

Differences in power structures regarding access to natural resources at the village level in Central Sulawesi (Indonesia)

Koch, Sebastian; Faust, Heiko; Barkmann, Jan

Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:

Koch, S., Faust, H., & Barkmann, J. (2008). Differences in power structures regarding access to natural resources at the village level in Central Sulawesi (Indonesia). *ASEAS - Austrian Journal of South-East Asian Studies*, 1(2), 59-81.
<https://nbn-resolving.org/urn:nbn:de:0168-ssoar-362609>

Nutzungsbedingungen:

Dieser Text wird unter einer CC BY-NC-ND Lizenz (Namensnennung-Nicht-kommerziell-Keine Bearbeitung) zur Verfügung gestellt. Nähere Auskünfte zu den CC-Lizenzen finden Sie hier:

<https://creativecommons.org/licenses/by-nc-nd/4.0/deed.de>

Terms of use:

This document is made available under a CC BY-NC-ND Licence (Attribution-Non Commercial-NoDerivatives). For more information see:

<https://creativecommons.org/licenses/by-nc-nd/4.0>

Differences in Power Structures Regarding Access to Natural Resources at the Village Level in Central Sulawesi (Indonesia)

SEBASTIAN KOCH¹, HEIKO FAUST² & JAN BARKMANN³

University of Göttingen, Germany

ASEAS - Österreichische Zeitschrift für Südostasienwissenschaften / Austrian Journal of South-East Asian Studies, 1 (2), 2008

SEAS - Gesellschaft für Südostasienwissenschaften - www.SEAS.at

*The mountain forests of the Indonesian province of Central Sulawesi include core areas of the global Wallacea biodiversity “hotspot”. Remote sensing data indicated that deforestation rates around Central Sulawesi’s Lore-Lindu National Park differ more strongly between villages than could be explained by differences in the individual characteristics of the village households as assessed by quantitative village censuses. This setting provided the background for a study into inter-village differences in power structures regarding access to natural resources. Our results are abstracted from 3*10 semi-structured, qualitative interviews with key informants from the leading groups of autochthonous and migrant households of three contrasting villages. In village A, nearly feudal power relationships are exerted by a group of local “first settler” families that dominate formal village leadership as well as the influential Council of Traditional Leaders (Lembaga Adat), and that restrict deforestation and land transactions. No such institutional restrictions exist in village C. Traditional power relationships are replaced by economic power based on petty capitalist-type production of the international agricultural commodity cocoa. Deforestation is much higher in village C. In village B, traditional institutions and power structures still appear in place although land transactions are less restricted than in village A, resulting also in high deforestation rates. While contrasting problematic social effects, our study highlights the potential efficacy of traditional institutions in the regulation of access to resources.*

Keywords: *Deforestation, Common Pool Resources, Village Institutions, Indonesia*

¹ Department of Agricultural Economics and Rural Development, Environmental and Resource Economics & Institute of Geography, Human Geography, Georg-August-Universität Göttingen, Germany; corresponding author; Contact: skoch@gwdg.de.

² Institute of Geography, Human Geography, Georg-August-Universität Göttingen, Germany.

³ Department of Agricultural Economics and Rural Development, Environmental and Resource Economics, Georg-August-Universität Göttingen, Germany.

*Die Bergregenwälder Zentralsulawesis sind Teil des globalen Wallacea-Biodiversität-“Hotspots” und beheimaten viele endemische Tier- und Pflanzenarten. Die Entwaldung im Bereich des dortigen Lore-Lindu Nationalparks unterscheidet sich zwischen umliegenden Dörfern stärker, als dies durch quantitative Haushaltsdaten zu erklären ist. Darauf aufbauend untersuchten wir Unterschiede in den Machtstrukturen bezüglich des Zugangs zu natürlichen Ressourcen zwischen einzelnen Dörfern. Unsere Ergebnisse basieren auf 3*10 halbstrukturierten, qualitativen Interviews mit Schlüsselinformanten und Führungspersonen der autochthonen und der hinzugezogenen Bevölkerung aus drei sich unterscheidenden Dörfern. Untersuchungsdorf A ist gekennzeichnet durch feudale Machtstrukturen ausgehend von einer Gruppe autochthoner Familien, die nahezu alle Positionen der formalen Dorfführung und des traditionellen Dorfrats (Lembaga Adat) innehaben und die Entwaldung und Landverkäufe begrenzen. Solche institutionellen Restriktionen bestehen im Untersuchungsdorf C kaum. Die traditionellen und formalen Machtverhältnisse wurden hier weitgehend durch ökonomische Machtverhältnisse ersetzt, welche sich wiederum auf den Erwerbsanbau der internationalen Handelsware Kakao gründen. Die Abholzungsraten sind hier deutlich höher. Im Dorf B sind die traditionellen Machtstrukturen oberflächlich noch vorhanden, Landverkäufe sind aber weniger stark begrenzt - und die Abholzungsraten ebenfalls recht hoch. Zusammenfassend belegt die Studie die relative Effektivität traditioneller Institutionen, den Zugang zu natürlichen Ressourcen zu regulieren, deckt jedoch auch deren problematische soziale Auswirkungen auf.*

Schlagnworte: Entwaldung, Allmendegüter, Dorf-Institutionen, Indonesien

Introduction

In spite of more than three decades of scientific discussion amongst environmental and resource economists, the driving forces of tropical rainforest conversion continue to be a matter of debate (Barbier & Burgess 2001; Kaimowitz & Angelsen 1998; Barraclough & Ghimire 1995). In addition to large-scale deforestation, for example, for timber extraction and palm-oil plantations, small-scale forest conversion accounts for a significant proportion of current deforestation (Sunderlin & Resosudarmo 1996). Institutions play a decisive role in the sustainable or non-sustainable utilization of many natural resources (Acheson 2006; Stern et al. 2002; Ostrom 1990). Institutions are defined as any form of constraint that shapes human interaction (North 1990: 4). Formal institutions include laws, official regulations, and administrative procedures while informal institutions include private conventions, non-codified norms and modes of behavior, customs and traditional values. One institutional

arrangement affecting tropical deforestation is an ill-defined property rights structure which rewards individual resource exploitation while damaging overall resource availability (Mishan 1969).

For cases of a non-sustainable exploitation of common pool of resources (“Tragedy of the Commons”; Hardin 1968), local self-governance is frequently cited as a potential solution at the institutional level. Here, the resource needs to be considered as subject to common property rights instead of as an ‘open-access’ good which may be exploited by anyone (Acheson 2006; McKean 2000; Bromley 1992; Ostrom 1990). Numerous case studies have examined design principles for an effective governance of common pool resources suggested by Ostrom (1990). These studies generally support the soundness and effectiveness of the suggestions (Quinn et al. 2007; Gautam & Shivakoti 2005).

However, the propagation of local self-governance has its critics. Empirically, it is not clear, yet, to which degree positive findings concerning resource conservation can be extrapolated (Barraclough & Ghimire 1995). Furthermore, the cultural and human dimensions of effective, but often very restrictive local resource management regimes are frequently ignored (Cooke & Kothari 2007; O’Riordan & Stoll-Kleemann 2002; Campbell et al. 2001). For a more comprehensive view of local self-governance of common pool resources, a close investigation of the interaction of population characteristics and the environment is required at the local level (Gibson et al. 2000: 3). These analyses should include an observation of the effect of power and status on resource access (Agrawal 2003: 258). Against this background, our systematic case study explores institutional inter-village differences, with a special focus on the driving forces of natural resource utilization and on imbalances of power between “village elites” and dependent smallholders.

