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Against ‘Green Development Fantasies’: Resource Degradation and the Lack of Community Resistance in the Middle Mahakam Wetlands, East Kalimantan, Indonesia

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Abstract

In the middle Mahakam wetlands, East Kalimantan, local populations are hit hard by ecological deterioration in the form of degraded water quality, floods, depletion of fish stocks, and increasing sedimentation and aquatic weeds. In the short term, resources such as fish and wood are being depleted, while unpredictable floods and droughts cause insecurities and lengthy periods without earnings. In the longer term, resource depletion and water pollution threaten villagers’ health. Some of these environmental problems are produced by the fishing communities themselves but most are caused by outside actors, such as logging and mining companies and oil palm plantations. This article raises the question of why local fishing communities do not resist against outside actors and seeks to explain why they are unable to protect and manage their environment in a sustainable way. It challenges ‘green development fantasies’ and optimistic approaches which put primary faith in the capacity of local communities to manage their resources. We show instead that local communities are often unable to challenge and resist environmental changes. We explain this out of a lack of: (1) a clear enemy or a clear focus of opposition; (2) a single and relatively homogeneous community or shared ethnic identity; (3) strong leadership; and (4) the involvement of brokers with the outside world. In this article, optimistic ideas about the ability of local communities to benefit from, or protect, their ‘locality of value’ are seriously challenged.

Keywords

resource degradation, conservation, fishing communities, resistance (lack of), indigenous knowledge, natural resource management, East Kalimantan, Indonesia

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The middle Mahakam lake area constitutes East Kalimantan's largest freshwater system and is one of Borneo's major wetland areas.² Over recent decades, vast ecological, social and demographic changes have taken place in this region. Surrounding forests have been felled, lakes are silting up, roads have been built, new migrants have settled, population figures have tripled and, in the last decade, open coal pits and oil palm plantations have been established on a large scale.

These changes have placed intense pressures on the environment, and they threaten aquatic-dependent livelihoods and the lifestyles of people who have been living in the area for generations. Many of the lake and fishing people are, or perceive themselves to be, negatively affected by the changes taking place. They fear for their future, their health and their livelihoods. Although fear, resentment and dissatisfaction are widespread among fishing communities, their voices are not heard in the conservationist debates and largely ignored in governance plans for the area. In contrast to more land-based Dayak villages, the fishing populations neither protest loudly, nor actively cooperate in the protection, co-management and sustainable development of the area. Why is this so? Why do fishing communities not resist, not try to influence resource management, nor protest against environmental depletion and degradation when compared to other groups in East Kalimantan?

This article explores some of the paradoxes and ambiguities of ecological degradation and sustainable resource management from the perspective of local fishing communities in the middle Mahakam lake area of East Kalimantan. The interests and stakes of the actors involved are ambiguous as economic gains and conservation concerns oscillate. It is one of the many areas in the world where environmental and economic agendas clash. Battles over economic development and environmental protection are fought out in an arena of multiple actors and institutions.

The locality is of great economic value to national and international mining and palm oil companies who are exploiting the region's natural resources with government support. According to nature conservationists and biodiversity specialists, the area is of prime ecological value due to its unique features, such as shallow lakes, freshwater swamps and mangrove forests, and the existence of rare and endangered species, including monkeys, reptiles and the endangered freshwater Irrawaddy dolphin (Tas'an et al., 1980; Global Nature Fund, 2007).

² The area comprises almost 40 large and smaller lakes. The major lakes are Lake Jempang (about 15,000 ha), Lake Melintang (11,000 ha) and Lake Semayang (13,000 ha). The lake area is crossed by the Mahakam river, one of the largest rivers of Indonesia, and forms an important water catchment and control system for the natural regulation of this river (Suryadiputra, 2001).

Various local and international environmental protection groups, such as World Wildlife Fund for Nature (WWF), Living Lakes, and Wetlands International, are attempting to conserve nature in various ways. Not surprisingly, public debates in the area centre around questions of economic development, nature conservation and livelihood-protection of the poor. These debates are highly politicised and result in differential images of the area that primarily reflect the interests of the organisations involved: fisheries, forestry, development, environmental protection and cultural diversity.³

Among all these voices, tens of thousands of families, their voices largely unheard, are dependent on the lakes' aquatic resources for their livelihoods and for maintaining their unique social-cultural way of life. From an economic point of view, "These lakes and swamps are very important fish-spawning grounds and replenish the main river seasonally. Therefore, the middle Mahakam lake area is an area of intensive fishing activity with an annual catch of 25,000 to 35,000 metric tons since 1970" (Global Nature Fund, 2007). Fishing villages, with their floating houses and houses raised on stilts, are marked out by their specific wetland and freshwater fishing culture. However, because protection schemes and conservation programmes remain limited, the ecological system and the related way of life of the fishing communities, are severely threatened.⁴

To understand the lack of cooperation, resistance and environmental protection from the perspective of local people, we present a study of the village of Muara Ohong (see Figure 1). This village is typical of fishing communities in the region and reveals the dimensions that determine these communities' involvement in resource management. First, we look at the perceptions and interpretations of the changing environment and resource use. Secondly, we analyse conflicting interests and the influence of degradation on livelihoods. Finally, we deal with leadership and the lack of cohesion and shared identity, in an attempt to understand the lack (and limitations) of collective action. Attention to these processes is crucial if we are to understand why local communities are often unsuccessful in managing local resources.

