

# Conflict management approaches under unclear boundaries of the commons: experiences from Danau Sentarum National Park, Indonesia

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## SUMMARY

Research on the role of local institutions in conflict management is still limited. This study highlights various inter-settlement conflicts over the issue of unclear resource boundaries in Danau Sentarum National Park, Indonesia. The park is home to two major ethnic groups (*Dayak Iban* and *Malay*) whose livelihoods are highly dependent on fish and forest resources available in the park area. We demonstrate how local institutions (*adat*) are used to address boundary conflicts and consider their effectiveness. The study also discusses challenges that *adat* face in ensuring the effectiveness of conflict management. We argue that enhancing communication and developing a mechanism of exchange among settlements engaged in conflict will promote better understanding of the problem and thus allows improvement in the current approaches in managing conflict. We propose a co-management arrangement to ensure the sustainability of the park and to constructively manage the conflict in the area.

Keywords: common pool resources, unclear boundaries, conflict management approaches, Danau Sentarum National Park, *Malay*, *Dayak Iban*

## Approches de gestion des conflits dans les délimitations vagues des terres communes: expériences du parc national de Danau Sentarum en Indonésie

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La recherche sur le rôle des institutions locales dans la gestion des conflits est encore limitée. Cette étude met en lumière les conflits inter-exploitations sur la question des délimitations vagues des ressources dans le parc national de Danau Sentarum en Indonésie. Deux groupes ethniques majeurs vivent dans ce parc (*Dayak Iban* et *Malay*). Leurs moyens de survie dépendent fortement du poisson et des ressources forestières disponibles dans la région du parc. Nous montrons comment les institutions locales (*adat*) sont utilisées pour faire face aux conflits de délimitations, et nous considérons leur efficacité. L'étude examine également les défis auxquels les *adat* font face alors qu'ils essaient d'assurer l'efficacité de la gestion des conflits. Nous démontrons qu'une mise d'accent sur la communication et le développement d'un mécanisme d'échange entre les exploitants impliqués dans le conflit vont permettre de promouvoir une meilleure compréhension du problème, et faciliter ainsi une amélioration des approches actuelles dans la gestion des conflits. Nous proposons un arrangement de co-gestion pour assurer la durabilité du parc, et gérer le conflit dans cette région de manière constructive.

## Técnicas de gestión de conflictos limítrofes en tierras comunales: experiencias del Parque Nacional de Danau Sentarum, Indonesia

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Las investigaciones sobre el papel de las instituciones locales en la gestión de conflictos sigue siendo limitadas. Este estudio describe varios conflictos entre asentamientos sobre el tema de lindes pocos claros y recursos en el Parque Nacional de Danau Sentarum en Indonesia. Dos grupos étnicos importantes habitan el Parque, los *Dayak Iban* y los *malayos*, y ambos grupos dependen en gran medida de los recursos forestales y pesqueros disponibles en el Parque. El artículo demuestra como una institución local (el *adat*) se emplea para tratar los conflictos limítrofes y analiza la eficacia de esta institución, y examina también los desafíos que debe afrontar el *adat* para asegurar la eficacia de la gestión de conflictos. El estudio sugiere que mejoras en la comunicación y el desarrollo de un mecanismo de intercambio entre asentamientos en conflicto promoverán una comprensión más profunda del problema y así mejorarán las técnicas actuales de resolución de conflictos. Se propone un modelo de manejo conjunto que pueda asegurar la sostenibilidad del Parque y una gestión constructiva del conflicto en la zona.

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## INTRODUCTION

Conflict is an emotive term that provokes various images or associations amongst people. As with all concepts in social sciences a bewildering variety of definitions co-exist (Wall and Callister 1995). Daniels and Walker (2001) suggest that all social conflicts are based on differences in things such as interest, perception, power and goals. Furthermore, Glasl (1999) argues that conflict only occurs if an actor feels 'impairment' from the behaviour of another actor. The experience of an actor's behaviour as impairment becomes a prerequisite for conflict, thereby providing a clear criterion to distinguish conflict from non-conflict situations. In the context of common pool resource (CPR) management, impairment can be experienced, for example, in terms of restriction over access to certain forest or fish products, exclusion from resource management, pollution due to resource extraction, etc. (Ostrom 1990, Yasmi 2002, 2003, Peluso 1994, Adams *et al.* 2003).

There are a lot of factors that trigger 'impairing' behaviour such as unclear resource boundaries, scarcity, population growth and legal pluralism. For example, conflicts over access to agricultural land and other productive uses at forest frontiers are mainly attributed to the absence of clear boundaries (Hotte 2001, Dennis *et al.* 2001). If boundaries are in place they are often contested or interpreted differently. Access to resources is aggravated by scarcity and demographic pressures (Homer-Dixon 1999). In addition, CPR management is often defined by different sets of rules (formal and informal). With all these phenomena conflict is unavoidable. In Indonesia, conflicts over CPR management have been long-standing (Peluso 1990, 1992). More recently, Lynch and Harwell (2000) have provided excellent accounts of the difficult history of forest management in Indonesia from colonial times. Numerous studies of the decentralization efforts that began formally in 2001 (Resosudarmo and Dermawan 2002) have examined the impacts for people in forests, some of which have been increased in conflicts (McCarthy 2006, Moeliono and Dermawan 2006, for examples, or Barr *et al.* 2006, for a summary of the findings from a number of recent studies of decentralization in Indonesia) - some peaceful, some violent.

In many places, the costs and consequences of resource conflicts have become unacceptably high (Watch 1997, Ho 2006, de Jong *et al.* 2006, Bogale *et al.* 2006). Therefore, the call for effective conflict management has increased. Conflict management includes all activities that have the intention to reduce or solve the conflict (Deutsch 1973). Its 'ideal' goal is to attain desirable positive outcomes (i.e. win-win solutions) and reduce or eliminate escalation to destructive levels (Kriesberg 1998). Scholars argue that conflict management has to mobilize local capacity through the use of local approaches such as customary laws, local leadership, and negotiation skills (FAO 2000, Engel and Korf 2005). Local response to conflict is seen as the first and quickest available conflict management strategy. It is often argued that stakeholders at local level know 'best'

their conflict situation. External assistance (e.g. a mediator, facilitator) is necessary once local approaches can no longer function effectively.