The study took place in three villages in the vicinity of Lore-Lindu National Park (LLNP) in Central Sulawesi (Indonesia), which contains extensive forest areas and provides conservation core areas for the Wallacea biodiversity “hotspot”⁴ (Myers et al. 2000)⁵. We used results from census analyses as well as informal interviews with key informants in order to select households that appeared likely to belong to the village elite considering land holdings/wealth, prominent social position in the village community, and perceived success in agriculture. With the heads of these 3*10 households, qualitative interviews were conducted in 2007.

The outline of this paper is as follows: first we will briefly review the general literature on natural resource exploitation. Second, a background on common pool resource management

⁴ The concept of biodiversity “hotspots” was originally developed by Myers (1988). A hotspot is a biogeographic region with a significant reservoir of biological diversity which is threatened by destruction. According to Myers et al. (2000), it must contain at least 0.5 percent or 1,500 of the world’s 300,000 plant species as endemics. The Wallacea biodiversity hotspot encompasses the central islands of Indonesia east of the Wallace Line (mainly Sulawesi, the Maluku Islands and Nusa Tenggara) but west of Papua.

⁵ The research is part of DFG-funded collaborative research center SFB 552 - STORMA “Stability of Rainforest Margins in Indonesia”. We would like to thank DFG and Otto Vahlbruch-Stiftung for funding.

and their relation to social and environmental justice will be given. After a short description of the three study villages in the LLNP area, methods and data collection are explained. Next, our empirical results on local power structures and access to natural resources in the three contrasting villages are presented. We close with a critical discussion of our findings, and some possible policy recommendations.

Natural Resource Exploitation

The conversion of tropical rainforests into arable land can be viewed as a highly degrading utilization of a precious natural resource. Thus, the search for appropriate management institutions is a highly important challenge at present (Berkes 1989; McCay & Acheson 1987). Garrett Hardin (1968) explained the economic rationality behind a paradigmatic type of natural resource overuse involving a pasture and local herders in his influential article “The Tragedy of the Commons”⁶. From the perspective of a self-interested individual, it appears as a promising resource use strategy to use as much as possible from the pasture to grow one’s own sheep or cattle. While the profits from intensive utilization of the pasture accrue completely to the individual, possible negative effects on the quality of the pasture (externalities) must be born by the whole community of users of the pasture. If such behavior is wide-spread, it easily leads to over-exploitation and final depletion of the pasture - with negative long-term effects for everyone (Hardin 1968). This divergence between individual rationality and group rationality was customarily explained after Hardin with the specific attributes of many natural resources as common pool goods (Berkes & Folke 1998: 6).

<i>Table 1: Type of Good, by Physical Characteristics</i>		
	Exclusion Easy	Exclusion Difficult or Costly
Rivalry in Consumption	<i>Private Goods</i> (trees, sheep, fish, chocolate)	<i>Open Access Goods</i> (forest, pasture, fishery)
Non-rivalry in Consumption	<i>Club or Toll Goods</i> (cable TV, festive atmosphere at a party)	<i>Pure Public Goods</i> (N ₂ in air, national defense)

Source: slightly modified according to McKean (2000: 29)

⁶ Hardin built up his theory on former thoughts of William Forster Lloyd (1833) “Two Lectures on the Check to Population”, who analyzed medieval village land holdings and population growth. However, the origin of the theory dates back to Aristotle.

From a systematic perspective, common pool resources share characteristics with private goods and with open-access goods (Table 1). Open-access goods are defined by rivalry in consumption and non-excludability (Gibson et al. 2000: 6). Rivalry in consumption means that a unit of the resource “consumed” by one user cannot be consumed by another. Non-excludability means that it is very difficult or prohibitively costly to exclude a potential user of the resource from actual consumption. Rivalry in consumption and excludability are necessary categories to classify goods because a simple differentiation between public and private goods is not sufficient for the characterization of natural resources (McKean 2000: 28 et seq.). Pure public goods (no rivalry, non-excludable) and (pure) private goods (rivalry in consumption and excludable) are only two extreme cases of a 2x2 matrix of types of goods (Table 1). Many forests, pastures, or fisheries are managed as common pool resources, and display rivalry in consumption while potential users are difficult or just very costly to exclude - if no institutional mechanisms exist that effectively govern access and use of the resources (McKean 2000: 29). Thus, it was claimed that the establishment either of private property rights or of government control are crucial to a sustainable use of natural resources (Demsetz 1967; Smith 1981).

However, several studies published over the last two decades concluded that neither privatization nor government control necessarily lead to sustainable resource use because the establishment of effective control remains a challenge for goods for which users are structurally difficult to exclude (Dietz et al. 2003; Ostrom et al. 1999). In contrast, there is growing evidence that certain types of joint local management institutions with clearly defined rules can be successful in averting the tragedy of the commons (see next section).

Local Self-Governance of Common Pool Resources – Effectiveness Versus Justice?

Along the lines of resource economic analysis, the research tradition on common pool resources started with questions on the sustainability of resource utilization (Stern et al. 2002: 457). Particularly in low income countries, however, concern on the sustainable use of a particular set of natural resources is only one of several socio-ecological and socio-economic concerns. Consequently, there is criticism that strictly enforced common property rights regimes may lead to social destabilization and fragmentation, and may exclude and marginalize at least parts of the local population (e.g., Agrawal 2003; Bardhan 2001). In fact, many respective institutions emerged from conflicting claims about common pool resources, but not from concern of sustainability (McCay 2002: 372). Thus, an overview of the effectiveness of local self-governance of common pool resources needs to be complemented by an overview of such

human dimension issues.

Resource Conservation Effectiveness

Based on intensive research on sustainable governance of natural resources, policy makers turned away from mainly “expert”-driven top-down approaches to natural resource management towards the inclusion of local communities as central actors (Agrawal 2003). Key arguments for this paradigm shift were provided by the seminal analysis of resource management institutions by Ostrom (1990: 90). She points out that the successful long-term management of common pool resources by local communities is historically characterized by certain design principles, among them (1) resource extraction monitoring, (2) graduated sanctions in case of violations of local resource use regulations, (3) minimal recognition of rights to local resource governance. More than thirty design principles have been identified ever since (Agrawal 2002: 65). More abstractly speaking, institutions need to be established that manage access to the resources in order to alleviate the rivalry in consumption problem by suitably limiting overall resource extraction (Berkes & Folke 1998: 5et seq.).

Furthermore, if such institutional arrangements are applied by traditional communities, the complexity of property right structures is often striking. Property rights can include distinct use rights, rights to exclude others, management rights, and rights to sell (Aggarwal 2006). The rights can be exercised by privileged individuals but are mostly held by the local community (Bromley 1992: 4; Gibbs & Bromley 1989: 31). The diversity of potential institutional arrangements and their differing effectiveness suggest that intermediate forms of resource access may exist between common pool resources and open access resources (cf. Campbell et al. 2001).

Agrawal (2003: 248) points out, that even the three most important works on the Commons, Ostrom (1990), Wade (1994) and Baland & Platteau (1996), “pay relatively little attention to features of resources that affect sustainable governance”. Also, a thorough integration of impacts of demographics, market access or technology adoption - which are central topics of classical agro- and development economic analysis (e.g., Barbier & Burgess 2001; Kaimowitz & Angelsen 1998; Shively 2001) is still missing (Agrawal 2003). These are potentially relevant influences also for the LLNP area in Central Sulawesi, where Maertens et al. (2006) documented that technology adoption can increase forest loss. In sum, local self-governance of common pool resources appears as a promising approach to an effective natural resource management, although the robustness of current prescriptions in the face of adverse external factors is unclear (Agrawal 2003; Agrawal 2002: 71).

