, due to abundance of timber resources, in Malinau, people harvest timber much closer to their villages than in Bungo, and logging concessions can't log at a 2 km distance from settlements.

With regard to NTFP (table 15), in Bungo the majority is collected in fallow land (52%), while in Malinau it is in forest areas (61%) although around a third of collection in Malinau occurs in fallow land.

In Bungo, people go to the forest less often to collect NTFP, compared to Malinau. It is worth noticing that in Malinau 7 % of occurrences to collection of NTFP are in production forest, and all these responses derive from the 2 villages where the logging concession is active. These data seem to indicate that villagers tend not to log in active logging concession area, but that they do collect other NTFP there. This reflects statements of key information indicating that concessions allow villagers to collect forest products except for timber species the concession is interested in harvesting.

Overall, in Bungo people use fallow areas for FP harvesting more often than in Malinau. This is partly related to higher population densities, thus more extensive fallow areas and less forest near settlements in Bungo, but might also relate to forest conditions, and lower overall dependency on FPs in Bungo.

In terms of collection from forest areas trends are similar for timber and NTFPs. In Bungo, collectors tend to know boundaries of state classified forestlands (production and protection forest). Harvesting in production forest and to a lower degree in protection forest does occur here, the biggest problem in terms of conflict with statutory regulations being timber harvesting for sale, which in fact seems not be regulated by customary institutions either (in 3 of the 4 villages in Bungo). Perception of 'illegality' is higher in Bungo because timber is the main FP extracted for sale. On the other hand, in Malinau, people are largely unaware of state defined forest classifications and boundaries, and their perception of 'ownership' of forest as well as legitimacy of collection of forest product is much higher. This is likely to have an important effect on incentives to maintain customary regulations to collect FPs. This is also related to the fact the local timber harvestin for sale is extremely limited in Malinau, With regard to other FPs there is almost no enforcement in either locations by government. This situation should put people in Bungo at a disadvantage in term of being able to defend local uses patterns vis-a-vis government institutions.

(iv) Permission and limits to FP harvesting

With regard to cutting trees in only 2 occurrences was permission asked to cut trees, both occurring in Bungo. In the first instance, a person asked the village government to cut trees for own use, while in the second occurrence the respondents asked permission to the owner of fallow land to cut a trees on his land. In all other instances permission was not necessary.

Table 16. *tot occurrences of permission asked to collect NTFP (by district) 91 hhs in Bungo and 48 in Malinau)*

kabupaten	Produc. F.	Protect.F	Vill. For.	HA/TU	fallow	TOTAL
bungo	3	4	4	0	15	26

malinau 0 0 1 0 7 8

With respect to NTFPs, in Bungo, permission asked to collect NTFPs in production, protection forest and village forest in 10 out of 11 occurrences refers to honey collection from privately owned trees in forest. Permission is asked to the owner of the tree. The product is then shared with the owner of the tree and group of collectors. The other occurrences all refer to collection of fruits from private tree garden. In Malinau permission is asked less often because individuals do not own fruit trees in forest (although communities do), including honey trees. In only a few instances did respondents indicate limits to collection of FPs. In fact, limits to collection are embedded in social norm, people take for granted and to the specific uses of FPs. For example, an understanding the collection should be limited to need is widespread for many NTFPs, and perishable food items usually also present implicit limits to collection.

Frequency of forest visits, and implications for monitoring

Table 17. number of forest visits to collect FPs over last 12 months

district	avg no. trips to forest	avg no. trips to fallow	Avg no FP collected
bungo	13	10	3
malinau	32	23	7

There is a clear difference in terms of average number of trips to collect forest products between Malinau and Bungo³⁰. In Bungo, household members collect FPs less frequently from both forest and fallow and they collect a smaller variety of FPs compared to Malinau. Self-monitoring of forest uses depends heavily on villagers reporting activities in forest. The more often villagers go to forest areas for own collection needs, the more they can monitor encroachment, in particular from outsiders. Less dependence of FPs also reduced the ability to monitor, for example encroachment from outsiders.

As FPs become more commercialized, e.g. timber and gaharu, it seems that customary systems can have difficulties at adapting rules and being able to effectively enforce these. In fact, for gaharu, customary rules are in force, the difficulty is mainly enforcement which becomes harder as external claimants backed by state law enter the area. On the other hand, in Bungo customary rules managing local timber extraction are either obsolete or have been weakened. This is also likely due to decades of state backing of external claims to timber. If the two locations are representative for a possible evolution from pre-logging to post-logging conditions, it is not excluded that in Malinau a transition will take place toward the situation in Bungo. The negative aspects related to the weakening of local forest management institutions related to such a development include, forest resource depletion, increasing dependence on timber compared to NTFP, which also brings more people into the 'illegal' sphere.

³⁰ Note: trips to forest are calculated separately for each of the 25 FP investigated. It is likely that the measure is an overestimation of actual trips, since often collectors do collect more than one FP on any one trip. However, in terms of comparison between Bungo and Malinau the difference should be indicative of difference in frequency of visits to forest.