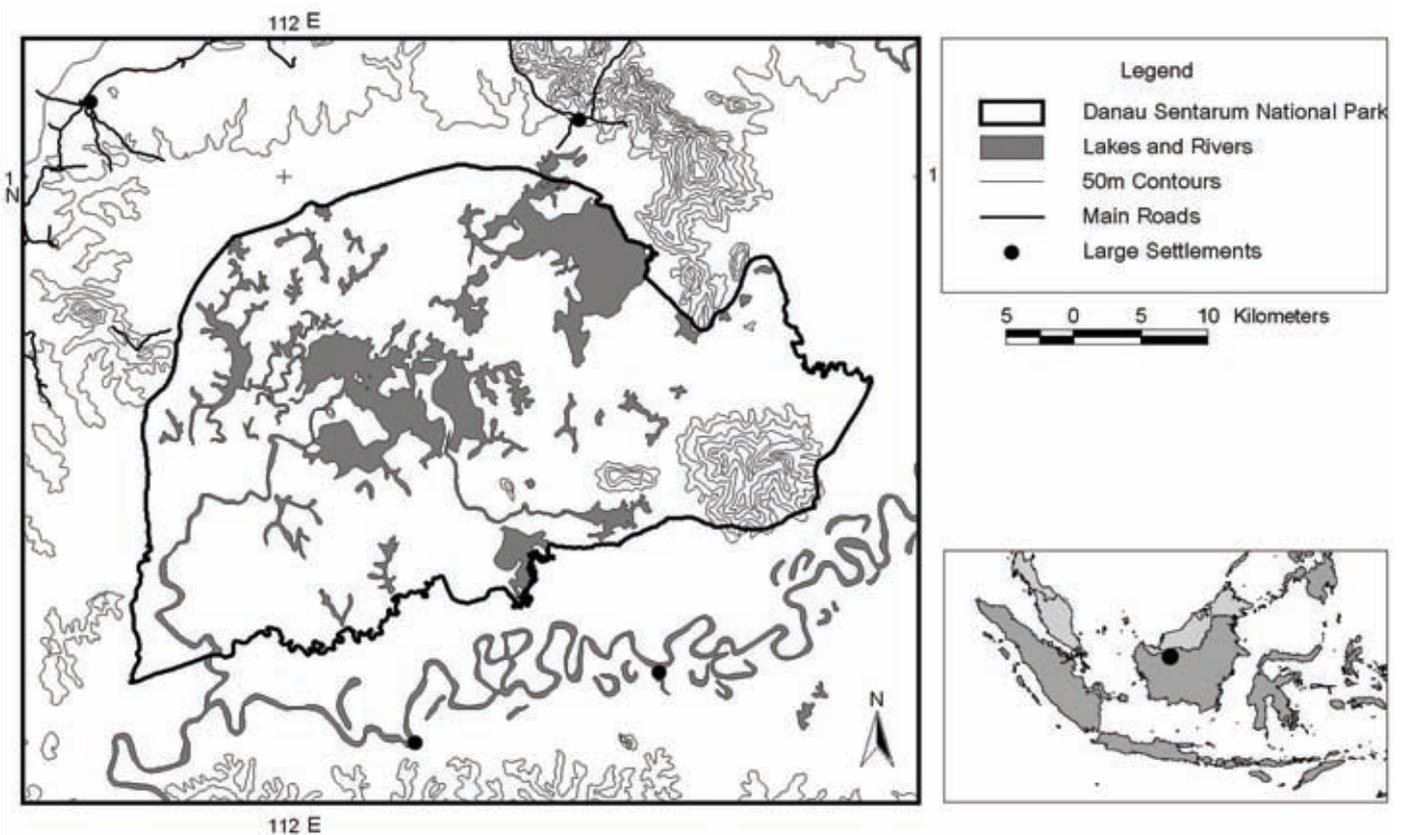
What is less known is why in some cases local institutions can respond to conflict effectively and in others not. Research on the varieties of conflict management approaches available at local level is still lacking. We need to address the gaps between the 'ideal' goal of conflict management and the reality on the ground. Against this background, this study sheds more light on how local institutions address resource conflict. This knowledge is important for strengthening these institutions so that they can manage conflict adequately. We analyze a conflict case related to unclear boundaries of the commons (i.e. forestry and fishery management). We demonstrate how stakeholders perceive impairments and explain conflict management approaches taken by them in addressing the conflict. We also evaluate to what extent these approaches have been effective and identify possible ways for their improvements. Finally, we discuss general lessons and policy implications for the management of common pool resources under an unclear boundary regime.

## RESEARCH LOCATION, STAKEHOLDERS AND RESOURCE USE

This study was carried out in Danau Sentarum National Park (DNSP), West Kalimantan, Indonesia. The park was first gazetted as a wildlife reserve in 1982, when it was 80 000 ha in size; it was expanded to 132 000 ha in 1994; it became a Ramsar Wetland of International Importance in 1994, and a National Park in 1999 (Giesen and Aglionby 2000). The park is located in the floodplain of the upper Kapuas river basin, Indonesian Borneo, near the border with Malaysia (Figure 1). It consists of a series of interconnected lakes (= *danau*), interspersed with swamp forest, peat swamp forest, and dry lowland forest on isolated hills in the northern and eastern part of the park area (Dennis *et al.* 2000, Anshari *et al.* 2001). Ninety-five percent of the area is inundated during the flood season creating a network of rivers and lakes. During the dry season (May - September) there is an average 12 m drop in water level (Adger and Luttrell 2000). The park is home to 500 tree species, 250 fish species, 250 bird species, 3 crocodile species, *orangutans*, and proboscis monkeys (Meijaard *et al.* 2000).

Technically under the management of Indonesia's Directorate General of Nature Protection and Conservation (DGNPC), for much of the time since its gazettelement, it has been under *de facto* management by local people, despite efforts by a British-Indonesian project (originally funded by ODA, now DFID) in the early 1990s, and continuing efforts ever since by the small NGO, Riak Bumi, with recent help from the Center for International Forestry Research (CIFOR), to protect the area and its people. The role of DGNPC in managing and overseeing the park has always been limited. Since its establishment, there have been no more than three rangers in the park. Due to the small number of staff on the ground and the lack of funding, the DGNPC's

TABLE 1 Location of Danau Sentarum National Park



role in resolving social conflicts has also been minor. In 2006, several efforts were made to strengthen formal management, in the face of serious threats to the ecosystem<sup>1</sup>, including the conduct of several multi-stakeholder fora, the establishment of a formal management unit by the DGNPC, and participatory action research with various stakeholders groups in the area.

Indigenous natural resource management has functioned well in the past, perhaps partly because of the isolation of the area and consequent autonomy from the formal government. Technically local management should have been subject to the same weakening processes noted by other authors elsewhere in Indonesia (McCarthy 2004, Lynch and Harwell 2000). However, isolation allowed the traditional structures to continue to function comparatively autonomously, which also meant a fair amount of autonomy from community to community. According to Harwell (1997), local communities in DSNP are very dependent on resources such as fish, timber and non timber forest products (NTFPs), including rattan, honey and medicinal plants, also documented in Colfer *et al.* (2000). Two major ethnic groups are found in DSNP (*Dayak* and *Malay*), each with distinct livelihood strategies. The

*Dayaks* in DSNP are mainly the sub-group of *Dayak Iban* and are referred to hereinafter as the *Iban*.

