



THE RAINFOREST FOUNDATION

# DIVIDED FORESTS:

## towards fairer zoning of forest lands

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# 1. EXECUTIVE SUMMARY

There has been little critical analysis of large-scale forest zoning programmes. In spite of this, zoning continues to be implemented in many countries, and to be promoted by some international development and funding institutions. Recently, a national forest zoning exercise was initiated in the Democratic Republic of Congo, and there is widespread concern as to the methodology which will be adopted, raising questions as to whether it will help achieve sustainable management of this country's rich natural resources, and what its impact will be on the lives of local peoples.

This report provides a review of macro-level forest zoning as a tool for forest management and land-use planning, in order to identify some of the lessons that have been, or should be learnt. The experiences of Australia, Brazil, Cameroon and Indonesia are considered. The successes and failures of each of these case studies are identified, and recommendations made for future zoning initiatives.

The report finds that, ultimately, what shapes the outcome of a zoning initiative is the political environment in which it is designed and implemented. Therefore, rather than any particular methodology, what is needed to ensure that the outcome of zoning is fair and equitable, and that it will be environmentally and socially sustainable, is a genuine political commitment to these principles.

# 2. MAJOR FINDINGS AND RECOMMENDATIONS

Based on the experiences of Australia, Brazil, Cameroon and Indonesia, a number of recommendations can be made for future zoning initiatives:

## FULL AND MEANINGFUL PARTICIPATION

Participation of all stakeholders in forest zoning is paramount. Meaningful participation requires serious investment of both time and resources. In addition, it needs to be a continuous process rather than a one-off event, occurring at all stages of zonation, from planning through to implementation and monitoring of forestry activities.

## FREE AND FAIR POLITICAL ENVIRONMENT

A free and fair political environment is essential to allow genuine participation by all sectors of society.

## EFFECTIVE GOVERNANCE

Transparency is an important means of ensuring effective governance, and to confer legitimacy. Co-ordination, both vertically and horizontally, is also needed within government, to ensure clarity and consistency in approach.

## GOOD LOCAL GOVERNANCE

Good governance is essential at the local level, to help ensure that the voice of rural and forest-based peoples is heard. Sufficient resources, technical and intellectual capacity are needed for this to be effective.

## NEGOTIATION, CONFLICT RESOLUTION AND CONSENSUS BUILDING

Mechanisms need to be put in place for conflict resolution and consensus building, since zoning can increase conflict over resources. Zoning should be part of a process of negotiation over resource and land use rights.

## GOVERNMENT COMMITMENT TO SOCIAL AND ENVIRONMENTAL ISSUES

Genuine commitment at a high level to these issues is essential if they are to be addressed in a meaningful way.

## FAIR AND EQUITABLE LEGAL SYSTEM

The rights of indigenous peoples to their lands and resources need to be recognised in law.

## CLARITY OF LAWS AND PROCEDURES

A clear system of laws and procedures relating to zoning is necessary, to help ensure legality and transparency in implementation.

## EDUCATION AND CAPACITY-STRENGTHENING

An effective public information system is needed to make people aware of the law and their rights. Capacity-building may also be necessary, for example, to provide training on legal issues or forest management.

## EFFICIENT AND RELIABLE SYSTEMS OF INFORMATION GATHERING AND MONITORING

Zoning needs to be based on reliable data and maps. New technologies can be a valuable tool in enabling local communities to participate in mapping and zoning, providing an effective means of gathering 'base-data'. Efficient systems are also needed for monitoring and updating this information.

## COMMITMENT TO IMPLEMENTATION AND MONITORING

A long-term investment in monitoring and control of land use practices is needed, to ensure firstly that zoning plans are implemented on the ground, and subsequently, that they are kept up-to-date and relevant.

## INTEGRATED LAND USE PLANNING

Forestry zoning needs to be implemented as part of an integrated approach to land use planning. In particular, agricultural and forestry policy needs to be co-ordinated as many traditional management practices overlap with both these sectors.

## RECOGNITION OF DIVERSE VALUES OF FORESTS

Forest zoning needs to start from a position which recognises the diverse values of forests (timber, non-timber products, environmental protection, cultural values), and the various viewpoints and priorities of stakeholders.

## LOCAL PEOPLE AS PARTNERS IN FOREST MANAGEMENT

Forest zoning must not be based on the assumption that the state is best able to undertake sustainable forest management. Local people need to be integrated into forest policy, and their role in forest management recognised and facilitated. In particular, local people must have a central role in the design, implementation and monitoring of zoning initiatives.

# 3. INTRODUCTION

Large-scale zoning initiatives have been implemented in many countries, and influence the use and management of vast areas of forest throughout the world. Consequently, such planning exercises have a huge impact on the fate of biodiversity, economic resources and human well-being. Despite the significance of zoning, there seems to have been little critical assessment as to whether zoning is the best approach to take. There is an astonishing lack of documented information providing analyses of the various methodologies, assessment of outcomes, or recommendations for how to improve forest zoning in the future.

The aim of this study is to begin to rectify this lack of information and analysis, through providing a review of macro-level zoning as a tool for forest management and land use planning. The experiences of Australia, Brazil, Cameroon and Indonesia in implementing zoning are used as case-studies. The lessons learnt in these countries are highlighted, and recommendations made for future zoning programmes.

This report is intended as a discussion paper for those implementing national forest zonation programmes. It was partly stimulated by the start of a national forest zoning exercise in the Democratic Republic of Congo (DRC). The forests of DRC form part of the world's second largest area of tropical moist forest, and as such, are of great significance both regionally and globally, as well as to millions of some of the world's poorest people. This country is in the early stages of implementing a national zoning programme for its forests, a programme supported by the World Bank and the UN's Food and Agriculture Organisation (FAO). The initial stages of this programme suggest that this has been based on the zoning model applied in Cameroon. This has raised concerns that the programme in DRC will replicate a model in which large-scale timber extraction is prioritised at the expense of the country's rural and forest-based peoples.

This paper does not consider whether national zoning is the best approach for the sustainable management of a country's forest resources. Nor does it touch on the advisability of implementing this in a country such as DRC, which until recently was embroiled in war, and where much of the forest land is still subject to violent conflict. This would require a separate and more detailed analysis. The issue here is, given that zoning is to be implemented, how can this be done in such a way that it is equitable and just, and will help to promote sustainable forest management and sustainable development?