(VIII) PROPERTY RIGHTS AND WELL-BEING

The functional analysis of property rights presented earlier identified 5 functions of property rights in customary systems. Evidence presented in the following section focuses in particular on subsistence, economic and social security functions.

(a) Subsistence and Collection of Forest Products

Collection of forest products is likely to depend on a number of determinants. Most importantly forest conditions affect the likelihood to successfully harvest forest products, but other variables as property rights to forest (rights to access and withdraw), dietary habits, access to markets (as incentive for sale as well as for substitute products), incomes (people might revert to forest products collection for consumption and sale in times of need. For certain products, credit constraints might in fact limit access, in other words they might or not be able to undertake collection activities which require upfront costs depending on their income level). Obviously, since the two locations are in different ecological settings harvest of specific forest products also depends on type of forest ecosystem (in the survey we have though concentrated on products that are or used to be available in both locations).

On the other hand, availability and collection of forest products will affect income, diet and household consumption in general.

It is very likely that collection of forest products is also linked to differences in agricultural activities (e.g. wet versus dry rice cultivation). In addition, rubber cultivation in Bungo, might have contributed to reduction of dependence on forest product collection, and so have work opportunities outside agriculture and forestry.

This section is meant to give an indication of the contribution of FP to well-being in the subsistence, economic and social security spheres. In the literature often values of FPs is expressed in terms of income derived from forest products, although people value FPs for other reasons as well (Wilks 1990; Wollenberg and Ingles 1998). The literature shows that non-cash income is an important component for forest dependent people, especially for the poorest among them.

Investigation on forest product collection can be quite challenging in terms of measurements (Wollenberg and Ingles 1998), be they expressed in quantities or monetary values, and detailed information requires extensive investigation.

This section presents data on collection of forest products in the 12 months previous to the survey and is based on recall data. The number of FPs is not exhaustive, but based on a list of 25 different forest products that include fruits, medicinal plants, timber and wildlife and a few other important NTFPs. Consumption data are presented in terms of quantities collected, because of the difficulty to give reliable monetary values to a number of products that are either not exchanged on the market, whose prices are so variable and contingent, that it is not possible to assess an 'average' price, and because substitutes are not easily identified (Wollenberg and Ingles 1998). Quantities are obviously not directly comparable among FPs, but it is hoped that the figures can be a rough indication of the importance of FPs collected for consumption as opposed to cash incomes. Economic benefits from forest products exchanged on the market are expressed in estimated gross income terms, the only costs taken into account being average cash costs (Wollenberg and Ingles 1998) related to timber harvesting, while for other FPs cash costs are assumed to be negligible.

Table 18. Collection of forest products

	% hh that collect FP	Avg collected	FP	% hh that collect NTFP	% hh that collect Timber	%hh that collect NTFP	that collect (of those)	of which that Timber those collect FP)	% hh collect (of that)
bungo	67		3		62		20	92	30
malinau	98		7		98		40	100	40

* = avg of more than 1 product

Out of 524 occurrences simple counts indicate that almost all households collect forest products in Malinau (98%) and on average they collect a higher variety of them throughout the year (7 out of a list of 25) (table 18). On the other hand, just over half of the households in Bungo (67%) collect forest products, with an average of only 3 different forest products.

In terms of distinction between collection of NTFP and timber products: in both locations almost all those that collect FPs collect NTFP (92% Bungo and 100% in Malinau), while 30% of those collecting FP harvest timber in Bungo and 40% in Malinau³¹.

Table 19. % of hh respondents that collected FP for consumption in the last 12 months

district	manau	rattan	agarwood (gaharu)	dragon blood (jernang rattan fruit) ³²	honey	shorea resin (damar)	fruits*	bamboo	med plants*	timber*	mammals*	birds
bungo	1	15	0	0	15	1	36	42	20	14	1	5
malinau	0	67	0	0	2	4	44	65	69	25	83	21

Table 20. % of hh respondents that collected FP for sale in the last 12 months

district	manau	rattan	agarwood (gaharu)	dragon blood (jernang rattan fruit)	honey	shorea resin (damar)	fruits*	bamboo	med plants*	timber*	mammals*	bird*
bungo	10	3	1	3	10	3	12	0	0	9	0	1
malinau	0	0	29	0	0	0	8	0	0	21	31	4

For consumption needs many FPs are collected by a higher % of households in Malinau compared to Bungo (table 19). These include rattan, fruits, bamboo, medicinal plants, timber and game. On the other hand, if we look at % households that collect for sale (table 20), only timber, game and gaharu score higher in Malinau, while rattans, honey, fruits and

³¹ It is likely though that in Bungo respondent underreport timber cutting, because of the illegal nature of the activity there. In Malinau illegal logging for sale is not occurring so people have less incentives to underreport extraction.

