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The 'Adat' institution and the Management of Grand Forest 'Herman Yohannes' in Indonesian Timor: The Role of Design Principles for Sustainable Management of Common Pool Resources

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Abstract

Local success stories of sustainable forest management can inspire scientists and decision-makers. This article analyses the traditional 'Adat' institution that plays a role in the management of Grand Forest Park 'Herman Yohannes', in the Western part of Timor where the Adat forest management regulation has been formally restored. The original set of design principles for sustainable management of common pool resources of Elinor Ostrom (1990) has been used in this study as an analytical framework for understanding the role of the Adat institution in respect to the forest. In the park, the local community applies Adat for protection and management of the forest that has been its home for centuries. It appears that Ostrom's design principles can be identified in the current Adat institution and play a role in the sustainable management of the forest. Although many other variables can lead to success or failure of institutions, the original (internal) design principles are still valuable as a practical tool for building institutions that are – under certain conditions – able to sustain common pool resources. The findings confirm the importance of traditional institutions in successful forest management. The study recommends that decision-makers take into account existing traditional management systems that have shown long term functionality.

Keywords: adat, design principles, sustainable management, institutional design, Grand Forest park, common pool resources management, forest management, Indonesia

INTRODUCTION

Institutions within traditional communities have received much attention in the debate about sustainable development, particularly for the sustainable management of local natural resources. History shows numerous examples of communities and cultures that were able to survive in close relationship with

their natural surroundings for many centuries. Within various scientific disciplines, researchers have pursued the generic aim of finding institutional arrangements that could enhance sustainable management of (natural) common pool resources. The work of Elinor Ostrom has strongly contributed to this discussion. From her we take the concept of Common Pool Resource (CPR), defined as 'a valued human made or natural resource or facility, that is available to more than one person and subject to overuse' (Potetee and Ostrom 2002). Earlier, Ostrom (1990) identified a basic set of eight design principles for sustainable CPR management institutions, that later has been adjusted and extended by various authors. Although not meant as a panacea for handling the problems of natural resources (Ostrom, 2007), the original principles still have an important value as a practical analytical tool for understanding institutions.

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In this study, the original design principles have been used as an analytical framework for an empirical case study of the 'Adat' institution that is involved in the management of Grand Forest Park 'Herman Yohannes', in the Western part of Timor. The traditional regulation and enforcement system of the indigenous community, Adat, has existed in the area since ancient times, but was not always applied to the same level. After Indonesian independence, the enforcement power regarding the forest management was state controlled. This became ineffective with the political turmoil in 1998, followed by the restoration of 'Adat-based' forestry management at the beginning of this millennium. The objective of our study is to explore which role the design principles play in a traditional institution that guides community life including forest management. We aim to contribute to the understanding of the role that historical institutions can play in sustainable management of natural resources.

COMMON POOL RESOURCES MANAGEMENT

The modern debate on the understanding of common pool resources management was started by Garrett Hardin (1968) with his famous article, 'The Tragedy of the Commons'. Here commons were characterised as natural resources that were neither publicly nor privately owned and free to use for all. The element of ownership was considered a key factor: 'freedom in commons bring ruins to all'. The presented logic was presumed to be general and referring to all commons. Hardin's illustration of overgrazing commonly owned pastures received heavy criticism; nevertheless, it is a popular metaphor for studies about CPRs, especially in the fields of fishery, irrigation, animal husbandry, water management, and forestry (van Laerhoven and Ostrom 2007).

Many authors have long studied how specific natural resources are managed or mismanaged at particular times and places (Oakerson 1986; Campbell 1986; McCay and Acheson 1987; Berkes 1987; Ostrom 1990; Agrawal and Yadama 1997; Ylhäisi 2003; Ostrom 2005; Hess and Meinzen-Dick 2006). There has been particularly much confusion about property regimes regarding CPRs. The term 'Common Property Resource', for example is also frequently used to describe a 'Common Pool Resource' (Nagendra and Ostrom 2007). However, this confuses a resource system – either linked or not linked to a property right system - with an institutional system, 'property'. Frequently used property-rights regimes are ownership by government (public), by individuals or firms (private), or by the community. Another possibility is no ownership at all, like the situation Hardin (1968) assumed in his illustrative case of grazing pasture land.

Each of the types of property regimes has different sets of advantages and disadvantages but at times may rely upon similar operational rules regarding access and use of the resource (Feeny et al. 1990). Multiple examples exist where moving to government ownership (Terborgh 2000; Lovejoy 2006), private property (Demsetz 1967; Raymond 2003; Ylhäisi 2003), or community control (Vermillion and Sagardoy 1999)

has helped users of CPRs to achieve more efficiently short term results and potentially long term sustainability. Agrawal (2007) focusses in his extensive review of literature on property rights and their impact on how ownership rights of forests are distributed in various regions of the world. He concludes that an optimal use of a CPR cannot automatically be associated with a certain property regime. The 'optimal' solution that can be applied to all fisheries, forests, or water systems does not exist (Grafton 2000; Rose 2002; Tietenberg 2002). In the words of Ostrom (2007): 'there are simply no panaceas'.