# 4. BACKGROUND ON ZONING

Zoning can be undertaken at different scales, from macro-level zoning plans (e.g. at the national level), meso-zoning (e.g. at the level of regions or watersheds), to micro-zoning (e.g. for village territories or community forests). This paper is concerned with national zoning plans and their use by governments as a tool for land use planning and forest management.

The zoning of land is often done on the basis of certain criteria, such as soil type, slope or vegetation cover. This knowledge is used to place zoning on a rational basis, for example, identifying the best soils for agricultural purposes, those forest areas with the most valuable timber or priority ecosystems for conservation. The mapping of land on the basis of these "scientific" criteria has resulted in claims that it is an objective means of planning. However, this ignores the political nature of zoning (Peluso, 1995). The process of zoning depends on making a whole series of choices as to which are the priority regions, resources or social groups, how these priorities should be ranked, and on the basis of which criteria (Pénelon et al., 1998). These decisions are far from objective, and will determine the outcome of zoning, for example, whether it is most favourable to timber interests, conservation or local people.

Since colonial times, states have employed zoning as part of a process to lay claim to territory. This has often been motivated by a desire to control their timber resources. For example, in Thailand forest legislation was introduced at the end of the 19th century to control the trade in teak, with forest ownership being transferred from community leaders to the newly instituted Royal Forest Department (Fay and Michon, 2003; Kaiyoorawong, in prep.).

Typically, forest land, under the control of the state, was distinguished from agricultural land, which could be privately owned. This distinction is a reflection of traditional forestry concepts, in which forestry and agriculture were conceived of as distinct activities (Fay and Michon, 2003). Thus, forestry was regarded as the preserve of the state, and was aimed at exploiting timber resources to further economic development. Local people were regarded as threats to the forest, with no recognition being given to many traditional management practices, such as agroforestry (Vandergeest and Peluso, 1995). Therefore, forest policy was aimed at excluding local people from the forest, and confining their activities to agricultural areas.

This perception facilitated the acquisition of vast areas of land by the state, and the exclusion of local people. For example, in the Philippines under the colonial regime, all lands where no evidence was presented that they were agricultural were deemed to be state forest land (Fay and Michon, 2003). In Indonesia, all lands without certified ownership or which were not under cultivation were declared as state land by the colonial government (McCarthy, 2000).

The new states that emerged after independence adopted many of the colonial regulations concerning forests, these providing a readily available basis for the expansion or consolidation of state control over resources and land. Thus, under the Indonesian Republic, the Agrarian Law of 1960 reiterated the principle that state sovereignty took precedence over local people's land rights, and the 1967 Forest Law enabled the state to lay

# 4. BACKGROUND ON ZONING continued

claim to all forest lands (see further details below). The Philippine government also strengthened the state property regime, a 1981 Presidential Decree designating all lands above 17% slope as State Forest Zone or public domain, this representing over half the country's land-base (Fay and Michon, 2003). Similar laws have been applied over much of the developing world.

The centralised control of the forest has been given a new legitimacy in recent years by environmental discourse. For example, the Laos government, under pressure from international funding bodies, has designated large tracts of land as conservation areas. National biodiversity reserves now cover 13% of the territory and 70% of forest lands are listed as protected or conservation forests (Aubertin, 2003).

The designation of extensive areas of state land has usually occured at the expense of forest peoples, who are ignored in zoning exercises and are written out of the resulting maps. Often, their traditional activities are deemed illegal within the newly defined forest estate. For example, in Thailand 42% of its land area was mapped as reserve forests by the mid-1980s. Within this area, which included some 20-30% of the country's farmers, any activity deemed damaging to the forest, such as the grazing of animals, was forbidden, and permits were required to extract forest products (Vandergeest and Peluso, 1995).

In an attempt to counteract this, and to put local people "back on the map", community mapping initiatives have been instigated, most notably in Indonesia, but also elsewhere (Alcorn, 2000; Eghenter, 2000; Peluso, 1995). Community maps can prove powerful negotiating tools, enabling local people to document their claims to forest resources and to communicate these to government officials. Thus, they can facilitate the participation of forest peoples in the management of their resources and land. However, as with national level zoning, community maps are only tools, and so their effectiveness is dependent on how they are implemented and also on the wider political environment. Community maps can only promote local peoples' rights if there is a government system in place that allows the involvement of communities in negotiations over forest resources and land, and recognises their land and resource rights.

The need to involve local communities in national level zoning, and in forest management, has increasingly been recognised in recent years. Zoning initiatives have made greater efforts at ensuring the participation of all sectors of society, with greater recognition given to the rights and needs of forest peoples. In addition, a wider range of forest values has been considered, including timber and non-timber products, as well as environmental and social values. The case studies described in this paper illustrate some of these developments, in particular, the experiences from Australia and Brazil. However, there are still lessons to be learnt, and these are considered in the final discussion.

# 5. THE CASE STUDIES

Four case studies are presented here – Australia, Brazil, Cameroon and Indonesia. These have been selected primarily because they represent different approaches to zoning. An additional factor was the availability of information in the literature, and the need for this to be in either English or French. The language restriction placed a considerable limitation on access to material on Brazil, an extensive body of literature on this country's experiences of zoning being available only in Portuguese.

## AUSTRALIA'S REGIONAL FOREST AGREEMENT PROGRAMME

### INTRODUCTION

Australia has undergone a radical change in its forestry sector over the last few decades. The land use planning process that was implemented in a number of regions of the country offers some interesting lessons for the management and evaluation of diverse forest values.

Australia is a wealthy and politically stable country, with limited forest resources for its size. These include rainforest, eucalypt and acacia forests as well as extensive woodlands[1]. Today there are about 44 million ha. of forest (about 6% of the land area) and 112 million ha. of woodland (about 15% of the land area) of which 20% is public land (i.e. under government ownership). Most of this public land is forest rather than woodland, with three quarters of the forest area owned by the government, the remainder being privately owned (Dargavel et al., 1998).