³ For examples of studies published on the area, see: Christensen et al., 1986; Saanin, 1987; Evers and Gerke, 1992; Mulawarman, 1993; Lukman and Haryani, 1996; Gönner, 2000, 2002; Suryadiputra, 2001; Casson and Obidzinski, 2002; Rasi, 2005; Sumaryono, 2005; Syachraini et al., 2005.

⁴ This is a result of sedimentation (Hardwinarto, n.d.[2006]), decreasing water quality, increasing weeds, invasive fish species and annual fluctuations with decreasing predictability in water levels.

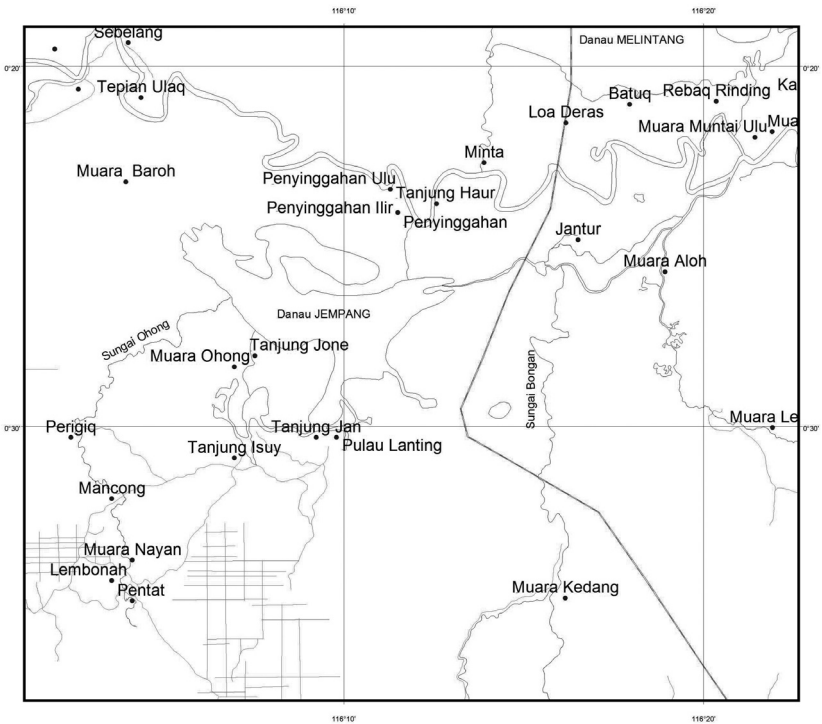


Figure 1: Jempang lake (*danau* Jempang). Coal mining activities take place at the south-west side of the Ohong River and newly-developed plantation areas are depicted upstream the Ohong River. The map is produced by PPLH-UNMUL. The village of Ohong should have been depicted at the mouth of the Ohong River.

However, before introducing the local study on which this chapter is based, we outline contrasting images about the role that local communities are considered to play in sustainable resource management.

Paradoxes of Protection: Green vs. Destructive Development Fantasies⁵

In studies of resource degradation and protection, local communities are often presented as knowledgeable and able to negotiate access to, and control over, resources by using their ethnicity in a strategic way.⁶ They are believed to have

⁵ The term green development fantasies has been borrowed from Tsing (1999).

⁶ See, for instance, F. and K. von Benda-Beckmann, Bakker and Moniaga, Schippers, and Acciaioli this issue.

a thorough knowledge of the environment and to be capable of its protection. Indigenoussness can be used as a resource in the fight against outside forces such as the state and large companies. A well-known example of such a successful struggle is Lake Lindu in Sulawesi as described by Acciaioli (2010) and by Li (2000, 2007).

At Lake Lindu, local communities successfully opposed the Lake Lindu Dam Project and regenerated local resource management of the depleted lake by strategically using their ethnicity, or the ‘tribal slot’ as Li calls it (2000:149). By using the tribal slot, they were able to execute agency and create room to manoeuvre *vis-à-vis* dominant state policies of Suharto’s New Order rule. Crucial in this process was ethnic mobilisation, the use of *adat* law, and the cooperation of the Lindu people with urban activists (Li, 2000:169–173). Similar success stories of indigenous people in Kalimantan, who were knowledgeable on resource management and successfully used their indigenous identity, are described by Peluso (1995), Peluso and Harwell (2001), Tsing (1999), Sellato (2002) and Bakker (2008, 2009).