³² Wild jernang is only collected in Bungo and is a raw material for dyes, but only 3 occurrences were reported. Prices are quite high (US\$65-US\$76 per kg locally (Komarudin et al. 2007).

to a lesser extent damar and jernang are collected for sale by a higher % of hhs in Bungo.

Table 21. Quantities of FP collected for consumption in the last 12 months (139 respondents: 91 from Bungo and 48 respondents)

	manau	rattan	agarwood (gaharu)	dragon blood (jernang rattan fruit)	honey	shorea resin (damar)	fruits*	bamboo	med plants*	timber	mammals*	bird*
units	stems	stems/kg/ bundles/ pieces ^	kg	kg	kg	kg	kg or fruits	poles	pieces	m ³	animal	animals
bungo	80	420 stems +20bundles+ 120kg+40 pieces 1830 stems+ 107 bundles+ 120kg+ 100 pieces	0	0	46	1	1028 fruits + 930 kg	860	16	30.3	1	6
malinau	0	100 pieces	0	0	1	5	298 fruits+ 914 kg	495	1673	26.0	1289	69

* avg of more than 1 product

^ for rattan and fruits we give quantities in more than one unit, because it was not possible to pool them together due to lack of reliable and uniform information on conversion measures.

Table 22. Quantities of FP collected for sale in the last 12 months (139 respondent: 91 from Bungo and 48 respondents)

	manau	rattan	agarwood (gaharu)	dragon blood (jernang rattan fruit)	honey	shorea resin (damar)	fruits*	bamboo	med plants*	timber	mammals*	bird*
units	stems	stems/kg/ bundles/ pieces	kg	kg	kg	kg	kg or fruits	poles	pieces	m ³	animal	animals
bungo	654	1100 bundles +450 kg	0	3.5	262	84	2070 pieces + 100 kg	0	0	400.5	0	3
malinau	0	0	N.D.^	0	0	0	75 kg	0	0	74	365	13

^ it was not possible to collect information on quantities of gaharu collected and sold, because of recall difficulties. The survey did collect revenue figures, which respondents did recall better than quantities. These are presented in the later section on cash income.

Tables 21 and 22 show quantities collected over a 12 months period for consumption and sale respectively. Small size rattan varieties are only harvested for own use in Malinau, although sometimes villagers sell artifacts of rattan. In Bungo on the other hand, they are harvested for both consumption and for the market. Prices are relatively low for small size rattan. The bigger manau rattan variety is harvested mainly for sale in Bungo, but collection is limited in quantity.

Gaharu and jernang (dragon blood) are only collected for sale. In Bungo honey is collected for both sale and consumption, quantities collected for consumption being around 6-7 times higher than for sale. Fruits from forest are mainly harvested for consumption, except for durian (*Durio spp.*) in Bungo (and to a lesser degree duku (*Lansium domesticum Jack.*), petai and lengkung (*Dimocarpus longan Lour - Ssp. longan*). In Malinau forest fruit sales are rare and occurred mainly for petai (*Parkia speciosa*), langsung (*Lansium domesticum*) and mata kucing (*Dimocarpus longan Lour - Ssp. Malesianus*). Medicinal plants and bamboo are exclusively collected for own use, and much more so in Malinau compared to Bungo. Hunting also occurs almost exclusively in Malinau, and quantities consumed are between 3 and 4 time higher compared to

quantities sold. Timber is harvested for both sale and own use, although occurrences are higher in Malinau, quantities harvested are much higher in Bungo due to much higher levels of harvesting for sale. Although we were not able to always retrieve comparable units for collected forest products, we can conclude that FPs that are mainly collected for consumption are medicinal plants for both health and dietary uses, rattans (in Malinau) to produce household items and work tools, some of which are sometimes also sold outside the village, bamboo which is used for construction of shelters, fences, irrigation and other constructions, and animals for food (mainly in Bungo). If we adjust the figures per household, people in Malinau collect considerably more forest products for consumption compared to Bungo (except for timber and honey). Finally, we only asked about collection of 25 FPs, while people do collect many more, most not included in the list refer to consumption items.

Table 23. Quantities of timber extraction for consumption and sale (yearly)

Kabup StDev in ()	Avg m ³ extracted per hh that extract for consump.	Avg m ³ extracted per hh that extract for sale
bungo	2.3 (2.1)	49.6 (70.4)
malinau	2.2 (2.9)	7.4 (10.1)

The situation in Bungo and Malinau regarding timber harvesting is quite different, in terms of quantities and purpose of harvesting, and is further discussed below.