Without effective institutions for the management of harvesting practices however, CPRs may easily be overharvested and eventually destroyed (Hardin 1968; Worm and Myers 2003; FAO 2005; Mullon et al. 2005; Ostrom 2008). Extensive empirical studies in diverse disciplines have found that users of resources that invest in designing institutions and implementing innovative management systems have the likelihood of sustaining these resources (Ostrom et al. 1994; Berkes et al. 1998; National Research Council 2002; Dietz et al. 2003). Hill (2011) mentions that a practitioner's model significantly needs a foundation platform of recognition of rights and interests, a set of effective organisations to support the roles of key actors and effective mechanisms for working together. Although there are examples of dialogues that stimulate conflicts (Idrissou et al. 2011), in general, interactive participation of users in creating and enforcing rules and conflict resolution is essential (Castro and Nielsen 2001; Adams et al. 2003; Chicchon 2009). Rules unilaterally dictated by powerful institutions or from outsiders have less legitimacy and are, unless accompanied with 'totalitarian' suppression, more likely to be violated (Nagendra and Ostrom 2007). Likewise, monitoring and enforcement are more effective when conducted by insiders. Furthermore, according to Ostrom (1990), common properties are often managed on the basis of rules and procedures that have evolved over long periods of time. Based on all considerations she identified eight design principles for institutions for sustainable management of CPRs as described below.

THE PRINCIPLES OF SUSTAINABLE MANAGEMENT

The concept of 'institution' is multi-interpretable (Yami et al. 2009). For sociologists like Berger and Berger (1972), they are programs, or procedures that structure human behaviour. Plott (1979) defines institutions as 'the rules for individual expression, information transmittal, and social choice'. Ostrom also (1990) uses 'institution' as a referent to rule in the sense of regulation, not in the sense of a principle like in a physical law. According to North (1990), 'institutions (...) consist of informal constraints such as sanctions, taboos, customs, traditions and codes of conduct, and formal rules such as constitutions, laws, and property rights'. We follow this definition, but want to stress that application of sanctions (enforcement) and its legitimacy are essential for a successful institutional system.

In Box 1, the eight ‘design principles for institutions that characterise local CPRs that have survived for a long period of time’ have been described (Ostrom 1990). They have been further developed by, amongst others, Anderies et al. (2004), Ostrom (2005), and Cox et al. (2010).

Combining the first three principles, helps to solve core problems associated with free riding (getting the benefits without paying the costs) and subtractability (rivalry) of use. They do not by themselves necessarily improve the institutional robustness of the management of a CPR, because the rules made to solve these problems are not self-enforcing. Incorporating monitoring (Principle 4), graduated sanctioning (Principle 5), and conflict-resolution (Principle 6) can fulfill this important function of enforcement and can increase common knowledge and agreement. These three principles combined can be seen as a feedback control for resource use. They transform information about the state of the system into actions that can influence the system. Recognising the formal rights of the users to choose their management system (Principle 7) prevents those who want to evade local systems, by bringing in, questions of legitimacy. Nesting the set of local institutions into a broader network of institutions (Principle 8) contributes to the robustness of the institution and helps to ensure that problems on a higher level of scale are also addressed (Anderies et al. 2004).

Numerous cases, in which the design principles for institutions were applied, have been documented (Ostrom 2005). In order to evaluate the eight design principles empirically and consider which theoretical issues have been documented since their introduction, Cox et al. (2010) examined 91 studies that used these principles. Examples of successful management cases which deal with fish stocks, like the lobster fisheries in Maine-USA (Acheson 2003), lands vulnerable to flooding - like the Dutch water boards (Kaijser 2002), local collective action in forestry in the hills of Nepal (Gautam and Shivakoti 2005), acequia irrigation systems in Taos valley, New Mexico (Cox et al., 2010), and many more. In other cases, the management of resources has failed, for example the North Atlantic cod fisheries (Finlayson and McCay 1998), the oyster fishery of Chesapeake Bay (McHugh et al. 1990), the customary marine system of the Tonga Islands (Malm 2001), the irrigation system of the Hohokam (Bayman 2001), water systems in

Ghana (Webb 1991), the basin of the Aral Sea (Glantz 1999), and many more.

Specifically, forest management offers a wide range of cases, since all over the world degradation processes for these CPRs can be found (Gibson et al. 2000). In South East Asia, the area of tropical rain forest has reduced dramatically from 250 million hectares in 1900 to below 60 million in 1989 (Poffenberger 2006). Deforestation rates in Indonesia continue to increase. According to the ASEAN (The Association of Southeast Asian Nations) (2009), the annual rate of decrease in forest area in Indonesia was 1.67% between 2000 and 2007. Most of the forest damage has been caused by conversion to other land uses, specifically agriculture and mining, but timber harvesting also plays an important role (Tsing 2005; Szczepanski 2002). In many cases where Asian forests are successfully protected, indigenous people are involved (Parotta et al. 2009; Rekarsem et al. 2008), as in Indonesian East Kalimantan (Nanang and Inou 2000) and East Sumba (Tasdiyanto 2007). According to Colchester (2000) about 85% of the world’s protected areas are inhabited by indigenous peoples. Most of them are living in tropical forests and have found a way to sustain their surroundings for their goods and services.