The *Iban* (Christian) are primarily shifting cultivators and hunters. They live in traditional longhouses<sup>2</sup> - rather like modern condominiums - and occupy the more upland, drier areas surrounding the lakes (Wadley 1997). Although they fish routinely for subsistence along the rivers and around the lakes, fishing is not their major livelihood. There is considerable variation from community to community in terms of livelihood strategies, levels of political and collective action, frequency of male circular migration, and other socio-cultural activities. Some differences include: balance between dry and swamp rice cultivation; levels of dependence on fishing vs. hunting; political and kinship alliances with other *Dayak* groups; leadership capabilities and levels of education; religious sect. Yet there remain significant commonalities in *Iban* socio-political, cultural and economic traditions (Sutlive 1978, Dove 1985, Wadley 1997, Wadley and Colfer 2004).

On the other hand, the *Malays* (Muslims) reside downstream around the lakes and along the large rivers. They depend almost exclusively on fishing for their livelihoods

<sup>1</sup> Giesen and Aglionby (2000) stated that until the 1980s, extraction of products from forests was quite sustainable. This observation was reinforced by Dennis *et al.* (1998) who used time series remote sensing data (1973, 1990 and 1994) to conclude that local forest management appeared to have minimal impact on forest cover. However, in late 1999, Wadley *et al.* (2000) found a number of signs of illegal logging activity in the area. This finding was further confirmed by Anshari *et al.* (2005) suggesting unsustainable logging practice in the park.

<sup>2</sup> The size of longhouses differs from one settlement to another. A small longhouse might consist of nine to fifteen households, while a big one can accommodate up to seventy households.

(Dudley 2000). The *Malay* movement into the lakes areas began in earnest in the mid-1960s, with many coming from the larger towns along the Kapuas River south of the park, and maintaining close ties with those communities. Many people from these large towns enter the park during the dry season when fishing is much more efficient. Some differences among communities include: links with particular towns on the Kapuas; accessibility during the dry season; residence on particular micro-watersheds or lakes, some of which developed shared natural resource management regulations; and involvement in agriculture. There is very little in the way of formal ethnography about the DSNP *Malays* prior to the conservation project of the early 1990s. Writings from this era include Wadley and Colfer (2004), Colfer *et al.* (1996, 1997, 2000) - most of which compare the two ethnic groups.

These two ethnic groups have a long tradition of antagonistic relationships, though there has not been violence in recent decades. In the early and mid-1900s, however, there were headhunting raids by *Iban* against *Malays*. The Dutch geographically divided the respective habitats, according to specific tree species that grew in flooded vs. dryland areas, and assigned each ethnic group its own area. In the early 1990s, the *Malays* remained quite fearful of the *Iban*, and the *Iban* were also wary of newcomers, despite the peaceful co-existence of that and the subsequent decade. In total, there are 39 permanent and 10 seasonal settlements within the park area recorded in the late 1990s (Giesen and Aglionby 2000). Out of these, there were only 12 *Iban* settlements. Erman and Heri (2005) reported that the population of DSNP was about 8 000 and 80% were *Malay* fisherfolk. With the growing population and increased pressure on aquatic and forest resources, conflict among community groups has become more frequent.

## METHODS

We collected data about stakeholders' perceptions on the following three broad themes: the major impairments involved in each conflict, approaches used to address the various inter-settlement conflicts, and the effectiveness of conflict management approaches. Fieldwork and secondary data collection took place between August and December 2005. Our primary method for obtaining stakeholders' perspectives was through interviews (Bernard, 2002, Holstein and Gubrium 2003). We conducted in depth face-to-face interviews with 31 key informants that lasted between 45 minutes and two hours. The informants were selected through stratified random sampling, of key stakeholder groups in the park. The key informants consisted of *Iban*,

*Malays*, researchers, park rangers, NGOs, and district forest service personnel. The total number of informants represents the saturation point of the data; the point where interviewing more informants was not giving additional substantive information (Guest *et al.* 2004).

One important shortcoming of our method was that the field team was composed of male researchers. They had difficulty establishing sufficient rapport with local women, who consistently referred the team's queries to local men - not an uncommon reaction when Indonesian women are asked to deal with comparative strangers. Future efforts to obtain women's views will require either the incorporation of female team members or longer periods of fieldwork in order to establish such rapport. Unfortunately therefore, our results do not adequately address women's perspectives<sup>3</sup>. Besides interviews, we carried out two focus group discussions (FGD), one with *Iban* and another with *Malays*. During these FGD sessions, the three main themes mentioned earlier were discussed. We also convened a multi-stakeholder workshop attended by representatives of all stakeholder groups. We double-checked our findings with experts with long experience of working in the area. With the triangulation of methods, the rigor (objectivity, reliability and validity) of the case study can be enhanced (Kyburz-Graber 2004). Data were analyzed qualitatively.

## RESULTS

### Forestry conflicts

Forestry conflicts can be best understood by looking at the historical division and use of forest resources in DSNP. The division is primarily based on the location of the settlement. Every settlement has its own utilization zone, locally known as *wilayah kerja*. The zone of a particular settlement is distinguished from its neighbour usually by natural features, such as rivers or hills.<sup>4</sup> The use of resources such as timber and NTFPs is regulated by customary law (*hukum adat*), which stipulates, for instance, which trees can be harvested, which locations are prohibited for harvesting, how much can be harvested, and for what purposes the trees can be used. In *Malay* settlements timber is used for house and canoe construction, walkways, simple furniture, and floating fish cages. In *Iban* settlements, timber tends to be used somewhat less for fish cages and walkways; other uses are similar.

Until the 1980s, extraction of products from forests was quite sustainable. However, in late 1999, a number of signs were found suggesting seriously unsustainable timber extraction. After the demise of the Soeharto regime in 1998, uncontrolled logging increased. This logging is often referred

<sup>3</sup> From other research in the area, we do know that women have opinions on conflicts, and indeed, have conflicts of their own (Seselia Ernawati, pers. comm.). However, the topics discussed in this paper, especially those involving inter-community disputes are more likely to be dealt with by men, in the public sphere.