14 % of villagers harvest for consumption in Bungo compared to 25% in Malinau, and 9% harvest for sale in Bungo compared to 21% in Malinau. However, average yearly sale revenues among households that sell timber is around 20 Mill Rp. in Bungo compared to 6 Mill Rp. in Malinau. This difference is due to the fact that in Bungo levels of extraction for sale per household is much higher. This becomes clear looking at quantities harvested (table 23). Extraction for own use follows a similar pattern in both locations. Households that extract for consumption on average extract between 2.3 m³ of timber per year for in Malinau and 2.2 m³ in Bungo respectively. (In Malinau the 1 respondent indicating to harvest 10 m³ for own use, is a carpenter). On the other hand, there are substantial differences in terms of quantities harvested for sale. The average extraction per households that harvests timber for sale is 49.6 m³ in the Bungo sites, compared to 7.4 in Malinau, which translates in around 7 times higher extraction rates for sale in Bungo by a lower number of people (8 in Bungo versus 10 in Malinau). If we adjust this to sample size differences, the overall extraction of timber for sale in Bungo is more than 6 times higher than in Malinau³³. Projection about total harvest would indicate that in the Bungo sites 285 m³ are harvested for consumption versus 175 m³ in Malinau, while for sale in Bungo 3,762 m³ are harvested versus 498 m³ in Malinau (table 24). In terms of sustainability, (even without taking into account different starting forest stand conditions, which are much better in Malinau) for both consumption and sale this translates into 6.35 m³ extraction per km² in the Bungo village territories versus 0.08 m³ per km² on the Malinau village territories.

Table 24. Projection of yearly timber harvest in m³ in sample sites (4 villages in Bungo and 6 villages in Malinau)

³³ Because of evidence of underreporting of timber harvesting for sale in Bungo, these figures should be seen as a lower estimate.

kabupaten	projected yearly m ³ of timber harvested for own consumption	avg m ³ per tot hh	avg m ³ per km ² (tot vill territory)	projected yearly m ³ of timber harvested for sale	avg m ³ per tot hh	avg m ³ per km ² (tot vill territory)	TOTAL	avg m ³ per km ² (tot vill territory)
bungo	285	0.3	0.45	3,762	4.4	5.90	4048	6.35
malinau	175	0.5	0.02	498	1.5	0.06	673	0.08

While in the Malinau sites sale of timber happens exclusively within village boundaries and relates to needs as repairing and building homes and boats and some carpenter work, in the Bungo sites most harvested timber for sale is transported and sold outside the village. Another interesting feature relates to the difference between sites where forest has already been logged by concessions, compared to sites where it is underway and sites where this is absent. While the highest extraction rates are in Bungo in 3 of the 4 surveyed villages, (with the exception of BLB village where sales outside the village do not occur), all these sites are in logged over concession areas, where logging concessions are not active anymore. Thus, past presence of logging concessions seems to be related to the highest levels of local extraction by villagers for sale, followed by villages with currently operating logging concessions, while the lowest level of local extraction for sale is linked to villages where no logging concession is active and which also present the best conditions of existing forest stand.

(b) Social Security Function of Property Rights and Well-being

There are a number of ways in which forest products can have a social security function (Wollenberg and Ingles 1998). Access to forest resources for subsistence as well as economic benefit, both provide a way to reduce vulnerability in times of need. And relatively free access to forest resources provides a safety net mechanism, in particular in the absence of state provided social security mechanisms.

Forest products can function as source of income or subsistence in the events of specific shocks occurring in the household. In our study we asked households to indicate how they responded to two possible or past occurrences:

A: an event within the household that causes a cash income shortage and B: an adverse agricultural event at the village level (bad harvest, drought, pests...).

Out of 7 different choices, 43% of respondents in Bungo and 55% in Malinau indicated that the household solved an A type problem and 52% and 50% a B type problem, within the household without external help³⁴ (Table 25). In Bungo around 40% of these indicated that they would revert to (distress) sales of land, livestock or other assets, while in Malinau no respondent indicated this solution³⁵. In case of an A event, which is contingent to single household conditions, only 2.4% of respondents in Bungo would resort to increasing collection of forest products for sale, while this figure reached 32% in Malinau. Reverting to borrowing from family (22% in Bungo and 18% in Malinau), using savings (20% in Bungo, 32% in Malinau,) and reverting to daily wage employment (15% in Bungo and 18% in Malinau) were indicated as other possible solutions.

³⁴ External help would include: extended family, villagers', village institution, government, Ngo or credit.

³⁵ Note that while land sales are widespread in Bungo, there are no developed land markets in the Malinau site, where people traditionally 'borrowed' land in case of need.

In case of a B type event (which is a widespread event affecting all villagers), noone in Bungo referred to be reverting to increasing collection of forest products for own consumption or for sale. On the other hand, 16% of respondents in Malinau indicated that they would increase collection of FPs for own consumption and 26% indicated that they would increase collection of FPs for sale. Sale of land or other assets were indicated by 25% of respondents in Bungo, while in Malinau 24% of respondents indicated reverting to sale of livestock or other assets (excluding land). And in figures on reverting to savings (18%), borrowing from family (20%), and daily work (38%) in Bungo were all higher compare to Malinau (5%, 5%, 26% respectively).