Social Aspects

Humans depend vitally on the provision of environmental goods and services, particularly those who live in rural areas of low income countries or emerging economies. For the rural poor, natural resources such as forests, rivers, or fisheries often play decisive roles for their livelihood strategies (Bardhan 2001: 281). According to the theorists of the Commons, the emergence of strong and effective local institutions is central for sustainable resource management (see key-principles above). However, successful enforcement, tends to be coercive, and in reality often constrains mostly those with the least power (Agrawal 2003: 257). But even during the establishment of the resource management regime, it can be expected that institutional choices are predominantly influenced by the most powerful local groups disadvantaging marginal and less powerful groups. In consequence, strict enforcement secures an unequal allocation of natural resource benefits. Such a domination of institution building by local elites tends to result in social fragmentation, and impedes social progress (Bardhan 2001: 281 et seq.).

Although literature has long highlighted the importance of participation in the design of institutions governing common pool resources (Stern et al. 2002: 470), it is still a moot topic how participation really works (e.g. Cooke & Kothari 2007). Theoretically, participation aims at an equal appraisal of the voices and interests of all affected individuals in a practical discourse free of domination (Habermas 1992). In fact, participative processes often only maintain or even reinforce existing status, power and patronage relationships perversely justifying them by recourse to (formal) participation (Hailey 2007: 94).

With respect to customary law as a typical form of local natural resource management institutions, Hodgson (2004: 86) writes:

“Another risk regarding customary law is that it is often taken to be inherently democratic, egalitarian, equitable and therefore to deserve support in contrast to formal law and regulations issued from distant capitals, which are not. This kind of romantic view is false. There is ample evidence that customary law frequently reflects unequal power relationships in local communities. Such relationships greatly affect the ways in which land and water are distributed and managed.”

Similar to customary law, “local knowledge” may be impregnated by the views, values and interests of those locally in power (Hildyard et al. 2007: 56ff; Mosse 2007: 19).

In sum, a socially critical analysis of local self-governance of natural resources from a justice and equality point of view is as much a pressing issue as the concern for the sustainable use of the resource itself (cf. Agrawal 2003). The relative lack of empirical research on these broader human dimension issues guides our specific investigation of power relationships in three contrasting villages in the vicinity of Lore-Lindu National Park (LLNP).

Study Area

Located in the humid Tropics in Central Sulawesi ($1^{\circ} 03' - 1^{\circ} 57'S$, $119^{\circ}57' - 120^{\circ} 21'E$), Lore-Lindu National Park covers some 2,290 km² of montane, cloud and monsoon forests from -200-2,610 m a.s.l. (Figure 1). The LLNP area is characterized by rift valleys and a steep rainfall gradient from 500 to 2,500 mm per year. First established as an UNESCO Man & Biosphere reserve in 1978, it was declared a National Park by the Indonesian Ministry of Agriculture in 1982. However, until 1993 LLNP was not officially recognized, and its permanent borders were not fixed until the end of the 1990s.

Approximately 136,000 citizens, mainly agricultural smallholders, live in 119 villages within the study area of 7,220 km² around LLNP (Erasmı et al. 2004; Maertens 2003: 22 et seqq.). Central Sulawesi is one of the poorest provinces in Indonesia, and the LLNP area is - similar to other remote upland regions - considered as a distant, disadvantaged place with fragile ecosystems and poverty stricken villages (Li 1999: 34; Li 2007).

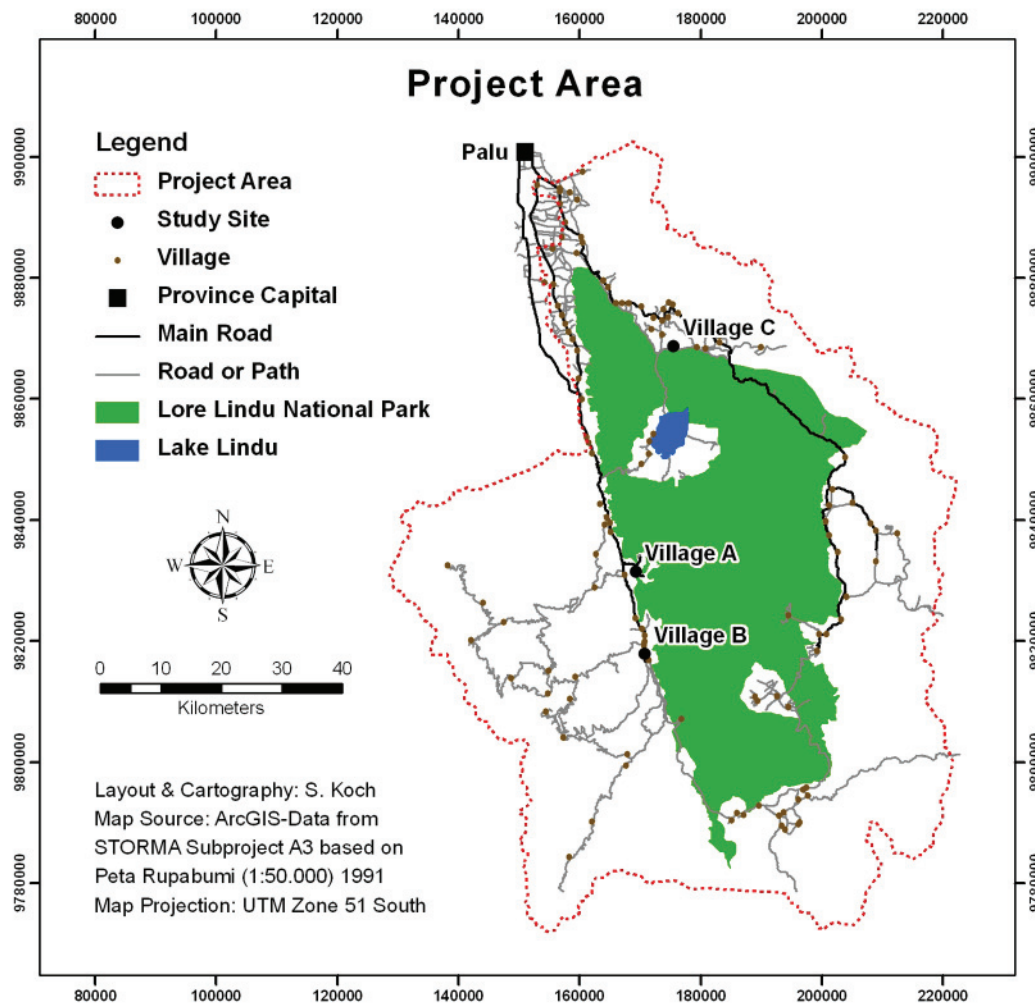


Figure 1 (continues next page)