<sup>4</sup> Although each settlement has a utilization zone, people from other settlements are normally permitted to collect timber and NTFPs provided that they ask permission to the customary leader.

to as ‘illegal logging’, but in fact, the scale of extraction was such that all logging contributed to the unsustainability of the practices. A common explanation for this phenomenon has been the political instability in the country following the end of Soeharto’s authoritarian regime. During the period of weak state control, the so called ‘transition period’ (1998-2004), many communities, stimulated by wealthy entrepreneurs, took advantage of the situation to make some quick cash, often from cross-border sales. The period was the peak of unsustainable logging and preliminary analysis of time-series satellite imagery corroborates these findings (Dennis pers. com.).

Illegal logging in DSNP seemed to follow a common pattern. Normally, a settlement made an agreement with a timber company to log within its use zone. In almost all cases Malaysian timber companies were the major player in the activities. Those companies used local entrepreneurs as ‘brokers’ to persuade communities to enter into logging deals. Once agreement was reached, the company mobilized all the necessary equipment and personnel to conduct logging. In return, local communities received fees from those companies (amounts varying from \$2 to \$5 per cubic meter) and local infrastructure development assistance (e.g. renovation of long houses in Iban’s settlements or mosques in the Malays’). During the expansion of illegal logging, conflicts increased. Most of the conflicts revolve around unclear boundaries of utilization zones between settlements. Many settlements felt impaired by logging activity done by neighbouring settlements within their use zone.

The main reason why they felt the impairment was because boundaries between settlements were never clearly demarcated. As said earlier, boundaries for the most part were defined by natural signs such as a hill, river, big trees, etc. Very often the same hill was claimed by two or more settlements resulting in heated disputes over the exact division of forest area. The problem became even more complicated because

sometimes two neighbouring settlements had not identified their boundaries at all. For instance, in some circumstances two neighbouring settlements originated from a single family root but due to the increasing number of households and demand for more working area some of them moved to form a new settlement next to the original. In this case boundaries between the two were not very obvious. Not to mention that logging activities were done without previously mapping the area. As a result, it was often the case where one settlement felt impaired by logging and blamed its neighbour for cutting trees inside its territory and vice versa. This kind of conflict occurred frequently involving various *Malays* and *Iban’s* settlements. One of the respondents explained:

*“In the past these two settlements never fought each other. We actually originated from one family. Now, because the possibility to cut trees from the forests is open, they started to talk about boundaries. One settlement wants to claim a bigger forest area than the other because they want to get more money from selling these trees. In the past they never thought seriously about the boundaries because it was difficult to cut the forests given the fact that people were afraid for being caught by the military. Now every settlement can sell their trees to Malaysia. Jealousy from our neighbours develops as we get more fees compared to them and our mosque is being renovated by the timber investor from Malaysia.”*

Table 1 illustrates examples of inter-settlements conflict in DSNP. In fact, there were many other similar types of conflict that occurred in DSNP with the same *modus operandi*.

**Fishery conflicts**

As with forests, a fishing zone is divided according to different river and lake systems. The divisions between the

TABLE 1 *Examples of inter-settlement forestry conflicts in DSNP*

Conflicting settlement	Ethnic group	Main issue and impairment
Tempurau vs. Semalah	Both are <i>Malay</i> settlements	According to history, Tempurau and Semalah used to be one settlement. Later on, Tempurau was founded as a new settlement next to Semalah. Because Tempurau had little/no working area, Semalah people generously awarded them some of their area. In this conflict, people from Tempurau cut trees from the forest of Semalah, beyond their own working area. As a result people of Semalah felt impaired. They worried that the logging could make their forest entirely gone.
Sungai Pelaik vs. Meliau	Both are <i>Dayak Iban</i> settlements	People of Sungai Pelaik agreed with an investor from Malaysia to cut trees within their forest. In return, the investor paid certain fees and helped renovate their longhouse. In the operation the investor hired people from Sambas (another district in West Kalimantan whose people are well known as the best loggers in the area) to fell trees within Sungai Pelaik’s forest. A conflict started when Meliau felt impaired by logging activity that it considered to take place in its forest. The people of Meliau confiscated several chainsaws from those loggers accusing them to have entered Meliau’s forest. For that incident, people of Meliau asked Sungai Pelaik to pay for all the trees felled in their area and also reimbursement for the chainsaws. However, Sungai Pelaik refused and conflict escalated.

*Malay* and *Iban* zones are perhaps more obvious than the divisions among the *Malay* settlements. The *Iban* fishing zones normally exist in the upper part of the area (upstream), which includes rivers and some lakes. The *Malays*, who live mostly downstream along major rivers and lakes, divide fishing zones among themselves. Sometimes two settlements

*regulations in one settlement very often contradict those in other settlements. For instance, settlement A allows pukat (gillnet) while its neighbours forbid it. Due to differences in their fishing regulations conflict often occur”*.

TABLE 2 Examples of inter-settlement fishery conflicts in DSNP

Conflicting settlements	Ethnic group	Main issue and impairment
Meliau vs. Semalah/Tempurau	Meliau is a <i>Dayak Iban</i> settlement and Semalah/Tempurau are <i>Malays</i>	People from Semalah/Tempurau very often go fishing in the river that belongs to Meliau. Most of those people use <i>jermal</i> (small mesh funnel net) and <i>pukat</i> (gillnet) which are forbidden according to Meliau's customary law. In many occasions Meliau confiscated their fishing gear, their boats and also applied sanctions.
Sekulat vs. Pega	Both are <i>Malay</i> settlements	People from Sekulat entered the fishing area of Pega without permission and used a certain size of <i>jermal</i> (small mesh funnel net) that is forbidden in the area of Pega. The conflict heated up because Sekulat argued that the area where they used <i>jermal</i> was their area not Pega's.

share the same river or lake, in which case the boundaries may be rather vague. Fishing practices in DSNP include the use of a variety of lift nets, funnel nets, cast nets, gill nets, traps, hooks-and-lines, etc. The intensity of fishing activities is highly influenced by the water level. It reaches its peak during the dry season. Each settlement has its own customary regulation (*adat*) that controls fishing activities, such as regulation on gears (allowed and prohibited ones), locations for fishing, and sanctions and fines. The head of the fishers (*ketua nelayan*) in each settlement ensures that proper practices are adhered to in the fishing area. Conflict often emerges when someone breaches the *adat*, for instance, by using prohibited gear or by entering another's fishing zone without prior permission.