The government has had to deal with many years of disputes over how to manage this public land, with the environmental lobby and timber industry in conflict. In order to address this, the Regional Forest Agreement (RFA) programme was implemented, "the most ambitious, comprehensive and expensive environmental and resource planning programme ever undertaken in Australia." (Dargavel et al.,1998:1)

### BACKGROUND

Up until the 1980s, Australia's forest policy had been dedicated to the production of timber. Public forests, or state forests, began to be demarcated in the 1920s. The aim of this was to reserve 10 million ha. of the "best" forests for protection and management by the government forest services, a target that was eventually reached in 1966. Management of these forests was focused on their commercial value as a source of timber and wood chips, and forest policies promoted industrial logging and the development of plantations and woodchip exports. The exploitation of forests grew rapidly after the First World War, with the granting of vast concessions to encourage the pulp industry (Dargavel et al., 1998).

This focus continued unchallenged until the 1970s, when a strong environmental movement emerged. Conflict flared up over the use of "old-growth" forests for the wood-chip and pulp industry, which were being clear-felled for the establishment of plantations. Environmentalists called for the preservation of these areas, with the establishment of "wilderness" areas and protection of endangered species. Debate over the use of the forest became a huge political issue, with the Commonwealth and state governments in dispute. In an effort to resolve

1.The savannahs of Australia, defined as those areas with 20-50% canopy cover are referred to locally as "woodland" (Dargavel et al.,1998).

# 5. THE CASE STUDIES

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this and to enable negotiations over forest issues to take place, the governments eventually agreed on a National Forest Policy Statement in 1992 (Commonwealth of Australia, 1992). This set out broad national goals for the management of the country's forests, to be implemented at the regional level through RFAs.

### THE REGIONAL FOREST AGREEMENT PROCESS

RFAs are 20 year plans which lay down the guidelines, tasks and responsibilities for forest management. One of the objectives of the agreements was to provide certainty for all those concerned with the forest, including the timber industry, local communities and conservation sector. This was to be achieved through research and widespread consultation to produce a negotiated agreement, providing secure access to resources for forest based industries, and making long-term decisions based on the principle of ecologically sustainable development. A further objective was to maintain regional environmental, heritage and social values (Commonwealth of Australia, 1992). RFAs were the first nationally co-ordinated attempt to assess the economic, environmental and social values of the country's forests, and to seek to agree forest allocation and management on this basis.

The programme was initiated in 1994. The regions selected were those where forests had been the subject of conflict over their use for wood production. Ten agreements were drawn up in the states of New South Wales, Victoria, Western Australia and Tasmania, and these were signed between 1997 and 2001 (Dargavel et al., 1998)[2].

The process began at the Commonwealth level[3], with the identification of national priorities, both for conservation and for the wood industry. Criteria were developed to identify those ecosystems in need of protection, and targets were set for their conservation. These included conservation of:

- 15% of all forest types, as they were distributed prior to European colonisation;
- 60% of the existing old-growth forest;
- At least 90% of high quality wilderness forests[4].

These criteria provided the guidelines for the development of the RFAs. These agreements were independent processes in each of the states, being run by their own steering committee and team of specialists, and the states negotiating independently with the Commonwealth Government. Consequently, although the agreements had the same basic framework, there were marked differences in their approach and implementation[5].

The first stage in all of the RFAs was to undertake a "Comprehensive Regional Assessment" to determine the values of the forests for the various stakeholders. These included local communities, with special reference to Aboriginal peoples, forest-based industries (including minerals, tourism, water resources, as well as the wood products industry), and conservation bodies. The assessments covered environmental, cultural heritage, social and economic values (Figure 1). The social assessments analysed census data, and investigated forest industries, previous land use and old settlements, attitudes to forest management, and people's aspirations for their region. Indigenous heritage values were assessed, through workshops and interviews,

2.All the Regional Forest Agreements are available on the Australian Government's website: **www.rfa.gov.au**. 3.The Commonwealth of Australia is a federation of 6 states and 2 territories. Thus, the term "state" in the Australian context differs from that in Indonesia, Cameroon and elsewhere, where it refers to the "nation state". The state and territory Governments have responsibility for their forests and national parks and for land allocation. The Commonwealth Government's role in forestry lies in its responsibility for trade and for foreign affairs, the latter including international environmental agreements (Dargavel et al.,1998; Davey et al., 2000) 4.The nationally agreed definition of old-growth forest is "ecologically mature forest where the effects of disturbance are now negligible", and that of wilderness forest is "land that, together with its plant and animal communities, is in a state that has not been substantially modified by, and is remote from, the influences of European settlement" (Commonwealth of Australia, 1997). 5.It is important to note that there were many differences between the various RFAs. The following discussion refers mainly to the processes in East Gippsland and the Central Highlands region of Victoria, and in Tasmania, where the first three agreements were signed.




Figure 1. Tasmania's Comprehensive Regional Assessment: Cultural Values ( Source: Commonwealth of Australia www.rfa.gov.au )