Table 25. Importance of collection of FPs in case of adverse shock

district	A: % respondents indicating solution within household	A: of these, % respondents that increased collection of FP for sale	B: % respondents indicating solution by household	B: of these, % respondents that increased collection of FP for own consumption	B: of these, % respondents that increased collection of FP for sale
bungo	43	2.4	52	0	0
malinau	55	31.8	50	16	26

Thus overall, in case of adverse shock more people in the Malinau sites would revert to collection of forest products as safety net mechanism. Villagers in Malinau routinely collect more forest products to start with, but better forest conditions may also contribute to the choice of this solution.

Clearly, at this stage reduced access to forest resources through for example implementation of exclusionary state tenure rules (reduced access to production, protection, and conservation forest) would certainly adversely affect people in Malinau. And it is in Malinau, where these changes are currently underway, with increasing exclusion from production forest areas as large-scale logging concessions enter the areas, as well as processes of delineation of national park areas, which although, should include special zones for local use, nonetheless reduce access for villagers to forest resources. In Bungo, these changes have long occurred, so it might be that less dependence on forest products in case of adverse shocks is at least in part the result of past exclusionary policies by the state.

(c) Economic Function of Property Rights and Well-Being

Property rights entitle to right holders to the benefit stream derived from a resource (Bromley 1991). The ability to derive economic benefits from FPs is quite important in economic contexts where market relations become more and more important and where alternative opportunities to earn cash incomes are limited.

This is particularly true for people with limited education, for which work opportunities outside the agricultural sector is limited. At the village level, economic benefits from FPs usually provide a minor contribution of cash incomes on average, but they can be very important for some of the households, which are usually among the poorest.

(v) Gross cash income from sales of forest products

Gross income is defined as total cash revenues, minus cash costs. In most instances of FP collection, cash costs are limited. Often collection of FPs for sale is undertaken together with collection for subsistence needs, other times activities are closely linked to local agricultural activities. For collection NTFPs, revenues are taken to estimate gross economic income, as there rarely are any cash costs related to collection. For hunting, the main cost is that of bullets for rifles, while trap hunting has no cash upfront costs. Timber extraction is the activity that requires most upfront cash costs. According to key informants, although cash costs depend on type of work and ownership of chainsaws, on average cash costs are around 50 % of revenues.

Table 26. Average annual household cash income from FPs by source (timber and NTFPs) (in ,000 Rp.)

district	all rattan	gaharu	jernang	honey	damar	fruits	timber	mammals	birds	TOTAL
bungo	37	6	9	78	1	49	995	0	3	1,177
malinau	0	1,452	0	0	0	7	630	1,228	12	3,328

Table 26 shows average household gross cash incomes from FPs. While overall, more types of FPs are collected in Malinau compared to Bungo, less are marketed in Malinau. Gaharu³⁶, sale of meat from hunting are the main cash providers for households, followed by timber sales. Together these 3 products provide on average 99.5% of gross income from sale of FPs.

In Bungo on the other hand, a wider variety of FPs is marketed, but 85% of average household cash income relies exclusively on timber sales.

Overall, per capita gross income from sale of FPs is 3 times higher in Malinau compared to Bungo³⁷.

Table 27. % of cash gross income out of total FP income

kabupaten	income from NTFP as % of income from FP	income from timber as % from FP
bungo	16	84
malinau	81	19

³⁶ Gaharu represents the most economically valued forest product in the region, although prices vary considerably according to quality (270,000 Rp is the average local price reported in sales per kg, with standard deviation of 182,428 Rp.). Gaharu collection is a high risk activity, because of the difficulty of finding the resource (infected trees) and the high difference in prices according to the quality of the product. Moreover, villagers often have to incur in debt to finance the collecting party, which makes them highly dependent on traders, especially when a trip is unsuccessful (Sheil 2002).

³⁷ However, we should point out that gross income from collection of gaharu in Malinau might in fact be overestimated. Collectors of gaharu rely on in-kind credit (food items) to fund their collection trips, and have to repay the costs after the trips. Unfortunately, we do not have detailed figures of these costs which vary considerably. Gaharu collection is a high risk activity because there is no assurance that collectors will encounter valuable gaharu on any single trip. Indebtedness can be the consequence of unsuccessful trips, and these costs are not included in our estimates, because of lack of data.

The role of timber versus NTFP contribution to incomes from forest is reversed in Bungo and Malinau. While in Bungo 84% of gross income from FPs derives from selling timber, 81% is derived from NTFPs in Malinau.

However, despite the high income share of timber as part of FP sale in Bungo, this relates only to a minority of households (9%), so that income distribution from timber sales is very much skewed in favor of a few households only.