However, we would argue that the successes of local communities in resource management tend to be overvalued or even romanticised in the literature, and images of indigenous peoples being good at nature conservation have been flawed and may be counterproductive. In Kalimantan this became painfully clear in the community forest management experiments of the early 2000s — whereby indigenous communities were allotted rights to their forests — which turned out a total failure. Community forestry did not lead to better forest management. On the contrary, logging rates increased (Obidzinski, 2005:201).

In the social science literature, and among NGOs and advocacy groups, we discern a bias towards successful cases of resource management; less successful cases remain under-exposed. A weakness in the analyses is that communities are often viewed as homogeneous, harmonious, united against a common enemy, and interested in maintaining their resource base. The proposed successes are relative, and using the ‘tribal slot’ is never free of risk and uncertainty (Li, 2000:149–150).

In a similar line of thought, legal anthropologists and social scientists consider legal insecurity and legal pluralism as an asset for local communities. In this understanding, the law is seen as a resource (e.g., F. and K. von Benda-Beckmann (2010), Bakker and Moniaga (2010), and Acciaioli (2010)). Much attention has been paid to how legal ambiguity and legal pluralism (the co-existence of different normative frameworks or systems of law, including state law, religious law, and *adat* law) can provide opportunities for local groups. In such systems, local people can fight the government or companies by claiming

rights according to alternative law systems. Moreover, these claims are often recognised as successful, especially when identities are clear, *adat* law systems are recognised and documented, and protests are well-organised (for examples in East Kalimantan, see Bakker, 2009, De Jonge and Nootboom, 2006, Nootboom, 2005). In this perspective, scholars focus on the potency of bending and modifying laws to the advantage of protest groups.

It is just as likely, however, that local communities are not successful in protecting their resource base, or fail to get access to a significant portion of the profits generated. In many cases, moreover, the tribal slot is not used or not effective. In the case of the Meratus Mountains, as described by Tsing (1999), only a few villages and people within these villages were able to benefit from government attention, NGO projects and eco-tourism. The majority of local groups and villages were not very successful and protests subsided under pressure from companies and state interests. Most of these unsuccessful village communities remain invisible to outside observers as they lack proper documentation, a clear and shared understanding of the problems at stake, countervailing powers, visionary leaders, and advocates such as journalists or scholars who might act as brokers of power and knowledge.

An opposite bias is also seen in the so-called destruction fantasies. In Indonesian policy circles, local farmers and poor people are often depicted, when it comes to resource management, as ignorant, polluting, destructive and exploitative. An example is the forest fires in Sumatra and Kalimantan in 1996–1997, when slash-and-burn farmers were blamed for causing the fires. Several studies, summarised in McCarthy (2000:111–114), showed that most fires did not occur in the vicinities of local settlements, but in the concession areas of large logging companies and that they were often the result of their logging activities. Blaming the poor for causing environmental problems is a general response from elites and policymakers in Indonesia. Tsing (1999) notes situations in which “regional authorities routinely blame villagers for their ignorance, bad habits, and lack of initiative” (ibid.:179).

During our interviews in the period 2003–2007, regional elites, policymakers and regional planners blamed poor people for being ignorant of modernisation (*belum terima*), lacking aspirations (*kurang aspirasi*) and lacking a proper understanding of the problem (*belum mengerti*). In so-called *sosialisasi* programmes, short trips to villages are organised during which local people are acquainted with progress and development through short chats, joint lunches and speeches. In these voyeuristic *safari desa*, villagers are stimulated to understand, adopt and support the perspective of the planners or the NGOs involved. These narratives reflect the inequality in these programmes. Few attempts to understand local ideas and ways of thinking can be found. This is

nothing new. Dove and Kammen (2001) describe and analyse this ‘arrogance of authority’ in detail in terms of the implicit ideology of New Order Indonesia in which local cultures were seen as obstacles to development.

In both perspectives mentioned above — one overvaluing and the other under-estimating local people’s capacity to act in their own interests and those of the environment — communities are often assumed to be homogeneous entities. In reality, communities are neither harmonious, nor egalitarian, and in the Mahakam lake area this is especially true as migration produced ethnically diverse communities.

Based on the successful cases described above, the factors that promote sustainable resource management and protest can be summarised as follows: (1) a shared definition and understanding of the problem and thus a clear enemy or a clear focus of opposition (dams, government, another specific ethnic group, a company, etc.); (2) a single and relatively homogeneous ethnic community or a strong and widely-shared ethnic identity (e.g., the pan-Dayak identity); (3) the presence of strong leadership (who are often powerbrokers themselves); and (4) the involvement of NGOs, scholars or journalists who give the necessary social and cultural capital, legitimacy, exposure and/or recognition to the outside world.