As a result of the vagueness of the boundaries conflicts between settlements have been widely reported (see Table 2). A particular settlement worried about the fish stock because the neighbouring settlements went fishing in its fishing zone. The worry was also very reasonable because these days yields are declining. People often complained about the small amount of fish they could catch these days. They said, in the past they only needed to go fishing for two or three hours and they could go home with a canoe full of fish. During the past few years they have been fishing for the whole day but still they do not get much. Perhaps due to the decreasing fish stock as claimed by many fishers and the increasing number of households in the area the issue of boundaries of fishing areas has become more and more relevant. Thus when people from other settlements entered into their fishing zone, they felt impaired. A conflict became more serious if those who violated the boundaries used fishing gears forbidden by a particular settlement. For instance, a respondent said:

*“In Danau Sentarum National Park there are a lot of fishing settlements. A major issue is that adat (customary)*

Conflict over fishing areas and the use of different fishing gear were very common in DSNP and up until now continue to be a 'hot' issue. Another type of fishery conflict often heard in the area was conflict between the *Iban* and the *Malays*. For the *Iban*, although they seldom fish commercially, some of them use poison for catching fish and fresh water turtles. Poison used upstream can kill fish downstream and in particular the *Malays* complain that it also kills their caged fish. Although the *Malays* have complained a lot about the poison, the *Iban* still use it on occasion. In recent years, the conflict between the *Iban* and the *Malays* was not so often reported as during the 1970s. Perhaps, because the *Iban* only use fish for subsistence and in many cases they could get it from the nearby lakes and rivers, conflict with the *Malays* was not so intense. It would have been different if the *Iban* also fished for commercial purposes. On the other hand, fishery conflict among the *Sayak* was rare.

## LOCAL CONFLICT MANAGEMENT APPROACHES

### Conflict management approach in forestry

#### *The Malay's conflict management approach*

Most of the forestry conflicts in the park were resolved based on customary laws (*adat*), with *adat* leaders playing a dominant role. These leaders are highly respected and have special social status. People often refer to *adat* leaders as their 'parents'. Showing overt respect to these leaders is a generally accepted norm and a must. *Adat* leaders also function as representatives of the community when dealing with outsiders, such as government and timber investors. Due to the high status of *adat* leaders conflict management approaches and processes are significantly influenced by them. Both the *Malays* and *Iban* resolve forestry

conflicts through customary laws relying on these leaders. Nevertheless, the approaches and processes between the two differ substantially.

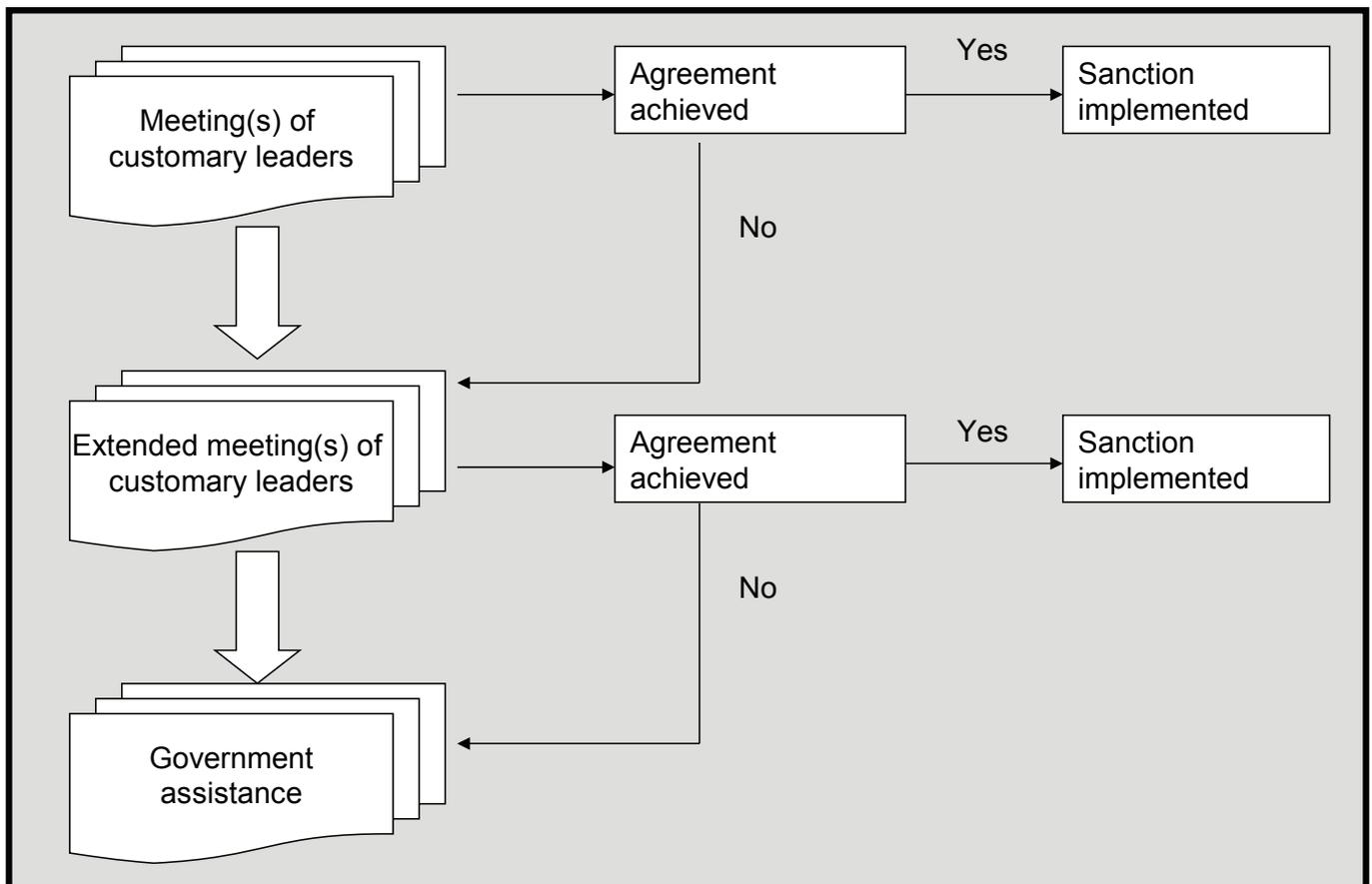
In the *Malay* context, *adat* leaders are normally the head fishers; each settlement has one *adat* leader. Those head fishers are elected for a particular term, normally for five years. The term is quite flexible and delays in the election often occur. A person can be re-elected several times as long he is willing to serve as the *adat* leader. Generally when two *Malay* settlements engage in forestry conflict, leaders from these two settlements will convene a meeting to discuss and find the best solution. The discussion between these leaders is normally based on ‘good’ intentions and on the assumption that all the *Malays* are one big family. The repercussions of this are that when they engage in a conflict, leaders will seek a way to solve the problem in a ‘nice’ way. In this way, as far as possible confrontation and escalation of the conflict will be avoided. However, in some cases forestry conflicts did escalate. Figure 2 illustrates a generalized model of how forestry conflicts are addressed by the *Malays* based on our observation and interviews in the following *Malay* settlements: Pengembung, Pega, Tekenang, Genting, Sekulat, Leboyan, Semangit, Semalah, and Tempurau.