The cases where CPR institutions are successful to sustain the resources tend to show the presence of most of the design principles (Ostrom, 2005). Cases where CPR institutions have failed to sustain resources, tend to be characterised by the incorporation of very few of the mentioned design principles (Anderies et al. 2004). However, various other factors are identified as potential causes for success or failure. The resilience and adaptation level of the (ecological/resource and social/institutional) systems are important factors here, as Olsson et al. (2006) convincingly demonstrate. Agrawal (2002) argues that factors, such as the size of the user groups, different types of heterogeneity within or between them, and the type of government regime they operate within, are important in many cases. The studies on the management of commons have advanced manifold and go beyond the mentioned original design principles, making it more and more complex.

With a focus on the dynamic interrelationships between the design principles and the impact of exogenous variables, cross scales, and across levels (Berkes 2002) the incompleteness of the original design principles has been empirically proven (Cox et al. 2010). The dynamics and contextual factors of CPRs make them more complex than the original design principles suggest (Agrawal 2002). It leads to a process towards ‘dual’ design principles (McGinnis and Ostrom 2010) and further to the ‘multitier framework to analyse social-ecological systems’, known as the SES Framework (Ostrom 2007). Nevertheless, the relative simplicity of the framework of the original design principles, with some adjustments in the distinction between the social and the physical parts of the system, remains crucial for understanding the core of theoretically complex institutional design. The original design principles are still valuable as a comprehensive and practical tool for a quick analysis of the minimal conditions for institutions that have the potential to sustain CPRs. Therefore, we employ these

Box 1

Design principles illustrated by long-enduring CPR institutions

Clearly defined boundaries for users and resource
Congruence between appropriation and provision rules and local conditions
Collective-choice arrangements for most individuals (information and ability to modify the rules)
Monitoring users and resources
Graduated sanctions for violators
Conflict-resolution mechanisms that are rapidly accessible
Minimal recognition of rights to organise
Nested enterprises, in case of resources that are parts of larger systems

Source: Ostrom 1990

principles as a framework for analysis of an institution of an indigenous community regarding their forest management.

THE INSTITUTION OF ADAT

The Adat is a system with traditional rules and sanctions for Indonesian community life. Besides social rules, the institution contains rules of behaviour with respect to the physical environment (Safitry 2007). Before the introduction of state interference, the Adat regime played a crucial role in the sustenance of the forest ecosystem. The meaning of the term 'Adat' can be approximated with 'customary law', 'tradition' or 'well mannered' (Davidson, and Henley, 2007). According to the Ministry of Foreign Affairs Regulation No. 39/2007, 'the Adat institution refers to a social organisation which has the objective to conserve and develop the Adat culture based on traditional customs'. In its original unwritten form, the institution dates back from ancient times.

Adat is not static; it is a system that develops over time and is influenced by local circumstances. During colonisation, most of the regulations became codified and acknowledged as formal written law. Dutch colonialists used these institutions for the enforcement of their interests by inserting it into their governmental system. This resulted in parallel legal institutions for indigenous people in Indonesia. Between the inhabitants, the Adat rules are leading, but as soon as the national state level is involved, another legal system prevails, putting aside local community regulations. Sczepanski (2002) illustrates the negative consequences for Dayak communities in East Kalimantan where the system survived in an adjusted form after Indonesian independence. The rights of the indigenous people in forestry were recognised in the Basic Agrarian Law of 1960 (Law 5/1960, particularly in part IX) (Fay and Sirait 1999), and they were in 1999 generally reiterated and confirmed in the Basic Forestry Law (Law 41/1999).

In this dual legal reality, the state kept a strong position in forest regulation, with strict enforcement of a centralised forest concession system, but within the areas, most of the inhabitants followed the Adat system. During the regime of President Suharto (1966-1998), the abuse of power at the central state level led to increasing deforestation rates, also in areas that were under Adat management by indigenous communities. Due to this, there were fierce protests that followed, which in turn contributed to the resignation of Suharto and his suppressive system and consequently more democratisation and modernisation ensued. These trends had an eroding effect on the Adat institution itself; numerous different views entered the Adat society and the society began to question the traditional rules. The direct result of the disappearance of (suppressive) law enforcement by the state was a situation in which outsiders could obtain forest resources without any consequences (Tsing 2005). From 1998 onwards, in the beginning of the 'reformasi' (reformation) era, lawlessness led to an accelerating loss of natural resources (Cszepanski 2002). As the weakening Adat legal system only had meaning between the local inhabitants, it was unable to defend the forests against outsiders. Due to this, in

general, Indonesia suffered from a wide range of illegal logging, land clearing for agriculture, and cattle grazing (Kant and Berry 2005; Tsing 2005). Although the content of the regulation did not substantially change, the degree of enforcement diminished to virtually zero. This process could be stopped, only after state enforcement power was allocated to local and regional entities.