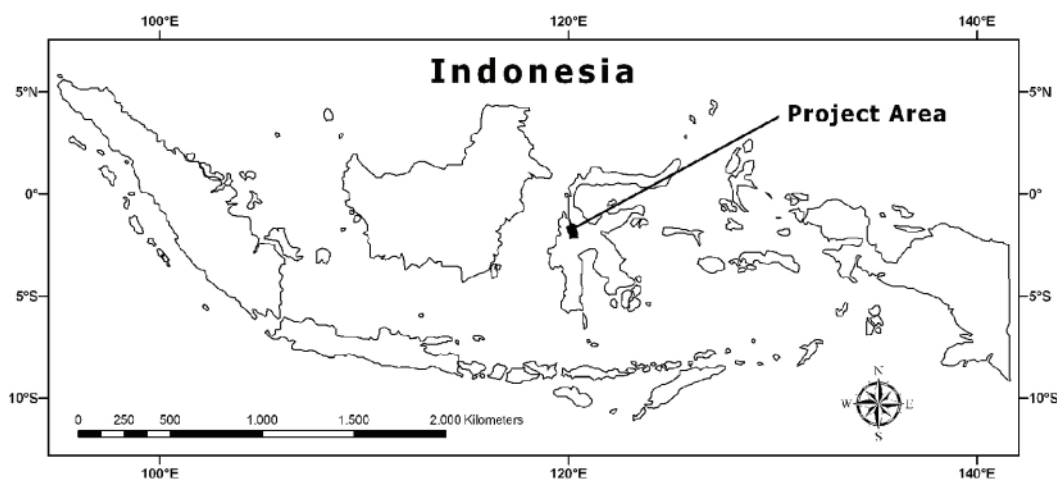


Figure 1 (continued from last page)

As one of the first activities of the Indonesian-German research center Stability of Rainforest Margins in Indonesia (STORMA)⁷, 12 villages were selected for intensive socio-economic research by stratified random sampling with population density, share of migrants of the village population, and distance to the road as stratification criteria (Zeller et al. 2002). These 12 villages encompass great variation in ecological conditions, as well as land-use patterns, socio-cultural and socio-economic conditions. The three contrasting villages used in our study were identified on the basis of household surveys conducted in the 12 villages as well as additional qualitative research on cultural landscape change, migration, ethnicity and ethnicity impact on land-use (Weber 2006; Faust et al. 2003). A census in the three villages later documented a gradient of migration intensity and, consequently, ethnic composition. With respect to migration dynamics, the villages were categorized as traditional, transitional and post-transitional (Weber & Faust 2006). In the following, we refer to these villages as village A, B, and C.

Village A represents a relatively static, traditional village type with low immigration, and a high share of autochthonous ethnics (~68 percent⁸ although several different ethnic groups are present). The village is one of the oldest settlements in the LLNP area and has a strong emphasis on traditions. In addition to a Council of Traditional Leaders (*Lembaga Adat*), an indigenous women's organization is active here since the 1990s (*Organisasi Perempuan Adat Ngata Toro/OPANT*). It fosters the traditional use of natural resources in the sense of a conservation agenda in collaboration with the village government. Land use is characterized by a large amount of wet rice fields at the valley bottom. Additionally, seasonal mixed cropping and agroforestry systems (mainly coffee and cacao) are widespread. Village A is almost an enclave inside LLNP. Free and accessible land is limited as access to land and all

⁷ See www.storma.de

⁸ This calculation includes one hamlet (Dusun V), located at the main road approximately five kilometers away from the village center. It is officially part of village A. Differing from the main village hamlets, however, Dusun V is mainly inhabited by Rampi ethnics from South Sulawesi. Dusun V inhabitants participate only little in village A community activities. The percentage of autochthonous inhabitants is much higher in village centre.

forest resources was officially suspended in 1982 with the declaration of the national park (Fremerey 2002: 13; Burkard 2002: 9 et seq.). As the result of negotiations with the national park administration, Village A was granted far-reaching self-governance rights to about 23 km² of forest land in 2001. In this community forest, village authorities monitor and regulate forest resource utilization.

Village B is less static and traditional than village A. It was relatively recently established at the southern end of the main asphalt road west of LLNP. Because of the less suitable topography, wet rice cultivation is of little importance while agroforestry dominates village agriculture. The population of village B doubled within the last ten years displaying high demographic dynamics with a significant proportion of migrants particularly from southern Sulawesi Buginese. Thus, village B is a representative of a transitional village type, in which immigration has started to impact village life but is not dominating it.

Village C is a young post-transitional village, located in the dynamic region of the Palolo valley at the northern edge of LLNP. Local migrants from surrounding villages were the most important group of first settlers before and during the 1970s when the Palolo valley was sparsely populated in contrast to the lower Palu valley (see Figure 1). The local migrants cleared the existing lowland forest for the establishment of wet rice fields. At the onset of the cacao boom in Central Sulawesi the 1980s (*revolusi coklat*; Sitorus 2004), Palolo was a favorite destination for a high influx of regional migrants, mostly Buginese well versed in cacao cultivation, which has a longer tradition in South Sulawesi. Today, village C's agriculture consists predominantly of intensive cacao plantations.

The census data had also indicated strong differences in average land acquisition patterns of the single households between the three villages (Koch et al. 2008). The census data show that 29 percent of all agricultural plots are bought in village A, whereas 55 percent are inherited, and 6 percent are cleared from primary forest inside LLNP. In village C, in contrast, 56 percent are bought, only 18 percent are inherited and 13 percent are cleared from forests inside LLNP. In village B, 35 percent are bought, 41 percent are inherited and 14 percent of the plots are cleared from community forest close to but outside LLNP. High levels of forest conversion (villages B, C) are related to the sale of land by locals to Buginese migrants ($p < 0.01$).

Methods and Data

In the three villages, a household census (n=898) focusing on household characteristics including livelihood strategies, resource access and social position in the village was conducted in 2004.

Based on extensive background analysis including the census data, the first author conducted informal interviews with key informants in the villages to select ten households per village that appeared likely to belong to a village “elite”. Without a formal definition (see Dasgupta & Beard 2007, for example), we considered land holdings/wealth, prominent social position in the village (member of formal or traditional leadership), and perceived success in agriculture as criteria to select “elite” households. With these 3*10 households, semi-structured in-depth interviews were conducted from March to June 2007. The interviews followed a “problem-centred interview” (PCI) approach (Witzel 1989: 227ff sqq.) focusing on natural resource use patterns. They included questions on village-level institutions and the related power structures that govern infra-village resource access and use decisions.

The 2004 census had already generated quantitative estimates on issues such as household forest conversion and land transactions. For this study, we chose a qualitative research methodology as a complement as the capacity of quantitative surveys to obtain meaningful information on potentially sensitive topics such as (technically illegal) deforestation is limited due to standardization requirements (cf. Berg 2007; Miles & Huberman 1994). Furthermore, we hoped that a qualitative approach would provide us with deeper insights into processes and background influences on village level resource management.

The interviews were structured by a flexible interview guide allowing, e.g., for non-standardized comments and explanations, as well as the incidental coverage of additional aspects when deemed necessary by the interviewer. All interviews were either conducted in Indonesian (or in rare cases in a local language) supported by an Indonesian assistant. The interviews were recorded in full. In a second step, the complete material was transcribed and subsequently translated into English. We are aware that any translation results in a loss of information. However, we were primarily interested in processes and structures in the village community that can be described in very plain language. A more in depth analysis onto underlying psychological factors behind resource use decisions may have required different observational and interview techniques. Furthermore, shortly after finishing an interview, relevant outcomes and the circumstances of the interview situation were jointly discussed with the assistant and documented. Unclear parts of the interview or potential misunderstandings were immediately clarified.

Since we are interested in specific issues with regard to natural resource use patterns, a rule-guided systematic coding following Mayring’s (2007) qualitative content analysis approach was applied. “For a content analysis to be replicable, the analysts must explicate the context that guides their inferences” (Krippendorff 2004: 24). Therefore, the coding system was developed based on an interplay of inductive and deductive procedures (Witzel 1989: 233).