The Setting

For hundreds of years, Kutai-Malay people have populated small villages along the larger rivers and lakes in the north-eastern lower areas of the middle Mahakam lakes and rivers, while Dayak communities could be found in the somewhat higher areas and along inland creeks and rivers. In general, these groups are well represented at district and provincial levels through effective bonds of political representation and ethnic organisation. Since the early 1900s, small numbers of Banjarese migrants from South Kalimantan and Buginese migrants from South Sulawesi have been settling in the central, southern and western lake areas and this trend continues until today. While large numbers of Javanese have been settled elsewhere in East Kalimantan under the massive transmigration programmes of the early 1980s, few are to be found in the lakeside and riverside villages.

The village of Muara Ohong⁷ is located at the western end of Lake Jempang and was founded by Banjarese who came from South Kalimantan to work and live as fishermen about three generations ago. At first, they mostly fished for

⁷ Locally, Muara Ohong is often abbreviated to Ohong. In the rest of the article, we simply refer to Ohong as the name of the village.

subsistence purposes but, after the opening up of the area in the early 1970s, they increasingly fished commercially. Since then, new groups of poorer kinfolk have arrived in search of better fishing grounds. The families of first-generation settlers live in the ‘high part’ (*hulu*) of the village, while ‘newcomers’ reside in the ‘low part’ (*ilir*). In the high part, the large wooden houses are built on stilts. Here the wealthy traders, shops and other village facilities of Ohong are to be found. The low part consists mostly of floating houses (*rumah rakit*) where new migrants, as well as outlaws, live. This part lacks facilities, such as wooden roads to connect the houses, and a proper mosque. Today, the people of Ohong produce fish for the growing urban markets of Kalimantan and dried fish for export to Java.

Recently, the occurrence of floods and dry periods have become increasingly unpredictable, and floods tend to be higher than in the past. Further, the lakes are becoming clogged with weeds and sediment, the water quality is deteriorating, over-fishing is rampant and mining activity, as well as the establishment of oil palm plantations, in the surrounding area further threaten the general quality and safety of the water. These dramatic changes in the aquatic system have been partly caused by large-scale deforestation (Jepson et al., 2001; Curran et al., 2004); changing land use, such as the new oil palm plantations; road construction and agriculture; and mining and pollution (Demmu, 2002). Especially, the massive and largely illegal logging in Kalimantan (Casson and Obidzinski, 2002; Curran et al., 2004), and the over-fishing and increasing population pressure, are having irreversible effects on the large aquatic systems of the middle Mahakam Lake basin and elsewhere (Chokkalingam et al., 2004; Sumaryono, 2005; Syachraini et al., 2005).

Besides physical and hydrological changes, chemical changes are also taking place. Water quality is decreasing due to soil erosion following logging and the lake ecology is changing into swamp conditions.⁸ The runoff waste from coal mines in the area (most prominently acid debris and coal residues from the open pits) and pollution from the large palm oil plantations recently established in the area (pesticides and fertilisers) further add to the deterioration. All the economic activities in the area seem to use the rivers, lakes and swamps for waste disposal.

⁸ The increase in weeds and decaying organic matter increases the acidity of the lake (low pH), which leads to a change in fish species from ‘white fish’ to swamp fish (reported in an interview with the head of fisheries at the Tenggara field department, 2007).

Perceptions and Interpretations of a Changing Environment

To understand the livelihood strategies and potential for cooperation or resistance of people in these unstable settings, we studied the extent to which people in water-dependent communities perceive the signs and effects of water ecology change and ecological degradation, how they interpret these signs, how they think their livelihoods are affected, and how they cope with visible and imagined negative effects on their livelihoods. Two assumptions are crucial in this approach: interpretations largely shape reactions and behaviour on ecological changes; and not all responses and interpretations necessarily match with the 'reality', i.e., the ongoing physical changes.

Members of indigenous communities, such as fishing and farming communities, generally notice both minor and major signs of climate change and are able to clearly point to the effects of changes in aquatic systems. Their experience of, dependency on, and daily interaction with, the local environment makes them ecological experts able to produce detailed accounts of environmental change and degradation (Scoones and Thompson, 1994). Although based on life-long experience, such forms of local and indigenous knowledge are seldom precise, systematically gathered, quantified or comparable, and remain rather anecdotic (Leach and Fairhead, 2000; Leach et al., 1999). Notwithstanding these limitations, such local and indigenous accounts are important as they reflect perceptions of aquatic degradation and express indigenous interpretations of and concerns about water quantity and quality. These interpretations are rooted in indigenous knowledge systems, but are also influenced by regional, national and international discourses (Leach et al., 1999). Local concepts of water quality and quantity, degradation, causes and remedies do not necessarily reflect the 'truth' about ecological change or pollution. Instead they are strong forces that structure people's actions and offer important keys to understanding local community reactions and adaptation to water ecology changes, their capability to adapt to changes and the grounds for resistance.

The most striking changes mentioned by the people of Ohong are the increased number of floods and the decrease in their predictability, closely followed by a decline in the number of fish species, the amount of fish caught and a declining water quality. A systematic survey carried out among the villagers shows that the inhabitants were very negative (76%) about the water quality, but opinions about the causes differed markedly. The water is very acid, akin to swamp conditions, with very low oxygen levels. When asked about the reasons for these changes, many villagers tend to blame the mining companies and plantation enterprises, though over a third does not know why these changes occur or they refer to Allah as the source and cause of climatic changes. A few mention the forest fires of the past. A quarter of the villagers

mention logging activities in the river's watershed. All these are outside causes, very few villagers mention activities of villagers themselves.