One respondent said,

*“The conflict here is all about boundaries. But you should know that the hidden motive behind boundary disputes is the race for timber”. If the first meeting does not succeed the leaders will convene more meetings where customary leaders contest the exact boundaries between the two settlements. If compromise cannot be accomplished they will go to the next step of negotiation (“extended meeting(s) of customary leaders”).*

In the second stage, customary leaders from both settlements are accompanied by other prominent people, such as previous customary leaders, religious leaders and elders. During this meeting elders will be asked to tell the history of the boundaries. Sometimes elders will be required to do this under the oath. This meeting(s) sometimes can last for weeks and months until they can agree on the exact boundaries. If they can reach agreement over the boundaries, they will then come into a session where sanctions are applied. For instance, Pengembung acknowledged that they had cut trees in the forest of Genting (another *Malay* settlement). The consequence was that Pengembung had to accept the fine as

FIGURE 2 Forestry conflict management approaches among the Malays



First, customary leaders from the two conflicting settlements held a meeting to clarify ‘impairment’ involved in the conflict. In this case it was about forest boundaries.

determined by the customary laws of Genting. In this case the fine was 1 million Rupiah per tree cut (approximately \$ 120/tree). The total amount of the fine Pengembung had to

pay was 20 million Rupiah (\$ 2 400).

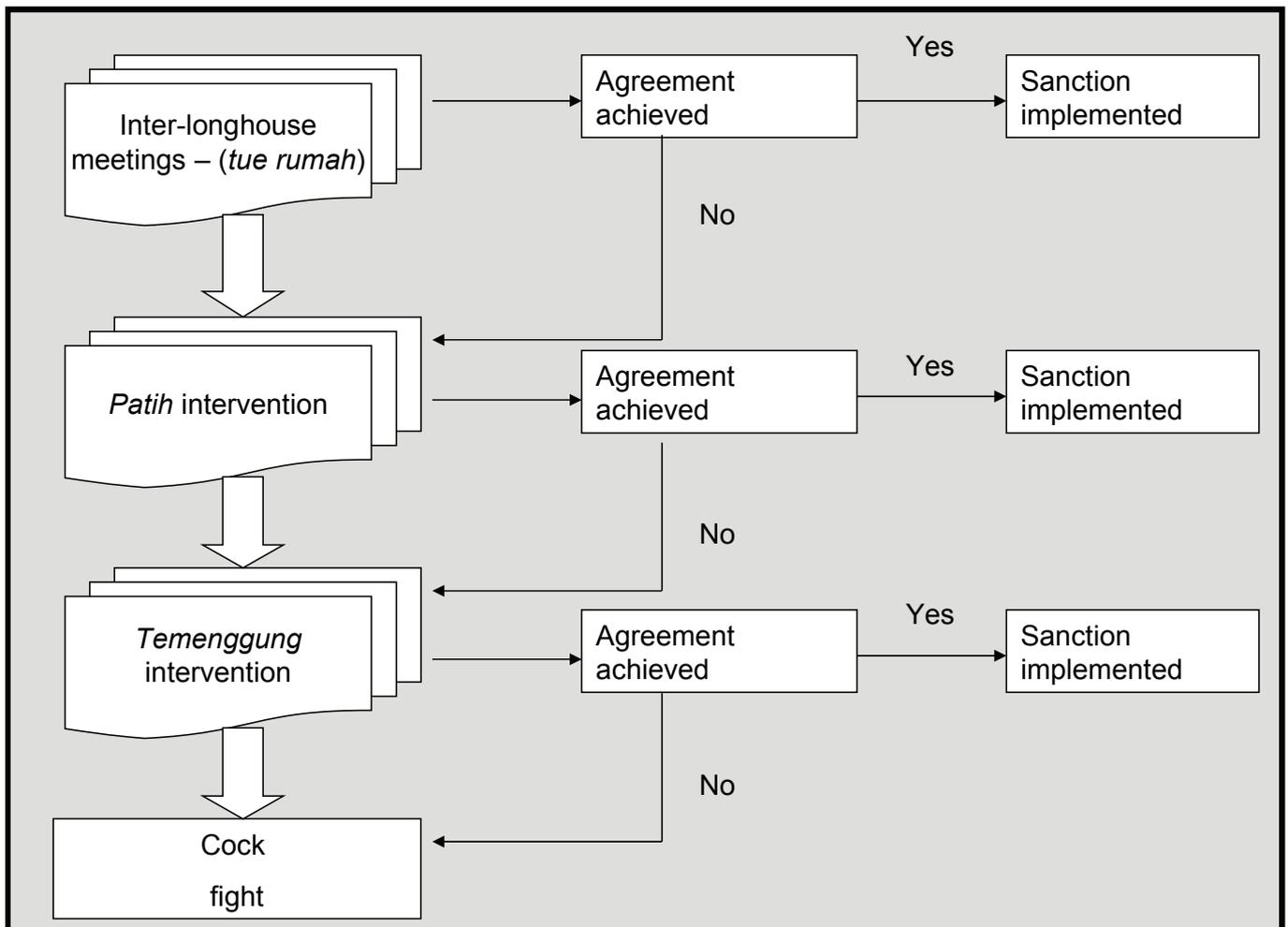
Nevertheless, if the second stage of conflict management ends in a deadlock, local governments (sub-district and district governments) will be required to help find a solution. Normally, the sub-district government will convene a meeting involving leaders from both settlements engaged in conflict and try to find a solution. For instance, in the case of conflict between Pega and Sekulat, after a meeting sub-district government sent a team to help the two settlements establish their boundaries. The team together with both settlements defined coordinates of the boundaries using GPS. However, during the survey, Sekulat could not agree with the boundaries as they argued that the boundaries should be located closer to Pega. This case was then extended and reported to the district government because Sekulat could not accept the solution provided by the sub-district government. At this point, Sekulat proved the boundaries by presenting an old document that explained the borders of its territory with other settlements, including Pega. Based on this the government imposed the boundaries explained in the document. The consequence was that Pega had to pay a fine to Sekulat for all the trees they had cut from Sekulat’s forest.

*The Dayak Iban’s conflict management approach*

Iban conflict management approaches follow different procedures. The Iban have at least four steps of conflict management (Figure 3). These steps are based on the Iban’s conflict management tradition. The Iban have a hierarchical leadership system which highly influences conflict management approaches. A settlement is typically composed of a single longhouse. Each longhouse has one customary leader called *tue rumah*. A higher customary leader is called *patih* and he heads several adjacent longhouses. There is no exact rule on how many longhouses are under the leadership of a *patih*. In some circumstances the *patih* might only rule two longhouses but in others a *patih* might rule four to six longhouses or more. Above the *patih* there is another leader called *temenggung*. He is the leader of several *patih*s. Again, there is no clear guideline of how many *patih*s are under the rule of a *temenggung*.