Results

In the traditional village A, all interviewed individuals highlighted the strong influence of local institutions mainly exerted by the Council of Traditional Leaders (*Lembaga Adat*). A clan of families belonging to the first settlers in village A dominates almost all positions in the formal village leadership. Besides the *Lembaga Adat*, its members also occupy the positions of the village head (*Kepala Desa*) and the custom institution (*Badan Perwakilan Desa/BPD*). To be a member of the village government, i.e. factually one of the three institutions, candidates must be indigenous. “[...] the members of village government should be the indigenous of Kulawi” (teacher; indigenous, village A). Although the village head and the traditional leaders are elected, positions are often passed from one family member to another. This is particularly true for the members of the *Lembaga Adat* that has a strong role in village A (see below). Furthermore, only the indigenous people are allowed to participate in the elections. Generally, the others are merely informed about the results. These power inequalities are also reflected in land holdings. Members of the village government, often stemming from the families of the first settlers, possess large land holdings - some of them even more than they are able to cultivate.

These local institutions are effectively in control of access to local natural resources, i.e. mainly to the forest resources assigned to the village. If a household has too little land to cover its basic needs, the head of the concerned household will appear at a *Lembaga Adat* meeting, explain his/her cause, and hope for the appropriation of a forest plot. In addition to access to land and forest plots, the *Lembaga Adat* grants permissions for the extraction of timber and non-timber forest products (NTFP) such as rattan or dammar. Regularly, punishments are imposed by the formal village leadership if villagers violate *Lembaga Adat* resource use regulations.

The same procedures apply principally to migrants intending to settle in the village. Poor, recent migrants are discriminated against, however. This is most obvious in cases of smaller land appropriations, or more restricted access to other forest resources: “[...] some people are being pressured not to take forest products while others were allowed to do. So sometimes I intend to ask where the justice is!” (migrant, village A). In addition to the inability to acquire a position in the traditional leadership, some respondents also report that migrants are discriminated against by restrictions in the use of public spaces in village A.

The land assigned to households in need stems from a community forest located inside LLNP for which the formal village leadership negotiated “traditional” - restrictive - use rights from the LLNP administration. Since there is no “free” land any more, the community forest serves as the only source for land expansion. As a result of land scarcity and land use restrictions,

some villagers already moved to other places in search of land. The community forest is divided into six zones. In one zone, for example, cultivation is strongly prohibited because it serves as a habitat for scarce flora and fauna and as a water source. In a traditional use zone, shifting cultivation with up to 25 years of fallow can be practiced.

Immigration by members of other ethnic groups is strictly discouraged by very restrictive regulations on land purchases. The village government hinders villagers in obtaining private land titles - which are seen as a prerequisite for land purchases by the most successful regional migrants, the Buginese. Differing from other villages in the research area, land transactions must be reported in advance to the *Kepala Desa*. Together with the *Lembaga Adat*, the village head will decide whether any proposed land transaction will be allowed or not. Furthermore, the size that could be sold is restricted by the *Lembaga Adat*. Finally, it is not allowed to resell formerly purchased plots to others except to the erstwhile owner.

Village B is to some degree similar to village A. Traditional institutions and power structures appear to be still in place. The *Lembaga Adat* serves as the guardian of the customary institutions. It grants access to a community forest outside LLNP only to autochthonous households. Also village regulations concerning natural resource use and designed by village head and *Lembaga Adat* exist. The regulations do not exist in written form, and are not fully implemented. Notwithstanding rules and regulations, there is a lack of monitoring and enforcement mechanisms in the village. Therefore, fines and punishments are rarely imposed.

Similar to village A, migrants are completely excluded from any kind of position in the formal village government. “[For] migrants it is impossible to be involved in traditional leadership” (village official, local, village B). However, some economically successful cacao farmers who are migrants were invited to participate in village meetings on agricultural development. This was done because several local farmers were also interested to turn from subsistence agriculture to market-oriented cacao cultivation. Most local cacao farmers adopt cultivation technologies from successful Buginese migrants well-versed in more intensive cacao cultivation.

Since timber trade is officially prohibited in the Lore Lindu area, only fuel wood and timber for private construction purposes - but not for sale - are allowed to be extracted. The regulations forbid agriculture on steep slopes >45° because of the possibility of landslides and to preserve the headwaters to secure the village’s water provision. However, land scarcity induces some poorer local households to extract forest products, such as rattan, as an important source of cash income.

In contrast to village A, land transactions are not restricted in village B. Because migrants are not allowed to convert forest into new agricultural plots, Buginese migrants - as well as

better-off autochthonous households - acquire land via purchase from poorer, local households. Groups of autochthonous, partly land-stripped households (15-20 persons) collectively prepare new agricultural land via conversion of uphill (primary or secondary) forest. This is mostly done in the area of the community forest located outside of LLNP. In combination with the absence of effective monitoring and sanctioning of perpetrations of formal and customary law, this two step conversion patterns results in high rates of forest conversion and natural resource depletion.

Although excluded from traditional leadership positions, migrants are not as discriminated against as in village A. According to the former village headman, differences between autochthonous and migrants should be diminished in favor of a unified village community: “The one from Ujung Pandang or Toraja, never [should] think that they are Buginese, Torajanese [; they should] claim themself as Lempeleronese” (former *Kepala Desa*, local, village B).

In migration dominated village C, traditional power relationships are replaced by economic power structures dominated mostly by Buginese migrants from South Sulawesi who are substantially more prosperous than the autochthonous households due to more effective cacao cropping. The village headman and the BPD are the formal governance organizations, and even a *Lembaga Adat* exists. However, neither the formal nor the customary institutions are as powerful as in villages A or B. It appears completely possible for migrants to hold a position in the formal village government (*Kepala Desa*, BPD). The low importance of these institutions is reflected by the fact that formally important legal village representatives (BPD) are not even known by many inhabitants of village C, be they migrants or locals.

Autochthonous as well as Buginese interviewees agree that a widespread laissez-faire attitude on natural resource use prevails. Every household is regarded as responsible for itself. No specific written village regulations exist to date. “There are no regulations about the use of the forest and its products in this village” (*Kepala Desa*, village C). Rules and regulations with regard to the national park exist only at the regional and national level. Locally, neither monitoring nor sanctioning is established. The BPD and the village headman drew up some regulations about natural resource use. For example, an extraction fee for rattan and timber of 25.000 IDR/m³ materials was envisioned to be paid to the village government. However, these regulations are only partly enforced. In addition, there are attempts to dissuade smallholders from farming steep slopes inside LLNP. In absence of forest resources and “free” land outside LLNP, these regulations are disregarded more often than honored.

Virtually without institutional restrictions, Buginese migrants - as well as some better-off local households - acquire land via purchase from poorer, local households. The land-stripped local households, in turn, acquire new land by illegally clearing primary forest inside LLNP. These new plots are of inferior land use quality, and of a highly precarious tenure status.

In contrast to village A or B, newly converted plots are reported to the *Kepala Desa* only after establishment because permissions from the village leadership are not needed⁹. “It is common here that everybody goes to the forest without permission” (local, village C). Furthermore, while our respondents report that fines and punishments were imposed in the past, this is not the case today.