(vi) The importance of cash income from FP in overall gross cash income

Table 28. Gross income shares related to agriculture and forestry activities

kabupaten	wetrice	Dryland crops	dryrice	Crops from rubber fields	rubber	treegardens	fallow	timber	NTFP	Outside ag.&for	TOTAL
bungo	-0.15	2.35	-0.89	0.51	36.81	0.38	0.24	8.86	1.54	50.36	100
malinau	0.09	0.07	-0.58	0.00	0.00	1.51	0.00	2.46	10.55	85.91	100

As % of overall gross incomes, incomes from forest (timber + NTFP) contribute around 10.5% in Bungo and 13% in Malinau (table 28). Small-scale rubber planting is very important in Bungo and contributes to 36 % of total gross incomes, contributing on average 4 Mill. Rupiah annually to household income, which explains the much higher income from agriculture in Bungo compared to Malinau.

Malinau is a resource rich, low population density district, and the share of income from outside agriculture and forest is much higher than in Bungo (86% compared to 50%). Government expenditure per capita is much higher in Malinau. Moreover, 2 of the villages surveyed in Malinau, although much smaller than any of the villages in Bungo, are sub-district capitals (MP and MAH), which means that numerous people hold well-paid government jobs there. Consequently, much of the difference in income outside agriculture relates to availability of government related jobs, and the fact that government salaries are considerably higher in this area of Malinau for government positions, as people get more than 50 % additional salary on state base salaries, because they work in 'remote areas'. If we look at table 29, wages determine 73% of income outside agriculture and forestry in Malinau and 44 % in Bungo. In Bungo timber related activities (occasional work and trade income) counts for 15%, and government subsidies for 10 % respectively. On the other hand, in Malinau as a share government subsidies are less important, but around 5% of average income outside agriculture and forestry relates to compensation fees by a logging company (occurs in 5 of the 6 villages surveyed).

Table 29. Gross income shares related to activities outside agriculture

district	fish	ag.trade	other trade	ricemill	timber related	repair	gold	furniture	remittance	hh industry
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bungo	3.55	2.32	4.62	2.99	14.91	1.16	0.67	3.03	1.75	2.26
malinau	2.67	1.08	7.78	0.00	1.75	0.16	0.00	0.05	0.78	1.94

(continues)

district	hh industry	livestock sale	wages	renting	gift	gov subsidy	interests	Logging concession compensation
bungo	2.26	6.71	44.38	0.91	0.05	10.69	0.01	0.00
malinau	1.94	0.74	73.04	0.64	0.17	4.58	0.00	4.62

Table 30. Average Household Gross income by categories (, 000Rp.)

district	From Forest Products	From Agriculture	Outside Agriculture and Forestry	TOT gross income
bungo		1,177	4,403	5,650
malinau	3,328	277	21,993	25,598

In summary (table 30), average household income from forests is 3 times higher in Malinau compared to Bungo, while income from agriculture is much more important in Bungo, mainly due to rubber planting activities. Overall cash gross income in the Malinau sites is more than twice that in Bungo and this largely depends on work outside agriculture.

(vii) For whom is access to forest resources more important in terms of gross cash income?

Incomes from FPs might have different importance for poorer versus richer households. If we look at shares of income from timber and NTFP out of total income by total income quartiles we observe the following.

In Bungo (table 31) income from timber sales is most important in terms of total income share for household in the first quartile (42 %), while it becomes much less important for household with higher incomes. Income from NTFP contributes to around 2-2.5% in household with incomes under the 3rd quartile.

On the other hand, income from rubber contributes to 44-55% for household under the 3rd quartile.

Table 31. Bungo: Income share from timber, NTFP and rubber by total income quartiles

Tot income	Timber share	NTFP share	Rubber share
<1st quartile	42.2	2.6	44.5
>=1 and <2nd quartile	8.6	2.3	55.0
>=2 and <3rd quartile	0.3	2.3	43.6
> 3rd quartile	0.2	0.5	24.3

On the other hand, in Malinau (table 32) NTFPs are crucial for poorer households, contributing to 50% of total income for household in the first quartile. NTFPs remain important for households in the 2nd quartile, contributing 25% to total income. On the other hand, income from timber is not so important, contributing around 5% to households in the first quartile and 11.5% for those in the second.

Table 32. *Malinau: Income share from timber and NTFP by total income quartiles*

Tot income	Timber share	NTFP share
>1st quartile	4.8	49.9
>=1 and <2nd quartile	11.5	24.6
>=2 and <3rd quartile	0.1	5.1
> 3rd quartile	0.2	2.4

Community access to forest resource is thus particularly important for the poor in both Bungo and Malinau. However, in Bungo this income derives almost exclusively from timber sales, which makes it more problematic in terms of sustainability, but also in terms of legitimacy of income source in the eyes of the state.

On the other hand, in Malinau, NTFPs - and in particular gaharu - substantially contributes to the income of the poor. Although stricter regulation about gaharu are being imposed on outsiders as well as in village people to avoid depletion, there are indications of increased scarcity as well as increased difficulty to monitor outsiders as new logging roads are opened. As state rights are asserted through active logging concessions, it become more and more difficult to maintain exclusion rules regarding FP collection toward outsiders. Depletion of NTFPs in particular, threatens in particular poorer households. On the other hand, the lost ability to exclude logging companies, together with the fact that logging becomes more profitable as market channels open, transportation costs decrease and processing industries arise pushes villagers to rely more and more on timber products for cash income compared to NTFP.