In forestry conflict management, this hierarchical structure is used as a basis for channelling conflict management procedures. Thus, if two settlements come into conflict the first step is for the *tue rumah* from the two settlements to hold a meeting. For instance, in the conflict between Sungai

FIGURE 3 Forestry conflict management approaches among the Dayak Iban



Pelaik and Meliau, the *tue rumah* from both settlements played a major role in solving the problem. Several meetings between them were held. These meetings failed to reach a solution to the conflict because each side continued to dispute the boundaries, wanting a bigger forest area. At that time, Sungai Pelaik had already given permission to a timber company from Malaysia to log its forest. Meliau posed a strong protest because the company was said to also cut in Meliau's customary forest. Sungai Pelaik, on the other hand, contended that the part of the forest claimed by Meliau belonged to Sungai Pelaik. As the dispute developed, people from Meliau confiscated several chainsaws from loggers who operated in the forest and asked for a halt in the logging operation. Up to this point, *tue rumah* from both sides came into a prolonged discussion and negotiation. Unfortunately, the problem was not solved.

Both settlements agreed to bring the case to the higher level, i.e., the *patih*. The *patih* held several meetings and ended up with no solution as both parties stuck to their original stands; the boundaries remained in dispute. The *patih* then called in the help of the *temenggung*, the higher customary leader. With his wisdom, the *temenggung* offered a solution to divide the disputed forest equally into two parts. However, Meliau refused because according to Meliau's perspective it was not fair to divide the disputed area equally. They claimed that they were the founders of the area and that Sungai Pelaik came in long after they had settled there. They said that the forest area of Sungai Pelaik was originally part of Meliau's customary forest. With generosity their ancestors gave part of the forest to Sungai Pelaik. Meliau people were very disappointed as they saw Sungai Pelaik permitted a logging company to log beyond the original area given to them. Up to this point both parties could not reach any agreement as offered by the *temenggung*. According to their tradition (*adat*) if the *temenggung* cannot settle a dispute then they have to decide it through a cockfight, the ultimate conflict management procedure.

In the *Iban* tradition the cockfight is the last resort for conflict management. Cock fights also symbolize the inability to resolve a conflict using more 'acceptable' ways such as dialogue and negotiation. Although they believe in the cock fight, the majority of *Iban* consider a cock fight to be an unfortunate venue for conflict resolution. Most of them would prefer negotiation through their leaders. Because in the case of Meliau and Sungai Pelaik, their leaders failed to find a solution a cock fight was inevitable. They believe that truth cannot be denied. And through a cockfight the truth will be revealed and the 'liar' will be uncovered. The agreement between Meliau and Sungai Pelaik to solve the problem through a cockfight became a hot issue as it spread quickly to other *Iban* settlements. An *Iban* belief is that no matter how strong and big the cock is, if the people have lied the cock will be beaten during the fight. Nevertheless, preparation for the cockfight made the two settlements very busy. Both of them struggled to find the 'best fighting cock'. Once they found their best cocks, they kept the cocks for a few days and fed them with the best food. Rituals and offerings were conducted to ask for the blessing of their

ancestors' spirits. The cocks were presented to the spirits and blessings were asked. Prayers were said day and night until the day of the cockfight. When the day came, all people from both settlements plus people from other settlements came to witness the fight. A particular area approximately 3 x 4 meters was prepared and fenced for the fight. People gathered around this area.

The cockfight was then executed and won by Sungai Pelaik. Some of the respondents told us that the fight did not last more than ten minutes and Meliau's cock was quickly covered in blood and then died. With this fight, it was clear that Meliau had to accept the boundaries claimed by Sungai Pelaik. It was a final decision and no one could ever refuse. As a consequence, the previously confiscated chainsaws were returned to Sungai Pelaik and Sungai Pelaik did not have to pay the fine as previously requested by Meliau. The Meliau people were unhappy with the result but had no choice but to accept their defeat. We were told that after the cock fight, the people of Meliau did not want to shake hands with the people of Sungai Pelaik anymore. Their leaders did not talk to each other. The feeling of being defeated was so dreadful.

#### Conflict management approach in fishery

We indicated earlier that fishery management is dominated by the *Malays* who live downstream along the major rivers and lakes. For the *Malay* fishing is their major livelihood. With this in mind, fishery conflict in DSNP reflects primarily conflict between different *Malay* settlements. However, to a limited extent conflict between the *Iban* and the *Malay* also occurs as discussed earlier, for instance between Meliau and its *Malay* neighbours on boundaries and also between the *Iban* and the *Malay* on using poison to catch fish and fresh water turtles. In addressing these conflicts, the role of the head fishers was very prominent. Fishery conflict between the *Iban* and the *Malay* was normally resolved through discussion between the head fishermen. In many cases the discussion between these leaders resulted in a settlement although some of these conflicts did re-occur. During our observation and interviews, the *Iban* and the *Malay* fishery conflicts did not escalate to a high level of intensity as most of them could be resolved through direct negotiation. It was also explained that using poison has not been so frequent in recent years, reducing the likelihood of conflict escalation.

In the case of *Malay* inter-settlement conflict, the procedure for conflict resolution exhibits more or less similar processes as those in forestry conflict management (Figure 2). The difference lies only in sanctions. For instance, in the forestry conflict normally the sanctions are in the form of money but in fishery conflict, while the sanction can also be in terms of money, some settlements like Leboyan and Semangit also sanction by destroying fishing gear. Leboyan, for instance, had confiscated the *pukat* of Lanjak's fishers several times and then burnt them. According to Leboyan's customary law, burning fishing gear is allowed and intended to make those violating its territory and customary laws afraid to repeat such actions in the future.

## EFFECTIVENESS OF LOCAL CONFLICT MANAGEMENT APPROACHES

The perception of stakeholders of the effectiveness of conflict management through *adat* is quite mixed. Although in some conflict cases agreements could be reached and sanctions were imposed, stakeholders perceived that the outcomes of conflict management through *adat* were not optimal. For example, in forestry conflict between Sungai Pelaik and Meliau, respondents from both settlements acknowledged that a cockfight was able to bring settlement to the conflict. In that sense, it was very effective. The people did not argue anymore about the forest boundary. On the other hand, as mentioned earlier the *Iban* saw cock fights as a last resort, as far as possible to be avoided. They would have liked to see the conflict solved through discussion and negotiation in a more harmonious way. They considered the cock fight as rather the least acceptable procedure as explained by one respondent:

*“Although we won the cockfight we felt very uneasy and sorry. For us a cockfight was not the best way to resolve our conflict. After the cockfight our relationships with Meliau got worse. We don’t visit so often anymore. Our leaders do not shake hands when they meet. We are very sad to see this happening, it is not easy though”.*

The same expression was also revealed by all respondents from Meliau that they did not appreciate a solution through cockfighting. For them too as far as possible it should be avoided.