<i>Table 2: Social and Resource Conservation Aspects Regarding Village Institutions</i>			
	Village A	Village B	Village C
Resource Conservation Aspects	<i>Enforced common pool resources:</i> Local institutions strongly preserve natural resources in LLNP (low forest conversion rate)	<i>Partly enforced common pool resources:</i> Local institutions only prevent migrants from conversion of community forest outside LLNP (high forest conversion rate)	<i>Factual open access resources:</i> Neither official legal nor local customary institutions protect LLNP forests (high forest conversion rate, landslides & floods)
Social Aspects	Feudal, traditional power relationships	Traditional power structures in transition	Economic power structures
	Strong & effective discrimination against migrants incl. land transactions	Partly-effective discrimination/exclusion particularly; not effective regarding land transactions	Progressing socio-economic exclusion of poor locals after land sell-off

Source: own compilation

Discussion & Conclusion

In this concluding section, we first synthesize the results from the three villages with a special emphasis on the questions, how the differences in local resource governance between the three villages influence their effectiveness, and their social impact. In the introduction, we singled out three characteristics of historically successful resource management regimes: (1) resource extraction monitoring, (2) graduated sanctions in case of violations of local resource use regulations, (3) minimal recognition of rights to local resource governance. Although more characteristics may be important, we will focus on these three to determine if an ineffective

⁹ In order to minimize land conflicts within the community, the *Kepala Desa* usually issues a letter that documents the establishment of a certain plot for a small fee.

open access situation or a potentially effective common pool situation with respect to access to forest land dominates.

Village A is ruled by a group of families relying on local and traditional institutions for controlling natural resource access. All three of the above characteristics are in place in order to render the - rather restrictive - regulations effective. Villagers must ask the local village leadership for permission for any natural resource extraction, particularly for the assignment of forest land, and perpetrators are punished. The local institutions - as well as the exclusive use of rights in favor of the village A community - are acknowledged by the (national level) national park authorities. Although it is unclear if the negotiated use rights inside LLNP are actually compatible with official national park law, the agreement with the village government is honored by the Central Sulawesi national park administration. This has enabled the leadership institutions of village A to exercise a relatively effective monitoring of their common property rights with respect to outside settlers and resource extractors as well as with respect to locals. One “objective” effect of the combination of restrictive procedures for granting access and a reasonably effective monitoring is the low forest conversion in comparison to villages B and C. Only 6 percent of all plots covered by the census in 2004 were cut by their owners from the original forest. From an effectiveness point of view, village A can be regarded as a relatively successful case of local self-governance of natural resources.

At first glance, the situation appears similar in village B from an institutional point of view. Also, traditional institutions (*Lembaga Adat*, local regulations for land access) are in place. As in village A, migrants are denied access to forest land. Because the village possesses a community forest outside LLNP, there was no need, however, to negotiate restrictive use rights from the national park administration or other state or province authorities. As a result, local smallholders enjoy relatively open access to the land of the community forest. In this situation, there is no immediate need for strict monitoring or for imposing sanctions against locals who illegally use LLNP land on part of the village government. While higher level administrations acknowledge village B’s rights to their community forest, the village is not responsible for LLNP land. Although migrants are effectively excluded from the conversion of forest land in the community forest, it is a small difference in local land regulations compared to village A that additionally fosters forest conversion: Locals are allowed to sell their land to agronomically often more successful migrants. Because locals possess the social capital - i.e., here, a little restricted access right - to convert new forest, they have an incentive to improve their short-term lot by selling their land and acquiring new forest plots that are cleared. These circumstances explain the high percentage of 14 percent of all plots being cleared from original forest.

In contrast to villages A and B, no traditional village-level institutions limit access to natural

resources and forest land in village C. After local flooding and increasing land slides, there are recent attempts by the official village leadership (*Kepala Desa*, BPD) to establish some restrictions on the utilization of LLNP land, for example on the steepest slopes. However, implementation of monitoring is weak, and perpetrators are not punished at present. In face of the massive intrusion into LLNP land (13 percent of all land cleared from original forest), it is doubtful if the LLNP administration will back any local claim to the self-governance of natural resources including access to forest land. As in village B, land transactions from locals to migrants with more highly developed cacao cropping technology are not inhibited, and locals enjoy nearly open access to new forest. Legally, access is not open of course. But the LLNP administration does not muster the repressive force that would be necessary to substantially halt or even revert deforestation. In sum, all highlighted institutional preconditions for a successful self-governance of natural resources are missing in village C.

As suggested for woodland management in Zimbabwe (Campbell et al. 2001), the differentiation between common pool resource and open access resources is useful for explaining some differences in the sustainability of resource use (village A versus village C) but not all: In spite of a common property community forest, deforestation rates are very high in village B. If looking in detail at the resource use institutions of the three villages, further differences regarding the existence of monitoring, sanctions in case of violations, and recognition of rights to local resource governance become obvious (Ostrom 1990). Our case study documents how the interplay of these three factors can differ in adjacent villages at the margin of the same national park. Although the differences in the percentage of agricultural plots cleared from original forests is certainly also influenced by other factors, our analysis clearly documents the decisive role that such local institutions play for resource conservation effectiveness. The question who establishes and/or maintains the local resource use institutions leads to the second main research question of this paper. Is successful local self-governance of natural resources associated with problematic social impacts, particularly under equality and exclusion aspects?

In none of the three investigated villages, we encountered substantial participatory or democratic processes that justified or legitimized existing (or non-existing) local resource access institutions. In fact, it appears justified to describe this aspect of village governance as being nearly completely dominated by the respective village “elites”. Their importance for local natural resource governance in the project area was also highlighted by Burkard (2002: 38). He investigated villages at the eastern margin of LLNP. Until very recently, village leaders had the power to distribute resources as they liked. This is partly an inheritance of Suharto’s New Order Era policies during which village leaders could behave like “Little Gods” (Faust et al. 2003: 13; Tsuyoshi 1989). They could allocate land at their own will, and

rather freely take financial advantages of their position. Studies from Java (Indonesia) show, however, that such elite capture depends on the structure of a community (Dasgupta & Beard 2007). Communities where both elite and non-elite households participate in self-governance demonstrate an ability to reduce elite capture.

The village elites are structured differently, and local resource use institutions as well as social outcomes differ strongly. In village A, nearly “feudal” power relationships enforce strict limitations regarding access to natural resources including land conversion. This power is exerted by a group of autochthonous “first settlers” forming a traditional village elite that makes use of a highly influential Council of Traditional Leaders (*Lembaga Adat*) besides formal leadership structures. Through denying villagers full property rights even to their existing non-forest land (strongly limited fungibility), a key process that enhances forest conversion and immigration is substantially tamed: Very little land is sold to economically successful migrant cacao farmers. In concert with this restriction, (poor) migrants particularly from non-autochthonous ethnic backgrounds are severely discriminated against in terms of land appropriation, access to leadership positions, and general integration into the local community.

In village B, also traditional institutions and exclusive leadership structures are in place, and migrants are not allowed to clear land in the community forest. Still, strong recent migration occurred which was facilitated by lacking restrictions of land sales by locals. In effect, agronomically successful migrants are increasingly recognized as valuable members of the village community. This transition is reflected by statements from within the local village elite that favors a united village community spirit. As of now it is unclear if the situation will develop into full equality of the autochthonous population and migrants, or if tensions will rise when the group of successful migrants starts to demand equal rights.

In contrast to villages A and B, all traditional power relationships appear replaced by economic power based on petty capitalist-type production of agricultural commodities in village C. While it would be possible in village C for a (better-off) migrant household to convert forest land inside LLNP, the economically powerful migrant households prefer the purchase of better land at the valley bottom for which land titles can also be issued. In effect, the two-step conversion forest process also described from village B is likewise operating in village C - however converting forest inside LLNP. Although no traditional or local institutions are effectively in place, poor local households are spatially and socially marginalized.