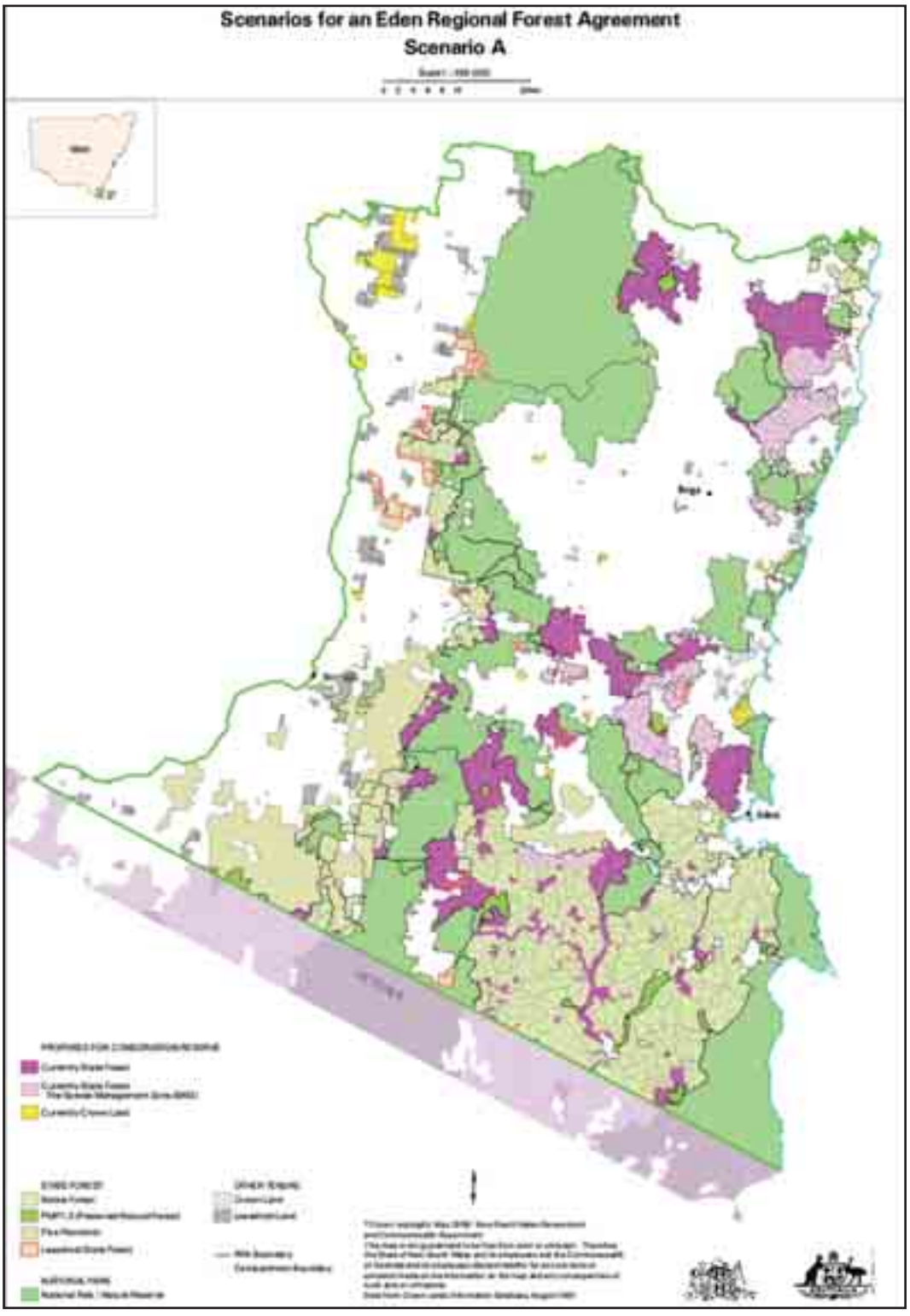



Figure 2. Scenarios for an Eden Regional Forest Agreement ( Source: Commonwealth of Australia www.rfa.gov.au )

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and also through archaeological research. Particular effort was directed to the assessment of environmental values, through the mapping of existing vegetation, and surveys of fauna, topography, climate, geology and soil. Relatively little research was done on the wood resources, as there was already extensive information available.

A large Geographical Information System (GIS) was developed to incorporate the various data. Decision-support models were then used to propose possible scenarios, identifying the areas of forest designated for protection or for commercial purposes (Figure 2). These scenarios were used as the basis for discussions and consultations between local government, industry, conservation groups, and Aboriginal Land Councils. The success of this process varied between states, difficulties in reaching consensus leading to drawn out negotiations (Dargavel et al., 1998). Final discussions took place between the state and Commonwealth governments, resulting in an agreement signed by both parties.

### OUTCOME AND POSITIVE LESSONS

The RFAs have produced a shift within the forestry sector towards ecologically sustainable forest management (Dargavel et al., 1998; Kanowski, 1997). An extensive system of conservation reserves has been established. In 2000, with 9 of the 10 agreements signed, the total area of forest in reserves had increased by nearly 40%, with a similar increase in the area of old-growth forest under protection (Davey et al., 2000). Forests outside of the reserves are available for wood production or other uses, but these are subject to substantial regulation and control. One outcome of this zoning process has been to increase security of tenure for the timber industry.

Perhaps more fundamentally, the RFA process represents a major shift in the way that forestry has been conducted in Australia. Thus, rather than focusing purely on timber values, a more holistic view of forests has come to prevail, in which forests are managed for all their values and uses (Kanowski, 1997). Indicative of this is the fact that this was the first time there had been an attempt to assess the history of indigenous occupation and of contemporary Aboriginal associations with forests (Dargavel et al., 1998).

Also significant has been the institutionalisation of participation and efforts towards consensual decision-making. The participation of Aboriginal groups was prioritised, and the signed agreements include measures to ensure their continuing involvement in forest management. For example, the agreements of the Central Highlands and East Gippsland both undertake to establish formal consultation mechanisms with local Aboriginal groups.

### PROBLEMS

The RFA programme is a product of the history of forest management and conflict in Australia (Dargavel et al., 1998; Kanowski, 1997). In recent years, this has been dominated by the disputes between the timber industry and conservationists. Consequently, the concerns of these two sectors, in particular those of conservationists, have been prioritised in the RFA process.

That environmental values were to be prioritised became clear at the outset of the process, Australia's National Forest Policy

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Statement stating that its goal was for "*ecologically* sustainable forest management" (emphasis added). In the international context, the more general term "sustainable forest management" prevails. Thus, Australia seems to be marginalising or excluding social issues from forest management (Dargavel et al., 1998; Kanowski, 1997). This emphasis on ecologically sustainable management continues a tradition within Australian forestry in which the role of Aboriginal peoples in managing their natural resources has been ignored. That such views prevail is also apparent from the use of the categories of "wilderness" and "old-growth forest" in the RFA programme, concepts which completely negate the long history of Aborigines in the landscape and their role in shaping it (Dargavel et al. 1998).

Thus, within the RFA programme the conservation of wilderness areas and of biodiversity has taken precedence over social and cultural values, and in particular, Aboriginal values. This was apparent during the assessment phase, in which the greatest effort was directed to biodiversity assessments. In comparison, relatively little attention was paid to social issues, both with respect to Aboriginal peoples and other rural communities. Insufficient time was allowed for extensive consultations, and the community participation that was implemented served to raise people's expectations that their needs and aspirations would be reflected in the final agreements. However, the degree to which this took place was unclear, because of the top-down nature of the decision-making process and a lack of transparency. This led to feelings of disillusionment among participants in the consultation process (Dargavel et al., 1998; Mayers and Bass, 1999; Engels, 2000).