In the case of fishery conflict, some stakeholders believed that the resolution of the many inter-settlement conflicts could still be improved. They argued that the current procedures, although sometimes successful, in many other cases were not. Some thought that the sanctions and fines were not sufficiently effective in preventing the same conflict from re-emerging. In the case of fishery conflict between Leboyan and Lanjak, the incidents of breaching areas and using forbidden fishing gears recurred regularly. Thus, many felt that sanctions did not work well as the same incidents tended to be repeated. In many other fishery conflicts, similar sentiments were also expressed by respondents.

The effectiveness of conflict management approaches was attributed to the following four aspects: agreement was achieved and upheld, effective sanctions, no violence, and an increased understanding among settlements on the need for unambiguous boundaries. For instance, in the forestry conflict between Pengembung and Genting, the high sanction (i.e., 1 million Rupiah per tree) seemed to be effective as no similar incident took place after the conflict. In other words, the agreement was respected by both parties. In many conflict management approaches and processes using *adat*, stakeholders appreciated the non-violent nature of such procedures. They said that *adat* brings to the forefront the notion of a peaceful conflict management approach. Most importantly, many stakeholders said that they had learned a lot from the many conflicts that they had gone through.

## LESSONS LEARNED AND CONCLUSIONS

Throughout this paper we have tried to establish a picture of how unclear resource boundaries and the presence of contradicting customary laws can lead to inter-settlement conflict. Unclear boundaries of the forestry and fishing areas have led many settlements to challenge and contest these boundaries particularly in light of economic competition among these settlements and growing, general confusion about Indonesia’s legal and institutional framework. It has also been shown that the issue of boundaries became more important as competition for the resources such as forests and fish heightened. Unclear resource boundaries as in DSNP pose several important lessons and points to ponder, particularly for those dealing with common pool resource management. Some indications are already clear with regard to why these conflicts emerged and how the local institutions (*adat*) responded. Therefore the following lessons might be reflected upon.

The need to have unambiguous boundaries in CPR management cannot be denied (Ostrom 1999). Access to natural resources has become more concentrated and some groups experienced both social and spatial marginalization, which tends to encourage conflict particularly if rules and regulations with regard to resource use and access are not clearly defined (FAO 2000, Wollenberg *et al.* 2002, Engel and Korf 2005). Claims over the same area often overlap. Furthermore, CPR management is often defined by different sets of rules and regulations. There are a set of formal rules defined largely by the government on park management that cover issues such as resource use in the park, restriction over resource extraction, participation of local communities in park management, etc. On the other hand, there are also informal rules and regulations embedded within local communities, in Indonesia often called *adat*. For instance, in the conflict between settlements described above, each settlement has its own *adat* regulations that often contradict each other (e.g. the case of fishing gear). Furthermore, the contradictions can also be with and within government itself. In one earlier case the fisheries department gave out fishing licenses allowing local fishers to use a gear type that had been prohibited by the regional government and the communities themselves. If these contradictions make certain groups feel their access to a particular resource such as a fishing area is being contested, conflict will follow.

This case has shown clearly that conflict among settlements in the park have been largely addressed through the use of *adat*. The role of the park management unit was minimal, if not totally absent. As we have seen throughout this paper, the effectiveness of *adat* in solving various conflicts has been rather mixed. Looking at the cock fight procedure applied in the *Iban* tradition, for example, it can be said that from the ‘mechanical’ point of view it was very effective because the conflict was stopped through the cock fight. In short, no more contestation was allowed after such a procedure. Nevertheless, if we consider the fundamental spirit of conflict management to bring a compromise and win-win solution, such a procedure has problems. The case

clearly indicates that hatred and hard feeling remained after the cock fight. Therefore, a critical implication is perhaps to stimulate the effective use of negotiation or mediation (Engel and Korf 2005). A daunting challenge is how to strengthen the negotiation skills of the *Iban* and *Malays* to complement *adat* in settling conflicts.

In our view, for all those conflicts negotiation capacities need to be strengthened. The role of local NGOs may be central and increased, for example, through capacity building. Another option would be to re-invent the community mapping initiatives previously done by ODA/DfID and Wetlands International. The initial community mapping has not yet been fully shared with all the settlements. In our view, there is a need to continue the community mapping initiative by making use of what was initiated earlier during the conservation project. This initiative will require a lot of financial resources as well as expertise. Financial support from donor agencies and the Indonesian government are required. Another important step to be taken is to maximize the role of the park management unit. The unit ideally should be able to manage and take control of the whole park area and at the same time facilitate stakeholders' interaction. When conflict emerges the park management unit should be able to intervene adequately too. Thus, the issue of under staffing and insufficient budget should be resolved. The park management unit needs to have the ability to communicate well with all stakeholders in DSNP. It should have the capacity to recognize conflict issues before the conflict escalates. Here again, the role of donors and research institutions may be essential to support capacity building of the park management unit in DSNP.

In general, for the effectiveness of CPR management, it is assumed that communication among stakeholders is necessary. Our observation during the fieldwork indicates that communication among stakeholders regarding rules and regulations did not take place regularly. The lack of communication can, in this context, be exacerbated by ethnic, linguistic, gender, geographic or wealth differences. Confusion of fishing rules resulted in prolonged inter-settlement conflict. We also learned from this case that communication amongst settlements with regard to different boundary conceptions and claims did not take place very often in the past. They only started to contest the conceptions and claims once they had an economic incentive (i.e. selling their timber to outsider). Only when they have come in conflict did they realize the importance of boundaries. In short, we have learned that managing CPRs becomes more complex as use moves from subsistence to commercial. The social dimensions of CPRs will have to have a particular focus on ensuring the constructive relationships among stakeholders involved in their management. Perhaps in the future the managers of CPRs might consider a kind of co-management arrangement where stakeholders plan and decide upon collective actions with regard to how CPRs are to be managed. The roles and responsibilities of each stakeholder are jointly identified and agreed upon based on continued negotiation and consultation processes. Adaptation to a changing environment is central in co-management.

Because co-management provides opportunities for broader stakeholder participation, the concept gains more prominence especially in relation to achieving 'good forest governance' objectives. Co-management potentially can also provide a platform for striving towards more sustainable resource use in the park, perhaps reducing illegal logging and over fishing. Nevertheless, co-management should be pursued with care because it also carries challenges and risks (e.g. increased complexity, low participation, high transaction costs, and conflict).

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