Fishermen, fish-processing women and traders were able to clearly indicate which species of fish were caught at which time of the year over the last decades. After analysing their accounts, a gradual shift can be observed in the number of fish species over the past decade. The change has been from fish with high value to fish of lower value, and also from fish that live in pH-neutral waters to those typical of swamp environments. Many villagers mentioned species which they had caught in the past but which had disappeared, and also that fish were now smaller. Nearly two-thirds of the villagers (60%) mentioned this decrease in quality and market value of fish catches.

The only exception to this pattern is the *toman*, a predatory fish originally found in the Barito River (South Kalimantan). It is a popular fish among Banjarese with a high market value in Banjarmasin. Originally, it was introduced in the Mahakam area to be reared in fish cages but soon escaped and multiplied in the lakes and rivers of the middle Mahakam area.⁹ The predatory *toman* competes strongly with other fish. Fishermen recall catching *toman* only since the late 1990s.

With respect to health, almost half of the villagers in Ohong mentioned an increase in waterborne diseases, such as diarrhoea and vomiting (*muntaber*), and in skin diseases (Holle, 2009). Perceptions of water quality are closely related to its colour. "Sometimes the water is milky, at other moments, it is totally clear. Prior to the mines, the water never had these colours," was a typical remark. In more than half of the comments, the Ohong villagers blamed the coal pits upstream as the cause of the changes in water colour and quality: "They release poisonous waste in the water; it makes us ill." Someone else added: "You can see it when they release waste, they mix lime with the water to hide it and the colour goes milky and then clear." A few mentioned the acidity of the water, including a former member of the village administration: "Due to government regulations, they need to reduce the poisonous acids in the waste. They do that with lime. I have seen it myself."

An important finding from our own water quality measurements in Ohong is that most of the values recorded were not directly dangerous for people although the water was very acid. The perceptions of danger however do seem to be stronger than the actual physical risk. People are getting ill, but probably due to other reasons than only by drinking or bathing in the water.

⁹ A persistent rumour is that a Banjarese Haji from Jantur, who is a well-known trader from South Kalimantan, released *toman* on purpose into Lake Jempang. He supposedly said that he sought to increase the production and catches of this expensive fish to improve his trading opportunities in South Kalimantan.

Local knowledge about the changes taking place is very detailed and concrete as it is based on daily interactions. Villagers showed much more uncertainty and confusion about the causes of these changes. Increasingly, mining companies and plantation enterprises are blamed as the actors causing the perceived decline in water quality and the depletion of valuable fish.

In our survey, we asked the villagers systematically two questions about future perspectives: (1) What would you do for a living if fishing and farming were no longer possible; and (2) what do you hope that your children will do for a living in the future? To the first question, 43% answered that they still wanted to be fishermen/women. A typical comment by both men and women was: “We know nothing else; we are not able to do anything else.” Others said: “If the fish here are gone, we will follow the fish and move somewhere else.” In these answers, fatalistic expressions dominated and again, no relationship with fishing and resource exploitation by the community itself was suggested.

Conflicting Interests and Differentiation in Adaption

The lake is getting shallower, the villagers say. Especially in and along the trenches in the lake-bed and major transportation routes, villagers observe increasing sedimentation and experience difficulties with transportation. However, explanations differ: “It’s the propellers of the boats which make the water messy,” “Too many boats create mud,” or “The mud sticks to the roots of the water hyacinth, these plants make the bottom rise.” Some of these explanations are rather fanciful and speculative, whilst others suggest precise knowledge: “The river bank used to be steep, now it is flat; it has risen half a metre in 25 years.” Someone who had been able to walk freely under his house when he built it observed that, “Nowadays this is impossible. I am sure the soil has risen more than 60cm in 30 years.” Another person explained: “I used to put my fish traps in the northern corner of the lake, but now the place is shallow and weeds cover everything. In the last five to seven years, I can only use these traps in further away areas and during high water.”

While narratives on silting concur concerning increasing sedimentation, the explanations again differ: “It is the river that brought the mud,” some say. Other explanations include: “It’s due to the weeds,” “The floating weeds clog the lake and prevent the fine mud from flowing away,” “Nowadays, there is not enough water in the lake,” “People upstream throw too much rubbish in the river,” and “It’s because the forest is gone.” In response to the lake becoming shallow, villagers fish further away, use smaller boats when the water is low, build houses on taller stilts, and plant rice on the banks of the grooves in the

lake bed during dry periods. Nobody seems to acknowledge that, if sedimentation continues at the same speed, the lake will be clogged up within one generation.