Shortcomings in the social assessments were most critical in the consultations with Aboriginal groups, even though some efforts were made to prioritise their concerns. Difficulties were encountered because of the widespread lack of trust of the government among Aboriginal peoples, a result of the long history of rights abuses and neglect, and the fact that some of the relevant information is confidential (Davey et al., 2000; Mayers and Bass, 1999). The limited time for consultations also did not take into account particular features of Aboriginal culture. The highly localised nature of traditional interests in natural resources, and the diversity of rights, means that a large number of groups may have to be consulted when making decisions about an extensive area. For example, those people living in an area may not represent those with custodial rights over an area or particular resources (Lane, 1999). Furthermore, the diverse and sometimes conflicting views of Aboriginal peoples were not fully recognised, it being assumed that they would have common or homogeneous interests (Engels, 2000). While the RFAs represent a major step forward in attempting to integrate indigenous values into forest management, insufficient time and resources were put into this process.

A related issue is that serious consideration of how to recognise native title has not occurred within the context of forestry management. This is in spite of the continued existence of native title claims in Forest Reserves (Lane, 1999), and the Commonwealth's Native Title Act of 1993 which recognised that native title rights could be claimed (Dargavel et al., 1998). Rather, the RFAs side-step the issue. While each of the Agreements undertake to implement various processes enabling the

participation of Aboriginal groups in forest management, they also state that this is not intended to influence either current or future Native Title claims in any way.

Recognition of proprietary rights is essential in enabling marginalised people to negotiate effectively, and to benefit economically from forestry activities. As Lane (1999) highlights, security of tenure gives Aboriginal people the negotiating collateral to ensure that they are properly consulted and have an equal role in decision-making. For Aboriginal groups, a number of factors hinder their effective participation in forest management, including cultural and language barriers, geographic isolation, lack of resources, and unfamiliarity with the decision-making process. Therefore, particular effort is needed to facilitate their participation, and recognition of native title could be an important means of encouraging this.

A final criticism of the RFA programme has been its narrow focus, since the agreements only relate to public land and to those regions that had been at the centre of disputes over wood production. Historically, Australian forest policy has focused almost exclusively on public lands, private land being regarded primarily as an agricultural domain. This has served to discourage people from conserving or planting trees on private land, where trees have all too often been regarded as a "woody blight" (Dargavel et al., 1998: 26). Deforestation and poor agricultural practices in these areas have resulted in widespread land degradation and salinisation. The RFA process has continued in this tradition, being only concerned with public land, while private lands, which include huge forest and woodland areas, have been by-passed in this process. There is a need for a more integrated approach to land use. While there has been some improvement, with programmes to promote plantations on private land and to encourage tree planting, this has not gone far enough. Forestry policy should consider all of Australia's forests and woodlands, and there needs to be better integration of forest and agricultural policies (Dargavel et al., 1998).

### LESSONS LEARNT

The RFA process represents a major attempt to address the sustainability of forest use in Australia (Dargavel et al., 1998). There was a high level of commitment to this programme, with extensive time and resources being allocated to its implementation. Consequently, it has served to improve understanding of the country's forest resources, and most fundamentally, has increased recognition of their diverse values.

However, the context of this programme meant that the interests of the wood industry and of conservationists took precedence over a broader consideration of social issues, including Aboriginal rights and the needs and aspirations of other rural communities. Consequently, the main beneficiaries have been the conservationists and wood-chip export companies.

The time and expense involved in developing the RFAs demonstrates the commitment that is needed for such a process to be undertaken in a meaningful way. Each of the agreements involved at least 50 assessment projects (Davey et al., 2000), and the process of negotiating a final agreement was very drawn out in some cases, with the last of the 10 Agreements being signed 9 years after the

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start of the process (Dargavel et al., 1998).

In spite of this, insufficient attention was paid to social assessments. Time and effort is needed to ensure the meaningful participation of all sectors of society, in particular, that of marginalised groups such as Aboriginal peoples. This participation also needs to be backed up by an equitable legal system, in which native land rights are recognised (Lane, 1999).

The RFA programme also demonstrates the importance of transparency at all stages. Despite the efforts that were put into consultation with the various stakeholders, there was a feeling that this did not feed into the decision-making process. The extent to which this was true is unclear, but it resulted in some disillusionment among participants.

This case study also highlights the importance of taking a holistic view of land use planning and management. Forest management, and in particular environmental issues, cannot be adequately addressed by focusing only on some of the resources – in this case, those on public land. Integration of forest policy for public and private lands would greatly facilitate the sustainable management of their resources.

While significant progress has been made in Australia's forest sector, a full review of the successes and failures will have to await the outcome of the 5 year appraisals of the Agreements, which are not yet available.

## ECOLOGICAL-ECONOMIC ZONING IN BRAZIL

### INTRODUCTION

What has been described as "one of the largest experiments in tropical frontier LZ [land use zoning] in the world" (Mahar and Ducrot, 1998: 1) took place in Brazil. Beginning in the late 1980s, agro-ecological zoning was implemented in the Amazonian states of Rondônia and subsequently Mato Grosso in an attempt to bring chaotic land use patterns under control. This has been a controversial experiment with mixed results. However, this approach to land use planning is being continued, and ecological-economic zoning (EEZ) has been extended to the whole country.

### ZONING OF THE AMAZON

The rationale behind the use of zoning in the Amazon region was to try and control land use and to consolidate conservation areas. Since the 1960s, development of the Amazon had been pursued through constructing thousands of kilometres of roads, and encouraging settlers and investment in the region. The outcome of this was uncontrolled land use and rapid deforestation (Mahar and Ducrot, 1998; Redwood, 1993).

In an attempt to address this situation, a zoning scheme for the state of Rondônia was proposed, which sought to categorise the land according to its potential use. A preliminary plan was drawn up in 1987, at a scale of 1: 500,000 (Figure 3). This was based on existing maps and previously collected soil data. Under this plan, the state was divided into six macro zones (see table 1). Agriculture and ranching activities were largely restricted to areas with better soils along the main highway (zones 1-3).