THE STUDY AREA AND RESEARCH METHODOLOGY

Our case study considers the indigenous community in the Amarasi sub-district on Timor Island, one of the 28 sub-districts of the Kupang Regency in the Province of East Nusa Tenggara (Figure 1), which is located 40 kilometres east of the capital city of the Province of Kupang.

The community lives in and around the Park 'Prof. Ir. Herman Yohannes', one of the 17 'Grand Forest Parks' in Indonesia. The park is roughly bounded by four villages: Sonraen in the north, Tesbatan in the south, Nekmese in the east and Kotabes in the west. It was declared 'Grand Forest Park' (or 'Tahura', from 'Taman Hutan Raya') under Presidential Decree No. 80/1990. The hilly terrain of the 1900 hectares defined as Grand Forest Park has an altitude of between 100 and 650 meters above sea level. It contains a tropical forest ecosystem with high bio-diversity value, including several indigenous species (e.g., Timor Deer) (Figure 2).

The Grand Forest Park is an example of a CPR; inhabitants receive benefits from the forest, reducing these benefits for others, while overharvesting would eventually lead to a collapse of the forest. For many centuries the remote located park was

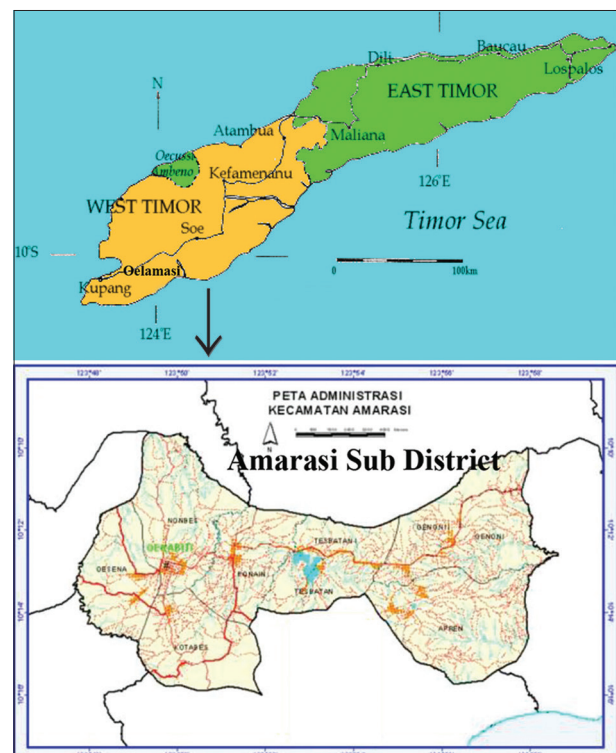


Figure 1: Amarasi sub-district, Kupang, Indonesia

able to survive in a sustainable way. After the end of the ‘new order’ regime in 1998, when the management of the forest shifted from the Forestry Agency at regency level to the Conservation and Natural Protection Bureau of the Forestry Department at Provincial level, a significant part of the forest was changed within a few years into barren land. According to the interviewed Forest Guard of Herman Yohannes, this happened particularly in the periphery area of the park. Only after May 1999, when president Habibis’s government passed the Regional Autonomy Law (no. 2/1999), provinces could attribute enforcement responsibilities concerning the governing of local land areas to decentralised institutions. Ministry of Forestry Decision no 33/2001 formally recognises the rights of indigenous inhabitants to the forest. After 2001 the forest has considerably improved. According to the respondents, deforestation ended with inserting the Adat-regulation into the official legal system.

Those living in Amarasi Sub District (with Oekabiti as the capital) consist mainly of the present generation of inhabitants from the former Amarasi Monarchy. In 2007, the nine villages of the area had 14,772 inhabitants, including 566 migrants (Amarasi sub-district 2009). The literacy rate was 84 %, but the large majority of inhabitants had only finished elementary school. In general, most of the people that are spread over the area share the same values and have a common history; they can be considered a community. Their culture, language, institutions, and knowledge system is locally known as ‘Manekat’. The area has been relatively unaffected by cultural change or political turmoil. Although, compared to colonial times the leading role of the Amarasi King has eroded, the traditional leaders of the institution still kept their social status and were consulted for mainly social conflicts between members of the community. The main leader in the area is known as the ‘Fetor’, assisted by sub-heads in each of the 9 villages in the park area. The Fetor and his staff originally supported the King.

The present community has the following basic characteristics:

- Dependence on the forest for living
- Low participation in the monetary economy
- Importance of family and community connections
- Acceptance of the Adat institution and the Fetor that is consulted in the case of conflict resolution and enforcement.

In Kupang Regent Decision number 02/2001, the local Government and Forestry Department decided to give the inhabitants formal communal property rights (‘Tanah Adat’) over the land of Grand Forest ‘Herman Yohannes’. With this decision, the Adat institution became officially part of the Indonesian legal system. Enforcement of the Adat rules is recognised, allowing the leaders to put sanctions according to the local conventions.