Some of the negative changes may produce some positive side-effects: If the water remains low for three months, large rice yields can be harvested from the fertile mud plains. In the past, rice was never planted in the lake area but, since the end of the 1990s, an increasing number of Ohong villagers have been successful in their attempts at rice growing. In 2005, almost half the villagers planted rice and achieved high yields but, in 2006 and 2007, the harvests failed due to 'early' floods.

The decreasing predictability of floods makes lake agriculture a risky endeavour. Villagers cannot rely on it and only the middle-income households can invest substantial capital and labour in rice production. Rice yields are seen as windfall profits, not as a potential livelihood option for the future: "We are fishermen, we don't know how to farm."

Interestingly, new land rights are developing in areas where they never existed before. The lake-bed is increasingly claimed by villagers and outsiders as well. When flooded, the lake is open to everybody, even to fishermen from neighbouring lakes but, when dry, private land use rights take over. Although formally no land rights can be claimed in the lake area, the village head now gives out parcels of land to villagers, relatives and friends. They mark their plots using small poles of ironwood (*ulin*). Over the years, the rights to these parcels remain in the hands of the same households. The families who first started to till the land have the best plots close to the village. Once tilled, the same family can return to that field the following year or two years later. New-comers and immigrants get fields further away. In the past couple of years, disputes have emerged around village borders in the lake area due to these fertile mud plains.

Increased resource competition has inspired village communities to demarcate village land and to prevent outside fishermen from fishing in their areas when the water is high. Outsiders' use of large motorised fishing boats is prohibited but not, generally, their placing large nets which is difficult to control anyway. When water-filled, the lake is typically a common pool resource with open access, almost impossible to govern by a single community. When dry, individual land rights develop around each village at the lake.

Unlike the Lake Lindu case, as described by Acciaioli in this issue, no return to common property regimes take place. If debated at all, there is widespread confusion on *adat* laws and regulations as no clear *adat* is available and the multiple ethnic immigrant groups will never accept either the *adat* of the Kutai or Dayak minorities or any other migrant group. Theories on the

‘tragedy of the commons’, therefore, do not fully apply to this situation as multiple outside forces are also responsible for the conditions in the lake area (through the run-off into the lake) and local communities dependent on lake resources are unable to exert much influence on these outside forces. In response to falling catches, villagers use larger nets, faster engines and more fish cages. Over the last decade, the number of fish cages in Ohong has tripled. The availability of affordable boats and engines has enabled villagers who fish with traditional gear such as bamboo traps to increase their number of traps. As one villager explained: “The price for wet fish [fish that are still alive] has gone up, so it is profitable to fish with traps.” Many invest in cages made from wire; those who are really rich invest in larger nets. In confidential moments, villagers would grumble: “It is the *haji* who take all the fish. They can invest in large nets and modern equipment. They take all the fish and nothing is left for us.”

Up to about five to eight years ago, two sets of 50m fishing nets would be sufficient to catch the same amount of fish that is now is caught with ten sets. Fishermen say they now spend about three times longer fishing than they used to do and that they need to invest in faster and larger boats to be able to reach the more remote places. The village poor can no longer compete as they are unable to buy nets and bigger engines. According to a survey among the shopkeepers in the village, spending in the village is decreasing due to a decline in net incomes while fuel prices have risen.

The depletion of fish stock is partly caused by the increase in fish cage usage. Over the last two decades, villagers have been growing fish in cages in the rivers and lakes. These cages can be found in front of virtually all houses. Although only recently introduced and highly despised, *toman* is one of the most important fish species in this caged production system since, sold alive, it has a high value. Unfortunately, the *toman* need to eat young fish twice a day. These small fish are usually caught in the lake. Indirectly, the *toman* cage culture has led to severe overfishing as large numbers of fingerlings and small fish are caught at an early stage. In response to fewer fish being caught, the richer villagers and traders invest again in more advanced fishing gear.

This race to the bottom has increased the discrepancy between richer and poorer villagers. Fishing families without the capital or labour to invest in large numbers of traps, nets or boats experience difficulties in making ends meet. Some have been employed by larger traders to process and pack the fish, others turn to cutting and selling firewood, timber smuggling, catching rare birds and animals in the swamps surrounding the lake, or to electro-fishing.

Almost all of the younger fishermen fish with illegal electric gear and, although forbidden, the police almost never check for such equipment. There

is little to gain from arresting poor fishing folk and they would rather seek out illegal timber transport. According to older villagers, the new migrants from Banjarmasin introduced these fishing techniques, and the local youth soon followed. In most cases, the equipment is leased from rich traders or fishermen, often *haji*, on the condition that the catch is sold to that specific trader, and usually at a discounted price. In return, the traders give cash advances, provide bride-wealth on credit and food loans during slack periods. Some of the traders also run shops and sell rice and goods on credit.

Although most wood in the areas close to the lakes has long been logged, the lake still serves as a smuggling route for high value wood. At night, logs are transported over the lake to small sawmills downstream. One villager commented when asked about the numbers of people caught: “We almost never see police in these areas; we are too poor to take ‘fines’ from.”