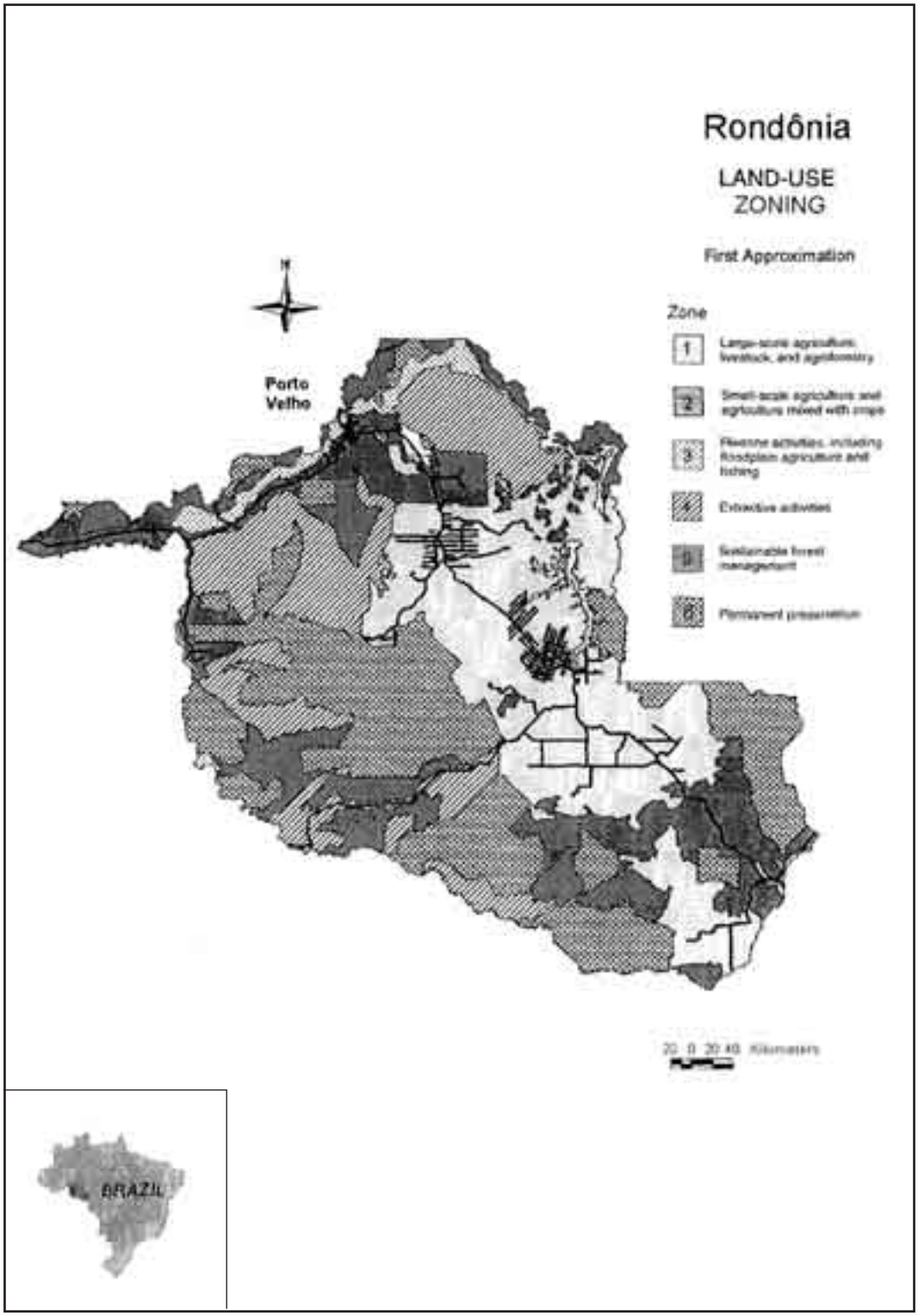



Figure 3. Rondonia Land-use Zoning - First approximation ( Source: State Government of Rondonia, 1998. In: Mahar & Ducrot, 1998: 6 )

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This was where most of the rural population was found. The remaining land, representing 56% of the land area, was for extraction, sustainable forest management, conservation areas and indigenous reserves. The plan passed into law in 1991 (Mahar and Ducrot, 1998).

This plan became a central component of PLANAFLORO, the Rondônia Natural Resource Management Project. This was initiated in the early 1990s with funding from the World Bank. PLANAFLORO sought to provide a framework for sustainable development within the state, and this was done on the basis of the zoning plan. In settled areas (zones 1 and 2), the project aimed to promote the intensification of agriculture in order to reduce the incentive to clear more land. In areas of low population and with little deforestation (zones 4-6), the aim was to establish and protect the borders of conservation areas, indigenous areas, public forests and extractive reserves (Mahar and Ducrot, 1998).

Support for the zoning was mixed, depending in part on whether people gained or lost from the land allocation. Some communities saw it as a way to protect their interests. For example, extractivists welcomed zoning because it enabled them to gain legal rights over the forest areas which they had been managing. The demarcation of extractive reserves and granting of long-term

| ZONE | % STATE LAND AREA | CHARACTERISTICS | PRESCRIBED LAND USE |
|---|---|---|---|
| 1 | 28 | Small/medium holdings<br>High deforestation<br>Better soils | Large-scale agriculture<br>Livestock<br>Agroforestry |
| 2 | 14 | Small/medium/large holdings<br>Medium deforestation<br>Medium/poor soils | Small-scale agriculture<br>Agriculture mixed with tree crops |
| 3 | 3 | Sparse population<br>Alluvial soils | Riverine activities, including floodplain agriculture and fishing |
| 4 | 16 | Mainly public lands<br>Sparse population<br>Low deforestation | Extractive activities |
| 5 | 11 | Mainly public lands<br>Sparse population<br>Low deforestation<br>Poor to good soils | Sustainable forest management |
| 6 | 29 | Public lands<br>Very sparse population<br>Very low deforestation<br>Fragile ecosystems | Permanent preservation, including conservation units and indigenous reserves |

Table 1: Land use zoning in Rondonia ( from Mahar and Ducrot, 1998 )

usufruct rights to their resources enabled these groups to resist intrusion from ranchers and loggers (Mahar and Ducrot, 1998).

Loggers and ranchers were among the principal opponents of zoning, concerned that it would place excessive constraints on their expansion. There was also resistance from small farmers who found themselves in areas earmarked for conservation or sustainable forest management. In addition, many local politicians did not support the zoning plans. For them, the large areas allocated for conservation and indigenous areas represented an unproductive use of the land, resulting in a loss of revenue for the state.

Opposition increased with the implementation of a second zoning exercise. The initial zoning plan had been regarded as a rough guide, and this had helped to reduce opposition because it was expected that the boundaries would be altered. The second zoning began in 1992, aimed at producing a more detailed plan, with maps on a scale of 1: 250,000, and for some critical locations, 1: 50,000 (Mahar and Ducrot, 1998). This was based on new satellite imagery, more extensive soil sampling and economic and social data.