It is our aim to identify the role that the basic eight design principles for sustainable management (Ostrom 1990) play in the traditional Adat institution regarding Grand Forest Park ‘Herman Yohannes’. Since literature, documents or written news about the area are scarcely available, we asked the people from the community about their experiences. We conducted semi-structured interviews with 50 of the nearly 15,000

inhabitants of the area and we held in-depth interviews with 12 of the major societal actors in the community.

The survey with 40 questions was done during June and August 2009. The respondents were selected at random, by approaching people from the six (out of nine) villages located in the Grand Forest Park, that were reasonably accessible by road. The lack of respondents from the remote areas of the park that do not regularly visit the social meetings brings important limitations. Respondents were between 26 and 55 years old and most of them appeared to work as farmers. All of them were born in the area. In order to avoid social pressure, we guaranteed anonymous answers. Although we are aware of potential power inequalities, we did not find any indication of suppressed opinions, neither from the respondents nor the (in-depth) interviewees.

The in-depth interviews were held with 12 important actors in the community, based on their role in the Adat institution (7) and the management of the forest (5). The selection was based on a stakeholder analysis, performed in collaboration with Yacob N. Abineno, head (‘Fetor’) of the Adat institution in the Amarasi sub-district (‘Kafetoran’ Oekabiti). All interviewees were active in the area for at least 10 years. The 12 key actors are listed in Annex 1; some have been portrayed in Figure 3. As the key actors that were found played an important role in the Adat institution, we cannot exclude a positive bias towards the institution. Similarly, the Indonesian state is generally perceived in a very positive way here.

In the following section the Adat institution is analysed using the eight design principles of sustainable natural resources management that was developed by Ostrom (1990).

THE DESIGN PRINCIPLES AND THE ADAT INSTITUTION

Clearly defined user and resource boundaries

The first principle asks for clearly defined boundaries: (a) of the resource i.e. the Grand Forest Park; and (b) of the user group of these resources. The resource boundaries are clearly identified in the borders of the Grand Forest Park as declared in Presidential Decree No. 80/1990. Although the boundaries of the park were a top-down decision, they comprise the core of the Amarasi community’s traditional living areas. The original Adat rules do not indicate borders of the area, but the Regency decree gives the full community collective ownership. No one is allowed to collect any kind of forest products like trees and animals, or does any farming or burning activities inside the park except for the yard that surrounds their home (the ‘Ulayat’). Community members can use the wood and products from their yard for their own purposes (for example as building material). However there should be explicit permission from the leaders and it is required to replant the same amount of trees that have been used. According to the interviewed community leaders, it is not allowed to sell the trees. These rules not only bind the community members, but also the nearly 600 migrants who have also been living in the area for many years. Outsiders



Figure 2: Grand Forest Park 'Prof. Ir. Herman Yohannes'

who enter the park are also obliged to obey the rules, based on Kupang Regent Decision number 02/2001. Thus the users and resources are very well defined; only the community that owns land in the park can use particular resources.

All 50 respondents in the survey knew about the existence of the rule not to collect from the forest within the boundaries of the Grand Forest Park, except from their own yard. They were also aware that the rules have the purpose to keep the forest sustainable, guaranteeing future benefits from nature.

Proportional equivalence between benefits and costs

The second principle has two dimensions: (a) congruence between appropriation and provision rules; and (b) the rules are considered to be in line with the local physical and social conditions. When the respondents were asked whether they are loyal to the traditional Adat rules, all of them answered positively. Two factors were mentioned in this respect: (a) the fairness of the possibility to harvest from the (physical) areas that are owned by the community, and (b) the origin of the rules, based on the (social) traditions of Adat and inherited from their ancestors. The interviewed leaders mention that their ancestors created a taboo ('bunuk'): a belief that if they destroy the forest, the Spirit will punish them through a disaster. Although this threat is not as convincing as in earlier times, it makes 'Herman Yohannes' a sacred forest. Among the migrants who have been living for many years in the area, the majority also seem to obey the traditional rules. The interviewed leaders claim that they mainly do that out of respect for the community, not



Figure 3: Community leaders of the Grand Forest Park 'Prof. Ir. Herman Yohannes' (2009).

From left to the right: Eliasar Tuthaen, Jacob N. Abineno (the Fetor), Petrus Kasse, Kornelis Bureran, Elisa Ataupah (Secretary of Fetor)

because they believe in the revenge of the spirit. Most of the offenders were outsiders and not members of the community. It can be concluded that there is a positive perception towards congruence between appropriation and provision rules.

Collective-choice arrangements

The third principle refers to the ability of the users to change the rules that affect them, and the availability of information about the state of the resource. Some indication for this principle can be found in the level of participation of the community. It can be divided in two: (1) participation in the activities of the Adat institution, particularly the resource monitoring system, and (2) participation in the meetings such as the counselling programme from the government and the solving procedure of conflicts. The general invitation to join for all members of the community implies the possibility to influence the rules. Although theoretically in line with Ostrom's third principle, in daily practice the rules will not easily be changed by the common people. These traditions are inherited from a fixed past and they are applied by rather conservative leaders. The social structure also minimises change, since a request for other rules can also be considered a critique to the leaders.