Apart from the impact on sustainability of use of forest products, and the effect on household incomes there is a further reason for concern. Local logging for sale is considered illegal by statutory rules. Although this seems to be partly tolerated by the state, informally (through lack of enforcement of these rules in production forest at least), major reliance on an 'illegal' activity for cash income by the poorest section of society is certainly a cause of concern. This in fact, provides increase insecurity, not only in relations to rights to the forest resource (and consequently reduced incentives to use the resource sustainably), but also in terms of security of livelihood incomes, as people increasingly live in the grey zone of illegality.

(IX) CONCLUSION

Legal pluralism provides us with a framework to analyse forest tenure in Indonesia, which takes into account co-existing multiple tenure regimes and influences of state, customary and non-governmental organizations' institutions.

State tenure regimes, based on economic and ecological national priorities are very much distinct from customary tenure regimes in Indonesia. Local customary tenure regimes are based on collective village ownership and serve multiple functions related to political, economic, subsistence, social security and social continuity.

Descriptions of the two systems, highlight the difference and conflictual nature of their relationship. One main difference, pertains to 'who' is entitled to the benefits derived from management of forest resources: the national as a whole, and - in production - forest large-scale enterprises in state forest tenure regimes, compared to village members in customary tenure regime. Local perception of the state as an 'external claimant' to local

forest resource threatens the ability to local people to manage forest resources and their incentives to maintain the resource base. This is most evident in Bungo with respect to timber extraction. The subsequent weakening of customary institutions occurs when the state starts actively enforcing statutory tenure rules which conflict with customary rules. This threatens the very basis on social continuity of local cultures and societies, and the political aspects of tenures systems, which confer powers to the rightholders, This is also more evident in the Bungo sites, where state rules have been imposed for a longer time, and at a time where contestation of state rules was a more risky activity. Where customary leadership is stronger, and where the state at least in part supports customary authority (Malinau), local villagers are able to negotiate at least some very limited (and informal) recognition, e.g. in the form of higher compensation from logging companies.

We have seen that NGOs working on environmental issues in localities also affect tenure arrangements, through projects in localities, lobbying state institutions to amend statutory tenure rules, and through codification and redefinition of local tenure rules. They usually place themselves as facilitators between state and localities, but they bring their own agenda's about 'what forest resource are for' which will affect outcomes.

While the assurance of access to forest resources for both consumption and cash income needs is the main characteristics of local systems, state imposition of tenure rules undermine these uses, affecting subsistence, economic and social security aspects of well-being. The vision that forest resources need to be preserved is part of the underlying NGOs normative system in conservation forest area, which supports statutory tenure regimes that limit or prohibit FP extraction by local people for economic benefit.

One example of the effects of state tenure on local institutions and perceptions is the example from Malinau, where many village leaders are opposed to having part of their territory within the national park boundaries. In production forest, once economic exploitation becomes viable, and state tenure rules are imposed through active logging by concessionaires, local rights are informally recognized through compensation payment by logging companies. On the other hand, in protection and conservation forest, where (except for mining activities) state tenure does not derive economic flows, imposition of state tenure rules translates more clearly in exclusion of local users, and no economic benefits. However, compensation from active concessions, only provides for limited economic benefits and for a very limited time. After logging, in many parts of Indonesia the developments translated into complete loss of local control over land, through conversion of forestland into large-scale plantations.

State, customary and NGOs normative systems defining tenure regime not only interact, but are also affected and shaped by locally exercised rights.

Local users, have less knowledge of statutory tenure regimes in areas where state in not enforcing its own rules, and here villagers have a strong perception of security of tenure and a sense of ownership of territory and forest resources. Local users also have limited knowledge of NGO's preferred rules of use of forest resources, but have at least been partly influenced by these. Customary normative rules, on the other hand, are better known and more widely agreed with. Even where state imposes its tenure rules, villagers might not adhere to regulations (e.g. timber extraction in Bungo), defying and partly reducing the effects of state tenure rules on the ground. In the case of NTFPs collection and hunting the state is not yet enforcing forcefully enforcing its own tenure rules, and people largely perceive that these are exclusively regulated by customary rules. Villagers do not always adhere to customary rules either. In the case of gaharu collection in Malinau, for example, villagers never indicated that they ask permission to collect in other village areas, although from key informant interview it is clear that collecting parties might avoid collection in areas where customary leadership see encroachment as particularly

threatening (e.g. some *tanah ulen* areas).

In terms of effects of forest tenure on local well-being we investigated the role of forest tenure on economic, subsistence and social security aspects. People are less forest dependent in Bungo in post-logging conditions, where incomes from rubber are more important, despite the fact that in Malinau total incomes are much higher than in the Bungo sites. On average more households collect FPs for consumption needs, compared to cash income needs and a wider variety and - for most FPs - higher quantities are harvested for consumption. These products contribute to food items in terms of better and more varied diets, to better health conditions in relation to medicinal plants, provide construction material and are used to manufacture tools, building materials and to produce items for sale.