These zoning exercises resulted in the protection of extensive areas of land. Nearly 10% of the land area was allocated for conservation and about 20% covered by indigenous reserves. Success in this area was facilitated by the high national and international visibility of forest protection and indigenous rights. Pressure from environmental and human rights groups, both from within Brazil and elsewhere, and from international donors, helped to ensure that attempts to reduce the areas allocated for conservation and indigenous reserves were unsuccessful. The subsequent protection of these areas has been helped by the physical demarcation of their boundaries and the complete prohibition of many land use activities (Mahar and Ducrot, 1998).

However, elsewhere in the state, forest clearance continued at a rapid pace, the rate of deforestation increasing between 1988 and 1996 (Mahar, 2000). One factor encouraging people to clear the forest was their hope that this would result in the re-zoning of these areas. Implementation of the second stage of zoning experienced many delays, creating an atmosphere of uncertainty in which people sought to stake their own land claims.

Clearing also took place in extractive reserves, because of the difficulties of monitoring to ensure that only extractive activities took place. The expansion of the road network, enabling easy transport to market, meant that agricultural activities could be more profitable than extractive activities, particularly with the declining rubber prices experienced in the 1990s (Mahar and Ducrot, 1998; Rosendo, 2003). Twenty one extractive reserves were established, covering 1 million hectares. However, only a few of these implemented utilisation plans for their management, a legal requirement for their establishment. This was because people viewed these reserves as a way of gaining land title. Therefore, a strong sense of individual ownership of the land remained, and people did not subscribe to the communal management plan (Rosendo, 2003).

Opposition to zoning continued among loggers and ranchers, because of the restrictions placed on their activities. They saw zoning as a constraint on development, an argument that also found support among many local politicians.

# 5. THE CASE STUDIES

## BRAZIL continued

### PROBLEMS WITH PLANAFLORO

A fundamental problem with zoning in Rondônia was the lack of co-ordination between the federal and state governments. This resulted in the federal government proposing settlement projects in zones allocated for extraction or sustainable forest management (Mahar and Ducrot, 1998).

A further problem with the implementation of zoning was that insufficient time and effort was put into gaining political support for the process. The dilemma faced by the planners was how to find a common agenda for stakeholders with divergent priorities and needs. These included Amerindian populations, ranchers, loggers, small-scale farmers as well as NGOs and local politicians (Garrison and Aparicio, n.d.). However, rather than confronting this issue, it was avoided. Thus, little effort was made by the government to involve stakeholders in the zoning process, and the extent of their competing interests was not fully recognised (Lele et al., 2000; Mahar and Ducrot, 1998). Consequently, the project met with a great deal of opposition, particularly in its early years. Most crucially, local business associations, including logging and ranching interests, were not given any formal role and so were excluded from the zoning process. Their powerful political position greatly increased resistance to the project.

A review was conducted mid-way through the project in response to this opposition (Mahar and Ducrot, 1998). This highlighted the project's failure to effectively incorporate stakeholders' views into the decision-making process. In particular, there was a lack of effective community participation, and the absence of a public information programme meant that there was limited understanding of zoning at the community level. The initial zoning had also not taken pre-existing land tenure into account. Furthermore, a lack of political commitment to the environmental and social aspects of the programme, as well as weak technical capacity at the state level, had resulted in serious delays in the establishment of conservation areas and in the provision of assistance to indigenous communities.

As a result of this review the project was restructured, and some improvements made. This included efforts for broader and more effective participation, and the development of more community level initiatives. However, this did not succeed in gaining a broad political consensus on zoning, particularly within the powerful ranching and logging sector (Mahar and Ducrot, 1998). The consequences of this were increasing opposition to zoning, resulting in legal challenges being made to the allocation of land and to the zoning law. These succeeded in modifying the law, allowing tenure to be granted regardless of zoning specifications, so weakening the whole basis of zoning (Lele et al., 2000).

### LESSONS LEARNT

A review of land use planning in Rondônia concluded that although zoning is a useful instrument for guiding land use, it is "far from being a panacea" (Mahar, 2000: 126). Zoning is often portrayed as a purely technical exercise, which can enable objective decision-making. However, political and economic factors are also crucial, since zoning involves a process of negotiating among different, and often

conflicting, sectors of society (Kainer et al., 2003; Lele et al., 2000; Mahar and Ducrot, 1998). The planners in Rondônia, in under-estimating the importance of these factors, failed to gain wide political support for zoning and consequently, its legal basis was under-mined.

A further conclusion of this project was that for environmental and social objectives to be met in land use planning, government commitment to these is essential (Lele et al., 2000). Those who "win" in negotiations over land use are typically those who are politically or economically dominant, while marginalised peoples and environmental issues are all too easily side-lined. That this was not able to occur was only a result of the high-profile nature of Amerindian and conservation issues elsewhere in Brazil and internationally.

The other main lesson that was drawn out of the experiences from this project was the importance of participation. Limited participation in the early stages of zoning and exclusion of the private sector throughout its implementation resulted in wide-spread opposition. Participation of all parties is needed from the outset and this should be a continuous process rather than a one-off event (Mahar, 2000). Furthermore, for participation to succeed, a political environment is needed in which there is openness to consult and transparency, as well as sufficient financial and institutional resources. Creating such conditions is clearly no easy task, given the politically highly-charged nature of land tenure issues in 'frontier' areas such as Amazonia. However, this is no reason to avoid this challenge. International donors have a special responsibility to ensure that socially and politically marginalised groups, such as indigenous people, are able to participate equitably, in conditions free from fear of retribution, threats or harassment. Sufficient time is also essential for a meaningful participatory process, particularly in the case of traditional populations who are geographically dispersed, and have a weak status in Brazilian society (Garrison and Aparicio, n.d.; Redwood, 1993). Finally, if participation is to result in a negotiated outcome, conflict resolution and consensus building skills are essential (Lele et al., 2000).

## ZONING IN ACRE

Some of the lessons learnt from PLANAFLORO are being applied to zoning initiatives elsewhere in Brazil. Most notably, the Government of Acre has highlighted the importance of participation, equity and sustainability in its zoning efforts. Furthermore, it has sought to broaden the range of values for which its forests are managed, including non-timber products, agroforestry and extractive systems as well as timber products [6].