The grade of participation of community members is generally high. As far as the general activities of the people are concerned, 92% of the respondents answered that they are 'often' or 'practically always' involved in the community activities (Figure 4).

Only 8 % of the respondents rarely participate in Adat activities, mostly because they live too far away from the main road. Moreover, economic conditions do not allow travelling and involvement in Adat activities, although these respondents declare that they obey the traditions and respect the Adat institution. For the total community the non-participating percentage will be higher, since we only approached inhabitants of the villages.

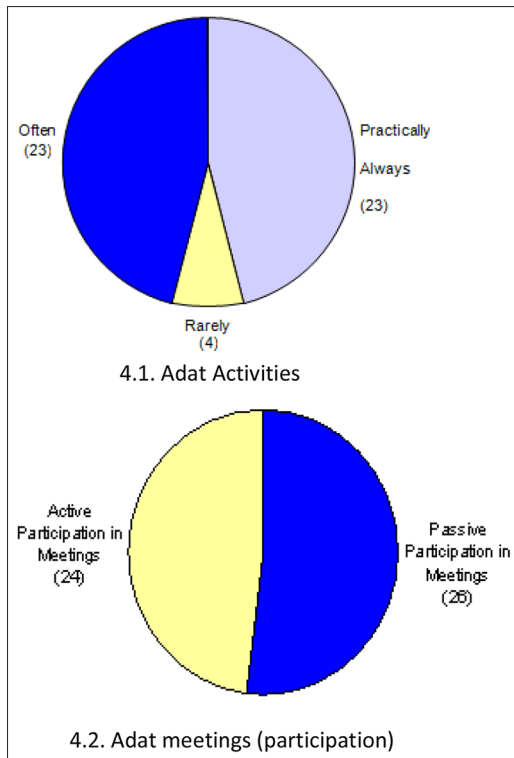


Figure 4: Involvement of the community in Adat activities and meetings

As far as the type of participation in meetings is concerned, around half of the respondents (52%) are actively involved. They explicitly give their opinion in the meetings. The others (48%) attend meetings in a passive role; they limit their involvement to listening. This group also contains two ‘observers’: members of the community who also work as government officers. They attend the meetings and are involved in the Adat activities because they feel attached to the Adat institution. Although we acknowledge the risk that the ‘silent’ participants are under pressure to avoid speaking out their opinion, we consider a more than 50% active participation relatively high. Besides, the general perception amongst the respondents that they are applying the rules indicates the presence of the third design principle of Ostrom (1990).

Monitoring users and resources

The fourth principle, ‘monitoring’, is related to the active role of the population in the monitoring system regarding resources (a) and users (b). It contains the monitoring activity itself and the condition that the monitoring individuals are accountable for their activities or are the appropriators themselves. All community members responded to be actively supporting the monitoring system. If they observe damage to the forest they report that to the head of the village, and if they observe the offender, they will also mention that. Forestry officers and local government officers also monitor irregularities in the forest. The system is specifically effective because it is based on a chain of information with the following order:

- 1) A member of the community observes something illegal in the forest
- 2) Information about the case is brought to the head of the village
- 3) The head of the village informs the case to the community leader(s)
- 4) The community leader informs the case to the forestry officers and government officers
- 5) Community leaders, forestry officers and government officers together try to identify the offending user

It means that monitoring takes place by the members of the community themselves, in cooperation with governmental officials. When asked about the amount of offences known in the last three years (before 2009), the interviewed Forest Officer mentions two cases of illegal logging, one case of illegal occupancy of land, one case of cattle grazing in the park and one case of a forest fire. The chain of information, combined with the monitoring system, is indicated to be effective in decreasing the frequency of deforestation cases. This is a result of community members and government officials working closely with each other in the management of the system.

Graduated sanctions

The fifth principle refers to proportional punishment of offenders. The Adat sanctions are directly related to the King’s Rule of the Amarasi Monarch. The sanctions for breaking this rule are applied per incident. Most common sanctions are:

- 1) ‘Nasaeba Nafani Soko Ko’o’: The offender should re-plant the forest that was destroyed, plus a fine of 1 cow and 200 kilograms of rice.
- 2) ‘Nanoni’: The offender should pay a financial compensation to the community of up to IDR 500,000 (around USD 41 in 2009).

In the lighter cases, leaders write a memo with a warning not to repeat the committed offense. In the most serious cases, however, such as substantial forest cutting, the offender will consequently be passed to the legal agencies of the Indonesian Government.

The respondents consider the sanctions to be fair, but heavy enough to have an effect. They observed that the few offenders who were punished with these sanctions did not repeat their offense. The interviewed leaders stress that the sanctions given to the offenders are effective and in proportion with the severity of the offense.

Conflict-resolution mechanisms

The sixth principle is related to solving problems both in daily community life and in the deforestation cases. According to the leaders, most of the conflicts are disputes about land ownership between families, but cases of illegal logging were also handled. The procedure for these problems is that all community members sit in a meeting and, guided by the

leaders, come to a conclusion. As they have been practising this habit successfully for a very long time, the leaders come to the conclusion that its effectiveness is historically proven. The absence of larger groups of people with contrasted interests prevents conflict acceleration during the dialogue. All respondents state that they are convinced that conflicts about deforestation can be resolved by the local Adat institution in a better way than by the government.