The majority of scholars on the commons assert that (local) communities will manage their natural resources in a sustainable manner, ensure egalitarian access and equitable distribution among their members (e.g., Ostrom 1990; Feeny et al. 1990). This paper gives additional weight to critical voices that claim that local self-governance of natural resources

does not necessarily result in egalitarian access and equitable distribution (Agrawal 2003; Hodgson 2004: 86), particularly if institution building is strongly influenced by local elites as in our case study villages (cf. Bardhan 2001: 281 et seq.). In village A, it can be observed that successful enforcement tends to constrain some of those with the least power (Agrawal 2003: 257). Similar trends were found in Nepal where the poorest inhabitants benefited less from common property forest than less poor inhabitants (Adhikari et al. 2004). However, the absence of effective self governance in the project region (village C) displays a complementary social problem: the socio-economic marginalization of poor autochthonous households who - not hindered by non-democratic institutions - sold out their land to economically successful migrants.

In conclusion, we find a very complex reality even at the level of only three adjacent villages that provides evidence for both positions:

- Local self-governance of natural resources can be an effective means of sustainable resource management if some essential design characteristics are implemented.
- Local self-governance of natural resources may have less egalitarian and pro-poor outcomes that envisioned even if effectively implemented.

Additionally, we document that already a small loophole in traditional institutions (village B) can be sufficient to jeopardize the success of a principally well-'designed' set of local governance rules. With regard to the specific situation in Central Sulawesi characterized by cash-crop driven smallholder encroachment and deforestation, the fungibility of land (or its restrictions: autochthonous inhabitants may not sell land to migrants) turned out to be a decisive factor.

With regard to practical implications of our study, we can address only one point here. The governance situation has generally improved with the introduction of the new village constitution (BPD) in Central Sulawesi in comparison to the Suharto era. Our results show, however, that the introduction of the BPD does not result necessarily in more legalistic, participatory or democratic resource management procedures. In fact, the BPD system is too weak to prevent deforestation in villages B and C, and too weak to prevent undemocratic social exclusion based on ethnicity in village A and partly village B. In fact, local elites based on traditional and/or economic power decisively influence access to natural resources and social cohesion. Such power structures should not be ignored, e.g., by development institutions (Hailey 2007: 98). In particular, participatory approaches in community-based common pool management - as well as idealistic market solutions -, should not naively ignore the existing power inequalities.

References

- Acheson, J. (2006). Institutional Failure in Resource Management. *Annual Review of Anthropology*, 35, 117-134.
- Adhikari, B., S. Di Falco & J. C. Lovett (2004). Household characteristics and forest dependency: evidence from common property forest management in Nepal. *Ecological Economics*, 48 (2), 245-257.
- Aggarwal, R. M. (2006). Globalization, local ecosystems, and the rural poor. *World Development*, 34 (8), 1405-1418.
- Agrawal, A. (2002). Common Resources and Institutional Sustainability. In Ostrom, E., T. Dietz, N. Dolsak, P. C. Stern, S. Stonich & E. Weber (Eds.), *The Drama of the Commons*, (pp. 41-85). Washington, D.C.: National Academy Press.
- Agrawal, A. (2003). Sustainable Governance of Common-Pool Resources: Context, Methods, and Politics. *Annual Review of Anthropology*, 32, 243-262.
- Baland, J. & J. Platteau (1996). *Halting Degradation of Natural Resources: Is There a Role for Rural Communities?*. Oxford: Clarendon.
- Barbier, E. B. & J. C. Burgess (2001). The Economics of Tropical Deforestation. *Journal of Economic Surveys*, 15 (3), 413-433.
- Bardhan, P. (2001). Distributive Conflicts, Collective Action, and Institutional Economics. In Meier, G. & J. Stiglitz (Eds.): *Frontiers of Development Economics - The Future in Perspective*, (pp. 269-290). New York: Oxford University Press.
- Barraclough, S. & K. Ghimire (1995). *Forests and Livelihoods - The Social Dynamics of Deforestation in Developing Countries*. Basingstoke: MacMillan Press Ltd.
- Berg, B. (2007). *Qualitative Research Methods for the Social Sciences*. Boston: Pearson.
- Berkes, F. (Ed.) (1989). *Common Property Resources - Ecology and Community Based Sustainable Development*. London: Belhaven Press.
- Berkes, F. (2002). Cross-Scale Institutional Linkages: Perspectives from the Bottom Up. In Ostrom, E., T. Dietz, N. Dolsak, P. C. Stern, S. Stonich & E. Weber (Eds.), *The Drama of the Commons*, (pp. 293-321). Washington, D.C.: National Academy Press.
- Berkes, F. & C. Folke (1998). Linking social and ecological systems for resilience and sustainability. In Berkes, F. & C. Folke (Eds.), *Linking practices and social mechanisms for building resilience*, (pp. 1-25). Cambridge: Cambridge University Press.
- Bromley, D. (1992). Common Property as an Institution. In Bromley, D. (Ed.), *Making the Commons Work - Theory, Practice, and Policy*, (pp. 3-16). San Francisco: ICS Press.
- Burkard, G. (2002). Natural Resource Management in Central Sulawesi: Past Experience and Future Prospects. *STORMA Discussion Paper Series No. 8*, Göttingen and Bogor.

Campbell, B., A. Mandondo, N. Nemarundwe, B. Sithole, W. De Jong, M. Luckert & F. Matose (2001). Challenges to proponents of common property resource systems: despairing voices from the social forests of Zimbabwe. *World Development*, 29 (4), 589-600.

Cooke, B. & U. Kothari, (Eds.) (2007). *Participation - The New Tyranny?* London: Zed Books Ltd.

Dasgupta, A & V. Beard (2007). Community Driven Development, Collective Action and Elite Capture in Indonesia. *Development and Change*, 38 (2), 229-249.

Demsetz, H. (1967). Towards a Theory of Property Rights. *American Economic Review*, 52 (2), 347-379.

Dietz, T., E. Ostrom & P. C. Stern (2003). The Struggle to Govern the Commons. *Science*, 302 (5652), 1907-1912.

Erasmı, S., A. Twele, M. Ardiansyah, M. A. & M. Kappas (2004). Mapping Deforestation and Land Cover Conversion at the Rainforest Margin in Central Sulawesi, Indonesia. *EARSeL eProceedings*, 3 (3), 388-397.

Faust, H., M. Maertens, R. Weber, N. Nuryartono, T. van Rheenen & R. Birner (2003). Does Migration lead to Destabilization of Forest Margins? *STORMA Discussion Paper Series*, No. 11, Göttingen and Bogor.

Feeny, D., F. Berkes, B. J. McCay & J. Acheson (1990). The Tragedy of the Commons: Twenty-Two Years Later. *Human Ecology*, 18 (1), 1-19.

Fremerey, M. (2002). Local Communities as Learning Organizations - The case of the village of Toro, Central Sulawesi, Indonesia. *STORMA Discussion Paper Series* No. 6, Göttingen and Bogor.

Gautam, A. P. & G. P. Shivakoti (2005). Conditions for Successful Local Collective Action in Forestry: Some Evidence From the Hills of Nepal. *Society & Natural Resources*, 18 (2), 153-171.

Gibbs, C. & D. Bromley (1989). Institutional Arrangements for Management of Rural Resources. In Berkes, F. (Ed.): *Common Property Resources - Ecology and Community Based Sustainable Development*, (pp. 22-32). London: Belhaven Press.