Possibly, the best years for this frontier fishing community have passed. Between 1973 and the early 1990s, fish resources were abundant in the area and livelihoods were comfortable. Today, in Ohong, the depleted fish resources lead to lower incomes. One of the shopkeepers estimated a 20% decline in spending over the last three years: “In the past, children got Rp. 5,000 (\$ 0.50) to spend in the shop, now they receive less. People need to be careful and can only afford to buy the absolute necessities. All money goes on petrol, because the fish are hiding far away.” Among the established villagers, the newcomers are often blamed for depleting fish stocks and using unsustainable fishing practices, such as electro-fishing. In reality, both groups are almost equally involved.

Regarding the future, we see a differentiation in adaptation strategies. Middle-income villagers invest in larger engines and nets, the richer villagers (traders, village officials, etc.) invest in land or buy a house elsewhere. Some of the more wealthy traders have bought a few hectares of forest land to plant rubber trees or oil palms: “When the fish are gone, I will move to my plantation, or rent a space at the market in town. I am ready to leave Ohong if needed; I know how to make money.” Such confidence is clearly lacking among the poorer villagers who have few options.

In response to changing livelihood conditions, people commonly react by diversification rather than protest. The people in Ohong are mixing fish species in their cages, while the fishermen in villages with better water tend to focus on the more financially productive *toman*. They explain their choice for *toman* by referring to the better water quality, the absence of droughts and the availability of fingerlings and small fish in the lake the whole year round. Ohong fishermen and women on the other hand repeatedly mentioned long periods of feed shortages: “We choose *haruan* (snakehead fish) which can

survive in poor water and without food for some time. *Toman* need to be fed constantly. We cannot afford such expensive species.” Moreover, *haruan* is supposed to be among one of the fish species most resistant to pollution. Fishermen in Ohong complain of skin disease (*coreng*) of their fish. The general narrative is that this disease came about after the opening of the mine pit at the Ohong River.¹⁰

The variations in perceptions on environmental change can be explained by the range of possible explanations: The activities of large companies upstream of the village; the success of Dayak villages upstream in claiming compensation from the mining company; the large number of fish deaths in the shallow Ohong River during the dry season; the even larger depletion of fish stock in the shallow Lake Jempang; increased population pressure; and, last but not least, the greater exposure to researchers and environmentalists in the vicinity of the Ohong River. Ohong has been increasingly exposed to researchers, ecologists and tourists who have shown primarily concern for the degradation of the environment, not for the people. These visits have aroused concern among local inhabitants. As one villager commented: “Why are all these people coming, measuring the water, asking questions, carrying out health inspections; surely something must be going wrong with the water?”

The rapid changes in the area, the decrease in fish, the opening of the mine, and the questions of researchers and nature conservation NGO’s propelled feelings of anxiety and insecurity. As a result, all ails, pains, and illnesses, both of man and fish are attributed to the environmental destruction (Holle, 2009). These anxieties could become a breeding ground for future protest even when some of these perceived connections are rather ill perceived and imaginary.

Leadership, Cohesion and Shared Identity

The third aspect we considered in trying to understand the lack of resistance, cooperation or countervailing power against resource depletion in the area is the social, political and institutional dimension. The people of Ohong are not well organised and do not have a sound political representation in the district of West Kutai, which is dominated by Dayak and Buginese politicians. The poorly-educated villagers have few fruitful connections with the outside world and their migration networks consist only of poorer kinsmen. The few villagers who do have good connections outside of the village, such as traders, village notables and school teachers, tend to use these mostly for their own

¹⁰ Our survey, with questions on fish diseases, revealed that this disease must have been present much earlier in the Middle Mahakam lakes.

benefit. Traders tend to conceal information on prices and new technology, while village leaders might be bribed by outsiders to cooperate in the exploitation of resources. During the 2006 provincial elections, the Ohong villagers supported a Dayak Muslim candidate from nearby Tanjung Isuy who lost, and so Ohong villages will be the last in line for any support from the district government.

Moreover, the Banjarese from Ohong lack both horizontal and vertical ethnic relationships which can be used for lobbying. The area has no strong ethnic organisations and no central leaders. This is in sharp contrast with the Dayak groups in the area and Buginese migrants. Both groups are well organised and provide influential political leaders at all levels. Further, the Banjarese in the area have generally not been as exposed to the outside world as the ethnic Dayak communities, who are seen as attractive to outside visitors, such as tourists, anthropologists, biologists and journalists.

As a result of this relative isolation, local leaders are powerful brokers of information and influence with the outside world. But they do not necessarily use their contacts for the benefit of the community. Claiming compensation has become big business. When the coalmine upstream the Ohong River started to operate, debris floated down the river and huge numbers of the caged fish died. Although it cannot be proven that the fish died because of pollution from the mine, the villagers believe this to be the case. It was decided that the heads of villages along the river and around Lake Jempang would complain to the mine and seek compensation. According to the village heads, no compensation was given, although the company promised to supply a piped water system (Holle, 2009).