Minimal recognition of rights to organise

The seventh principle underlines the right to self-organisation of the community. Recognition of the right to organise protects the tradition and the local knowledge of the community. Indonesia has legally formalised this principle in accordance with the statement of the United Nations (1992) to recognise the indigenous capacity and local knowledge. The most important laws that provide rights for the community in Indonesia are listed in Table 1.

For the community, the laws attribute the right to sustainably manage the forest and to use land ('Ulayat') for agriculture or farming, in principle for a long term period. Although these regulations could be easily set aside by the central government (as was shown before the reformation era), the community is formally provided with the authority to manage and govern the area they live in. According to most of the leaders, the people perceive that they are part of the governing organisation and feel that their rights are respected. Based on the majority of the interviewees, it can be stated that the current institutional organisation corresponds with the way the people want it to be organised.

Nested enterprises

The last principle refers to the condition that the institution should be part of a larger institutional setting. In the Grand

Forest Park the community has institutionalised a wide set of norms, rules, and sanctions to manage the area. As was described earlier, it appears that the provision, monitoring, enforcement, and conflict resolution are formally acknowledged as part of the Indonesian legal system.

Besides this legal embedding, the Adat institution can be considered to be nested in the broader governmental system of Indonesia. Many of the actors in the Adat institution are at the same time working for the government. When asked, they declare that for forestry issues, priority is given to the application of the Adat rules before they start enforcing general Indonesian law. The formal embedding of the Adat in the legal system provides leaders of the villages with authority to enforce regulation: to apply the rules, even towards outsiders. At the same time the Adat gives legitimacy to the leaders, according to the people; something that state officials do not always have. This combination of Adat legitimacy and legal power of enforcement can be seen as a plausible explanation of the successful functioning of the institution.

The other indication that nestedness has been achieved, is the government officials inspecting and sanctioning the offenders. It makes the Adat rules and the official legal system to be perceived as one entity. According to the interviewed leaders, these collaborating systems work in a very effective way. This is in line with, amongst others, Acheson (2003) who mentions that an ideal collaborative management system of resources can be gained if the government and the people work together in controlling the resource.

All 50 respondents and 12 interviewees were more or less convinced that the government positively works together with the community, particularly in solving the cases related to deforestation. This can be illustrated with the counselling programmes about forestry that the Forest Department organises for community members. The interviewed forest guard, Joni Tabun (Appendix 1), declared that after the formal re-introduction of the traditional rules of the Adat institution, deforestation rate in 'Herman Yohannes' declined to virtually zero. Respondents of the survey confirmed this statement, as they all perceive that the state of the forest has considerably improved since 2001.

DISCUSSION AND CONCLUSION

The importance of local traditional knowledge systems has been recognised by many countries in the world (United Nations 1992; Tasdiyanto 2007). By analysing the Adat institution on the presence of the design principles of Ostrom (1990), we showed that these traditional systems comprise basic institutional elements that can also be found in contemporary theories about sustainable governance. The almost unanimous support of the Adat system by the people we interviewed, should be attributed to social constraints (the sanctions, taboos, customs, traditions, and codes of conduct of the definition of an institution), combined with the institution's historical roots, and its embeddedness in the formal governmental structure. Earlier experiences with outsiders that plundered the forest, together

Table 1
Legal basis for the Adat in communities in Indonesia

No	The right of the community	Constitutional basis	Legal basis
1	The right for Society Forestry	The 1945 Constitution (UUD 45) Section 18b article (2) and Section 281 article (3)	Tap MPR No. IX/2001 UU No. 39/1999 Kep Menhut No. 31/2001
2	Property rights for the Adat on parts of the forest (Hak Ulayat)	The 1945 Constitution (UUD 45) Section 18b article (2) and Section 281 article (3)	Tap MPR No. IX/2001 UU No. 39/1999 UU No. 5/1960 Keppres No. 34/2003 Per Men Agraria No 5/1999
3	The acknowledgement of the Adat Institution/ Organisation	The 1945 Constitution (UUD 45) Section 18b article (2) and Section 281 article (3)	Tap MPR No. IX/2001 UU No. 39/1999 UU No. 22/1999 PP No. 76/2001

with the relatively low level of education of the inhabitants could be important situational factors that have strengthened the institution's acceptance rate.

The community of Amarasi felt a sense of relief that they were able to revert to their management system with support from the Indonesian government. But more important is that forests like 'Herman Yohannes' can still be managed in a sustainable way. Nevertheless, an institutional system like the one that has been described in this paper will certainly not always lead to the same positive results in terms of sustainability. Neither Ostrom's principles nor the Adat institution should be seen as a panacea. There are numerous other ways that can lead to the desired outcomes in terms of sustainability. And we are aware that the involvement of indigenous peoples' institutions do not always bring sustainable development. Besides, although we did not find indications of suppression, traditional institutions often imply the risk of habits that can be considered unethical in modern times.