Gibson, C., M. McKean & E. Ostrom (2000). Explaining Deforestation: The Role of Local Institutions. In Gibson, C., M. McKean & E. Ostrom (Eds.), *People and Forests - Communities, Institutions, and Governance*, (pp. 1-26). Cambridge: MIT Press.

Habermas, J. (1992). *Erläuterungen zur Diskursethik*. 2nd ed. Frankfurt/M.: Suhrkamp.

Hailey, J. (2007). Beyond the Formulaic: Process and Practice in South Asian NGOs. In Cooke, B. & U. Kothari (Eds.), *Participation - The New Tyranny?* (pp. 88-101). London: Zed Books Ltd.

Hardin, G. (1968). The Tragedy of the Commons. *Science*, 162 (3859), 1243-1248.

Hildyard, N., P. Hegde, P. Wolvekamp & S. Reddy (2007). Pluralism, Participation and Power: Joint Management in India. In Cooke, B. & U. Kothari (Eds.), *Participation - The New Tyranny?* (pp. 56-71). London: Zed Books Ltd.

Kaimowitz, D. & A. Angelsen (1998). *Economic Models of Tropical Deforestation - A Review*. Bogor, CIFOR.

Koch, S., H. Faust, J. Barkmann, & R. Marggraf (2008): Influence of Informal Institutions at the Village Level on Land Acquisition and Forest Conversion around LLNP in Central Sulawesi (Indonesia). In Stadler,

J., F. Schöppe, & M. Frenzel (Eds.), EURECO-GFOE 2008 "Biodiversity in an Ecosystem Context", p. 818, September 15-19, 2008, *Proceedings - Verhandlungen der Gesellschaft für Ökologie*, Band 38, Leipzig.

Krippendorff, K. (2004). *Content Analysis: An Introduction to Its Methodology*. Thousand Oaks, CA: Sage.

Li, T. M. (Ed.) (1999). *Transforming the Indonesian Uplands - Marginality, Power and Production*. Amsterdam: OPA.

Li, T. M. (2007). *The Will to Improve - Governmentality, Development, and the Practice of Politics*. Durham: Duke University Press.

Maertens, M. (2003). *Economic Modeling of Agricultural Land-Use Patterns in Forest Frontier Areas - Theory, Empirical Assessment and Policy Implications for Central Sulawesi, Indonesia*. Ph. D. Thesis, Georg-August-Universität Göttingen, Germany.

Maertens, M., M. Zeller & R. Birner (2006). Sustainable agricultural intensification in forest frontier areas. *Agricultural Economics*, 34 (2), 197-206.

Mayring, P. (2007). *Qualitative Inhaltsanalyse - Grundlagen und Techniken*. Weinheim: Beltz.

McCay, B. (2002). Emergence of Institutions for the Commons: Context, Situations, and Events. In Ostrom, E., T. Dietz, N. Dolsak, P. C. Stern, S. Stonich & E. Weber (Eds.), *The Drama of the Commons*, (pp. 361-402). Washington, D.C.: National Academy Press.

McCay, B. & J. Acheson, (Eds.) (1987). *The Question of the Commons - The Culture and Ecology of Communal Resources*. Tucson: The University of Arizona Press.

McKean, M. (2000). Common Property: What Is It, What Is It Good for, and What Makes It Work?. In Gibson, C., M. McKean & E. Ostrom (Eds.), *People and Forests - Communities, Institutions, and Governance*, (pp. 27-55). Cambridge: MIT Press.

Miles, M. & M. Huberman (1994). *Qualitative Analysis: An Expanded Sourcebook*. Thousand Oaks, CA: Sage.

Mishan, E. (1969). The Relationship between Joint Products, Collective Goods, and External Effects. *The Journal of Political Economy*, 77 (3), 329-348.

Mosse, D. (2007). 'People's Knowledge', Participation and Patronage: Operations and Representations in Rural Development. In Cooke, B. & U. Kothari (Eds.), *Participation - The new Tyranny?* (pp. 16-35). London: Zed Books Ltd.

Myers, N. (1988). Threatened biotas: 'hotspots' in tropical forests. *Environmentalist*, 8 (3), 187-208.

Myers, N., R. A. Mittermeier, C. G. Mittermeier, G. A. B. da Fonseca & J. Kent (2000). Biodiversity hotspots for conservation priorities. *Nature*, 403 (6772), 853-858.

North, D. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.

O'Riordan, T. & S. Stoll-Kleemann (2002). Deliberative Democracy and Participatory Biodiversity. In O'Riordan, T. & S. Stoll-Kleemann (Eds.), *Biodiversity, Sustainability and Human Communities - Protecting beyond the Protected*, (pp. 87-112). Cambridge: Cambridge University Press.

- Ostrom, E. (1990). *Governing the Commons*. Cambridge: Cambridge University Press.
- Ostrom, E., J. Burger, C. B. Field, R. B. Norgaard & D. Policansky (1999). Revisiting the Commons: Local Lessons, Global Challenges. *Science*, 284 (5412), 278-282.
- Quinn, C. H., M. Huby, H. Kiwasila & J. C. Lovett (2007). Design principles and common pool resource management: An institutional approach to evaluating community management in semi-arid Tanzania. *Journal of Environmental Management*, 84 (1), 100-113.
- Shively, G. (2001). Agricultural Change, Rural Labor Markets, and Forest Clearing: An Illustrative Case from the Philippines. *Land Economics*, 77 (2), 268-284.
- Sitorus, F (2004). "Revolusi Cokelat": Social Formation, Agrarian Structure, and Forest Margins in Upland Sulawesi, Indonesia. In Gerold, G., M. Fremerey & E. Guhardja (Eds.), *Land Use, Nature Conservation and the Stability of Rainforest Margins in Southeast Asia*, (pp. 105-118). Berlin et al.: Springer.
- Smith, R. (1981). Resolving the Tragedy of the Commons by creating private property rights. *Cato Journal*, 1 (2), 439-468.
- Stern, P. C., T. Dietz, N. Dolsak, E. Ostrom & S. Stonich (2002). Knowledge and Questions After 15 Years of Research. In Ostrom, E., T. Dietz, N. Dolsak, P. C. Stern, S. Stonich & E. Weber (Eds.), *The Drama of the Commons*, (pp. 445-489). Washington, DC: National Academy Press.
- Sunderlin, W. D. & I. A. P. Resosudarmo (1996). Rates and causes of deforestation in Indonesia: towards a resolution of the ambiguities. *CIFOR Occasional Paper 9*.
- Tsuyoshi, K. (1989). Different Fields, Similar Locusts: Adat Communities and the Village Law of 1979 in Indonesia. *Indonesia*, 47, 89-114.
- Wade, R. (1994). *Village Republics: Economic Conditions for Collective Action in South India*. Oakland: ICS Press.
- Weber, R. (2006). *Kulturlandschaftswandel in Zentralsulawesi*. Göttingen: Universitätsverlag Göttingen.
- Weber, R. & H. Faust (2006). Kulturelle Aspekte der Landnutzung in Indonesien. *Geographica Helvetica*, 61 (4), 237-245.
- Witzel, A. (1989). Das problemzentrierte Interview. In Jüttemann, G. (Ed.), *Qualitative Forschung in der Psychologie. Grundfragen, Verfahrensweisen, Anwendungsfelder*, (pp. 227-256). Heidelberg: Asanger.
- Zeller, M., S. Schwarze & T. Rheenen (2002). Statistical Sampling Frame and Methods Used for the Selection of Villages and Households in the Scope of the Research Programme on Stability of Rainforest Margins in Indonesia (STORMA). *STORMA Discussion Paper Series*, No. 1, Göttingen and Bogor.