In terms of cash incomes from FPs, in Bungo people almost exclusively depend on timber, while in Malinau cash income from forest are more diversified between timber and a number of NTFPs, which might be helpful to reduce vulnerability. Incomes from forest are particularly important for the poor in both locations, and reduced access to forest resources as well as depletion, will likely impoverish those that are already struggling to make a living.

Overall, people in Malinau seem to be better off: they have better and more forest in relation to population, they have higher incomes overall, and their income shares related to FPs collection is higher as well. They are more forest dependent, but also seem better off than people surveyed in the forest margins in Bungo.

If we look at the conditions of Malinau and Bungo as an example for pre-logging versus post-logging conditions, we can conclude that as state tenure rules are imposed on local communities through large-scale logging activities, while on the one hand temporarily communities might benefit in economic terms through compensation fees, depletion of timber resources and valuable NTFP is likely to increase, which in turn will affect the poor more heavily than the rich. Reduction of access to FPs, and in particular the prohibition to collect forest resources for commercial use and sale will undermine local livelihoods. It is also likely that as the state supports external claims to forest resources, local institutions will be further weakened, and incentives for sustainable use will be lost. What is surprising is that, this might lead to higher dependence and extraction of timber resources compared to NTFP, in areas where forest is already depleted from large-scale. The consequences are not only negative for forest conditions and vulnerability, but also tend to draw a part of the population into an activity which the state considers 'illegal', further weakening and rendering uncertain their livelihood strategies.

It seems important then to call for better integration of forest tenure rules by the state, which could support local livelihoods through recognition of customary forest tenure rules, avoiding policies that further exacerbate and weaken local institutions of forest management. In particular, the assurance of access to local users, not only for consumption, but (even if limited) for cash income purposes, need to be upheld in order to expect local communities to take an interest in sustainable use of forest resources. Support and backing by statutory legal systems in maintaining the exclusion rules toward outsiders, on which customary tenure systems are often based on, is also crucial. It is clear, that a compromise needs to be found between overall national development priorities and maintenance of forest dependent local livelihood and reduction of poverty in the forest margins. A better balance between these, one which recognizes the rights and needs of local forest communities might help to both maintain forest resources and incentives for sustainable use at the local level. Although the recognition of customary tenure systems alone, is no guarantee for sustainable use of forest resources, without that,

there certainly are no incentives for local people to enforce sustainable forest use rules. Commercialization, population growth, improved road systems and other social and economic changes all affect the ability and incentives to maintain forest resources, and the state needs to be aware of these trade-offs helping in particular the poor in a transition from high forest dependence to new livelihood opportunities within and outside agriculture.

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APPENDIX 1:

	BUNGO					MALINAU					
	BBK	BBP	BST	BLB	MAP	ML	MP	MK	MB	MAH	
Year founded											
Ethnicity	Minangk.- Melayu + Transm.	Minangk.- Melayu + Transm.	Minangk.- Melayu + Transm.	Melayu	Kenyah Dayak	Punan Dayak	Kenyah Dayak	Kenyah Dayak	Punan Dayak	Kenyah Dayak	
Village admin. areas (estim.) km ²	450	60	100	28	Around 5,000 ³⁸		550	550	780	575	
Pop. dens. (head/km ²)	2,21 (medium)	12.4 (high)	14,45 (high)	13,14 (high)	0.1 (very low)	0.1 (very low)	0.95 (low)	0.25 (very low)	0.26 (very low)	0.94 (low)	
Land scarcity	High	High	Very High	High	Very Low	Low	Low	Very Low	Very Low	Low	
Transmigration	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	
Access to market	Road (3,5h)	Road (2h)	(Road 2h)	(Road 2)	River (13 h)	River (13 h)	River (13,5 h)	River (14 h)	River (16 h)	River (18 h)	
Forest Cond.	Damaged	Damaged	Damaged	Damaged	Good	Good	Excellent	Excellent	Excellent	Excellent	
Logging	Logged	Logged	Logged	Logged	Logging	Logging	Primary f.	Primary f.	Primary f.	Primary f.	
Enforcement of state forest tenure	Protection f.	NO	Protection f.	Little	Limited in production f. (through concession)	Limited in production f. (through concession))	No	No	No	No	
Enforcem. of	Limited	Limited	Limited	YES (for	YES	YES	YES	YES	YES	YES	

38 The administrative area of MAP and ML is not yet divided between villages – two ethnic groups arriving at different times, have separated settlements in close proximity). Together they hold an extensive, unpopulated area downriver, but ~ over 3,000 km² are in fact controlled by supravillage adat elite, and do not accrue to the village alone). Village areas are rough estimates, and there are usually differences between administrative and adat defined territory.