Furthermore, our research does have its limitations. The results are based on perceptions of a limited sample of the population, and the respondents are partly biased by their role in the Adat institution. We did not have any proof of a causal relation between the principles and forest sustainability. The question, what exactly caused the better state of the investigated forest, has not been answered. Was it due to the Adat Institution, the re-established enforcement of State laws, or the decentralisation that has been initiated in the reformation era? Perhaps also the change in the Indonesian governmental approach played a role, or the awareness of the people involved. However, according to the inhabitants, the institution certainly played a positive role, and it seems plausible that when enforcement power is attributed to the local community, this status can make a difference in enforcement issues.

Keeping all this in mind, it seems that a form of state legitimised self-regulation by local traditional institutions can, under certain conditions, be effective in forest management in Indonesia. In terms of modern governance, important steps have been made towards interactive management (Van Ast, 2000), or even co-management (Carlsson and Berkes 2005; Cronkleton et al. 2012). With the existing institution as a starting point, it could even be possible to avoid many of the disadvantages of co-management as described by Castro and Nielsen (2001). When government and locals start the negotiation about an arrangement for management, governments power tends to dominate the outcome. But the Adat institution, a common phenomenon for forest management in Indonesia, has been implemented as such. As many people consider the Adat institutions to be successful, it can be (at least) recommended to take into account the existing traditional systems for the implementation of resource management. As Yami et al. (2009) explained: 'policies and development interventions should strengthen the involvement of well-functioning informal institutions in decision-making, so that sustainable CPR management can be achieved'. The ultimate outcome of interactions and exchanges in the local institutions depends on the place-specific bio-physical environment, the preferences

and roles of all relevant actors as determined by the specific socio-economic context, and the dynamics of local institutional arrangements. The original eight principles still have much value, as a quick practical set of tools.

We did not investigate the relationship between the Adat institution and current modernisation tendencies in detail. Nevertheless, weakening of the traditional institutions in modern times is a strong trend, and modern life is attractive to most of the youth. The power of the Adat leaders is not anymore taken for granted by anyone, although integration in the formal system brings some compensation. If the leaders did not gain any power in the formal state regulation system, Adat leaders probably would have been just as toothless as they were in the beginning of the 'reformasi'. At the same time, government officials alone can also not do the (enforcement) job. The Adat, with its implicit design principles, gives this legitimacy to its leaders; it might be the main factor for the success of the present institutionalisation.

The challenge now is to modernise the Adat institution without losing their importance for sustainability in managing commons. Special attention is required for the possibility that the full community can participate in the Adat activities. Furthermore, local leaders add legitimacy, but they also bring the risk of corruption, when personal interests are mixed with community interests. Again, we did not find any indication of this within the research, but one must be aware that it could lead to unethical enforcement of sustainability rules. We hope that by mentioning this point, we show its importance for future studies of indigenous communities and sustainability of CPRs.

Based on the perceptions of the community respondents in 'Herman Yohannes Grand Forest Park', most of the design principles were present in the functioning of its Adat institutions. Accordingly, it even seems that the presence of the design principles contributed to the sustainability of the forests over centuries, irrespective of the dynamics in regimes on a higher level of scale in governance. In this respect, the findings add argumentation to the original eight design principles for long term sustainability of CPRs as stated by Ostrom (1990).

At a later date McGinnis and Ostrom (2010) presented the fully developed dual design principles, in alignment with Ostrom's recent works on multi-tier framework to analyse social-ecological systems, known as the SES Framework (Ostrom, 2007). Studies as ours could be taken to the next level, with an analysis based on the dual design principles, combined with the SES framework. This could further enhance our understanding of institutions like the Adat and their potential role in sustainable management of CPRs in variable contexts. Further research is needed to find answers to these important questions.

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Appendix 1***Main actors in the community living in Grand Forest Park 'Herman Yohannes' (at the time of study in 2009)***

No	Name	Position in organisation	Location
1	Yacob N. Abineno	Head of TAIM (Fetor)	ASD
2	Elisa Ataupah	Secretary of TAIM	ASD
3	Petrus Kasse	Chief of Sub- TAIM in Kotabes village	ASD
4	Eliasar Tuthaen	Deputy of TAIM	ASD
5	Kornelis Bureran	Member of TAIM	ASD
6	Ferdinan Bani	Member of Tateut Pah	Nekmese, South ASD
7	Kusnawi Y. Bani	Chief of Forest Guarding Group Tateut Pah	Nekmese, South ASD
8	Semuel Yendri Lada, S.Hut	Staff of Forest Guarding section in Forestry Board East Nusa Tenggara Province	Kupang city
9	Eduar AR. Theedens, SH	Chief of Forest Guarding section in Forestry Board East Nusa Tenggara Province	Kupang city
10	Joni Tabun	Forest Guard Amarasi	ASD
11	Welhemus Lomu Niffu	Amarasi Sub District Leader	ASD
12	Apolos Nutbais	Secretary of Amarasi Sub District	ASD

TAIM: The Adat Institution Manekat, ASD: Amarasi Sub District