The mining company¹¹ managed to play the village heads off against each other, according to several sources. The upstream Dayak villages did receive compensation for their villages while, according to rumours, the Jempang village heads were paid ‘travelling money’ (*uang jalan*), a private sum. Once the news of the payments to the Dayak villages had spread to Ohong village, the Ohong people believed that the village head was paid but failed to distribute anything among the villagers. There is no proof of what actually took place but, a year after this event, the village head secretly bought a plot of land in Melak, the district’s administrative town, and built a house. He also bought a motorbike and it was unclear to the villagers how he earned the money to buy it: “He almost never goes out fishing.” True or not, the rumours show that trust in the village leadership is very low and villagers do not feel represented by, or responsible to, their leaders.

¹¹ P.T. Gunung Bayan Pratama Coal.

Between Ohong and the other villages on Lake Jempang there is much competition over leadership and borders, and between ethnic groups. There is no sense of cooperation between the villages. On the contrary, villages try to claim different parts of the lake as their territory and compete with each other for access. From this we may conclude that there are no strong countervailing powers among village communities against companies and the government, or any horizontal cooperation to produce collective action to achieve any form of communal resource management or possibly a form of green development.

Concluding Remarks

Confronted with the harsh reality of a changing and declining aquatic resource base, local water-dependent communities are forced to change their livelihood strategies. It would be wrong, however, to regard these communities as mere victims of environmental destruction: They are also creative actors, actively interpreting and altering their environment. Unlike most natural ecological systems, human livelihoods are both exploitative and adaptive (Berkes and Jolly, 2001) and should be seen as self-learning systems able to adapt to new conditions and even ‘innovate’ in the process of establishing new livelihoods (Chambers and Conway, 1992). This innovation can be positive, but also individually or collectively destructive in the use of new exploitative techniques as the case of Ohong shows. Moreover, the capabilities for adaptation should not be overrated, since a shared definition and understanding of the problem is lacking.

We started this article with a critique of positive accounts of the capabilities of local communities in resource management and raised the question why local fishing communities in the middle Mahakam lake region do not protest, unite and oppose the mining and palm oil companies in the area, nor the government who supports these activities, like the Dayak communities living more upland. In presenting the case of Ohong, we suggested that there are several reasons why local communities are not able to gain and maintain sustainable control over resources.

First, the nature of the resource (a lake with open access) and the nature of the problem (the unclear connections between changes and causes and the negative effects of economic activities outside the lake area) make it difficult for local villagers to identify a common problem and a common enemy. The perceptions studied here reveal significant knowledge of micro-level changes. Fishermen and farmers, both male and female, are able to indicate and some-

times even quantify detailed changes — though there are clear differences between those who are living in the area since long and more recent migrants. Although the observations based on daily livelihood interactions with the natural environment were often sharp, detailed and consistent, they were, however, generally weak in providing an explanation for the changes. Without clarity and consensus on the causes of environmental changes, protest is not likely to occur. For the people of Ohong, there is no clear enemy, nor a clear focus of opposition. The livelihood changes are fluid, hard to explain, and often paradoxical. The first criterion for protest, a common problem definition and a common enemy has therefore not been met.

The second criterion for protest, the existence or construction of a single and shared identity and homogenous community is also not met. Unlike Dayak and Kutai communities, the Banjarese of Ohong have little connection with the outside world. They are not well organised and do not have any indigenous organisations that fight for their interests. Moreover, they are internally divided and have different interests. Speaking Banjar, they are clearly traceable as immigrants from South Kalimantan. Other actors in the area, both the district government as well as companies and environmental NGO's, perceive them as outsiders (*orang luar*) or immigrants (*pendatang*) without any *adat*, even though they have lived in the area for generations. Their status as 'newcomers' makes it difficult for them to use *adat* law as a resource.

The third criterion, the presence of strong leadership and the existence of strong brokers of knowledge and power is also met neither in Ohong, nor in most other villages in Jempang region. Local leaders seem to serve their own interests more than the interests of the community. Although rumours cannot be fully checked, they suggest that village leadership is highly contested and offers little scope for effective resource management. Village rules and regulations are not respected and even broken by village leaders themselves, such as those banning electro-fishing.

Finally, the lakeside communities are not able to use the 'tribal slot' — the space available for local communities to resist the state or large companies on the basis of their 'indigenous' status. The population of Ohong has not been depicted in the media and academic research reports as a culturally-distinct group. There are no NGOs, scholars or journalists who advocate and create the necessary social and cultural capital, legitimacy, exposure and recognition of their specific way of life to the outside world.

In sum, while local communities elsewhere in Indonesia manage to shop around and use different forums to get their rights recognised, the fishing communities around the Middle Mahakam lake area are losing out because

they are not well organised, do not have a single, well-defined enemy, are internally divided, and lack knowledge on changes and repertoires of resistance. For them, green development remains fantasy.

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