The state of Acre has extensive forest resources. In 2000, only 10% of its area had been deforested, a result of its relative isolation in the west of the Brazilian Amazon. Over one third of the state's land area is under some form of protection, this area including extractive reserves, national parks, and indigenous lands. A large proportion of its population depends on the forest for their livelihood, including Amerindian communities and extractivists (rubber-tappers). The rubber-tappers have been behind the strong grass-roots social movement that developed in the 1980s, and this has been a significant factor in shaping the present government's forest policies.

Acre's forest policy is based on an alternative vision of development, one that is based on the use and management of its standing forest, rather than the conversion of this forest to

6. The following section is based on Kainer et al. (2003).

# 5. THE CASE STUDIES

## BRAZIL continued

agriculture, ranching or other uses. The self-styled "Government of the Forest" [7] considers extractivists as key assets in forest management and conservation, and has sought to achieve sustainable development through supporting their activities, rather than following the traditional model of encouraging large corporate producers. Non-timber extractive activities have been supported through research, extension and policy initiatives, for example, providing additional payments to rubber-tappers.

As part of the process to develop a sustainable forest management strategy, an ecological-economic zoning exercise was implemented in 1999, to assess the state's natural resources, environment and socio-economic factors. As in Rondônia, land use planning was aimed at intensifying land use in areas already subject to deforestation and with established agriculture and settlements, in order to reduce deforestation rates in the state's remaining forest areas. This aimed for broad participation, although the involvement of communities living in remote parts of the state was limited. Consultations were held with local government, the private sector and civil society, local and regional leaders were interviewed and public forums were held. The resulting plan was defined as a preliminary draft, to be used as the basis for subsequent negotiations.

The government also sought to establish 15% of the state's area as production forest. Considerable effort has been aimed at establishing production forests alongside the two major highways in the state, which are being paved as part of the federal government's Avança Brasil programme. The hope is to minimise the deforestation and uncontrolled land use that usually accompanies road developments.

The development of the timber industry has been a contentious issue within the state, because there is a history of conflict between extractivists and logging companies. However, increasingly extractivists and other forest dwellers have been converting the forest to agriculture and other uses, in part as a result of declining rubber prices. Consequently the government has supported the development of the timber industry as an economic alternative for these communities, encouraging small-scale enterprises involving rural people. The state has also been seeking Forest Stewardship Council certification for its production forests, and this was granted to some areas in 2002 and 2003.

Whether Acre will be able to withstand the growing pressure to exploit its resources more intensively remains to be seen. In particular, the viability of sustainable timber production is uncertain. Doubts have been raised because of the high costs of certification, difficulties of monitoring, and the huge pressure for increased logging that will result with the extension of the road network. In addition, efforts for sustainable forest management are being undermined by the availability of cheap timber. In Acre extensive areas of land are being cleared for agriculture, producing a glut of cheap timber. The extent of this problem is clearly illustrated by the fact that in 2001, only 6% of Acre's timber came from managed forests, the remainder coming from areas being converted for agriculture. This pattern of timber supply is not limited to Acre, but is found throughout Brazil. In 2003, 75% of the country's timber came from land clearance (Macqueen, 2003 ).

7. Jorge Viana, a forester by training, was elected as governor in 1998, and coined this term for his government (Kainer et al., 2003:875).

### LESSONS LEARNT

Experiences of zoning in Rondônia highlighted the importance of having full and meaningful participation throughout the zoning process and of recognising the political nature of the process. Zoning cannot be regarded purely as a technical exercise. Political and economic factors are paramount, and need to be dealt with head on in order to build consensus.

The ecological and social sustainability of zoning in Brazil will depend on the political commitment made to these issues. Thus, for zoning to be effective as a tool to reduce deforestation, the long-term provision of mechanisms for monitoring and control is necessary (Indufor Oy, 2000). Furthermore, for social issues to be integrated into zoning initiatives, their importance needs to be fully recognised at government level. In Acre, community participation and also effective local self-governance were both highlighted as crucial to the success of zoning efforts (Kainer et al., 2003). The approach taken by the state government is a laudable attempt to prioritise the needs and concerns of forest-dependent communities. However, a more equitable approach was only possible here because of the existence of strong social movements.

## CAMEROON'S *PLAN DE ZONAGE*

### BACKGROUND

Cameroon has undergone a major re-organisation of its forestry sector over the last two decades, an important element of which was a national zoning exercise. Reform of the forestry sector began in the late 80s, when the Cameroon government, assisted by the United Nations Development Programme (UNDP) and the FAO, drew up a Tropical Forest Action Plan. Subsequently, a process of policy reform was implemented, sponsored by the World Bank, and this resulted in the new Forest Law of 1994 (Law 94-1) (Ekoko, 2000; Silva et al., 2002).

This law included changes to forest taxes and regulations relating to the allocation of concessions, including the requirement for management plans, and new provisions for community forestry. Implementation of the forest law was based on a national zonation plan, referred to as the *plan de zonage*. This plan proscribed land use options for different zones within the moist forest areas of the country. Under the law, a fundamental distinction is drawn between the permanent (PFE) and non-permanent forest estates (NPFE), the former being defined as "lands that are used solely for forestry or as a wildlife habitat" and the latter as "forest lands that may be used for other purposes than forestry" (Ooste, 1999). One requirement of the forestry law is that at least 30% of the total land area of Cameroon is classified as PFE, and that this represents the ecological diversity of the country (Pénelon et al., 1998). The permanent and non-permanent forest estates are divided into the following categories (Lescuyer, 2003):

# 5. THE CASE STUDIES

## CAMEROON continued

- Permanent Forest Estate (PFE) (*forêts permanentes*)

  State forest (*forêts domaniales*) – the private estate of the state

  - Production forest (*forêts de production*) for timber extraction
  - Protected areas and forest reserves - for the protection of wildlife and ecosystems

  Council forest (*forêts communales*) – under the control of a local council

- Non-Permanent Forest Estate (NPFE) (*forêts non permanentes*)

  Communal forest (*forêts du domaine nationale*) - neither gazetted nor subject to management plans – mostly managed according to local "traditional" rules

  Community forests (*forêts communautaires*) - leased to community organisations, and used according to management plans

  Privately owned forests (*forêts privées*)

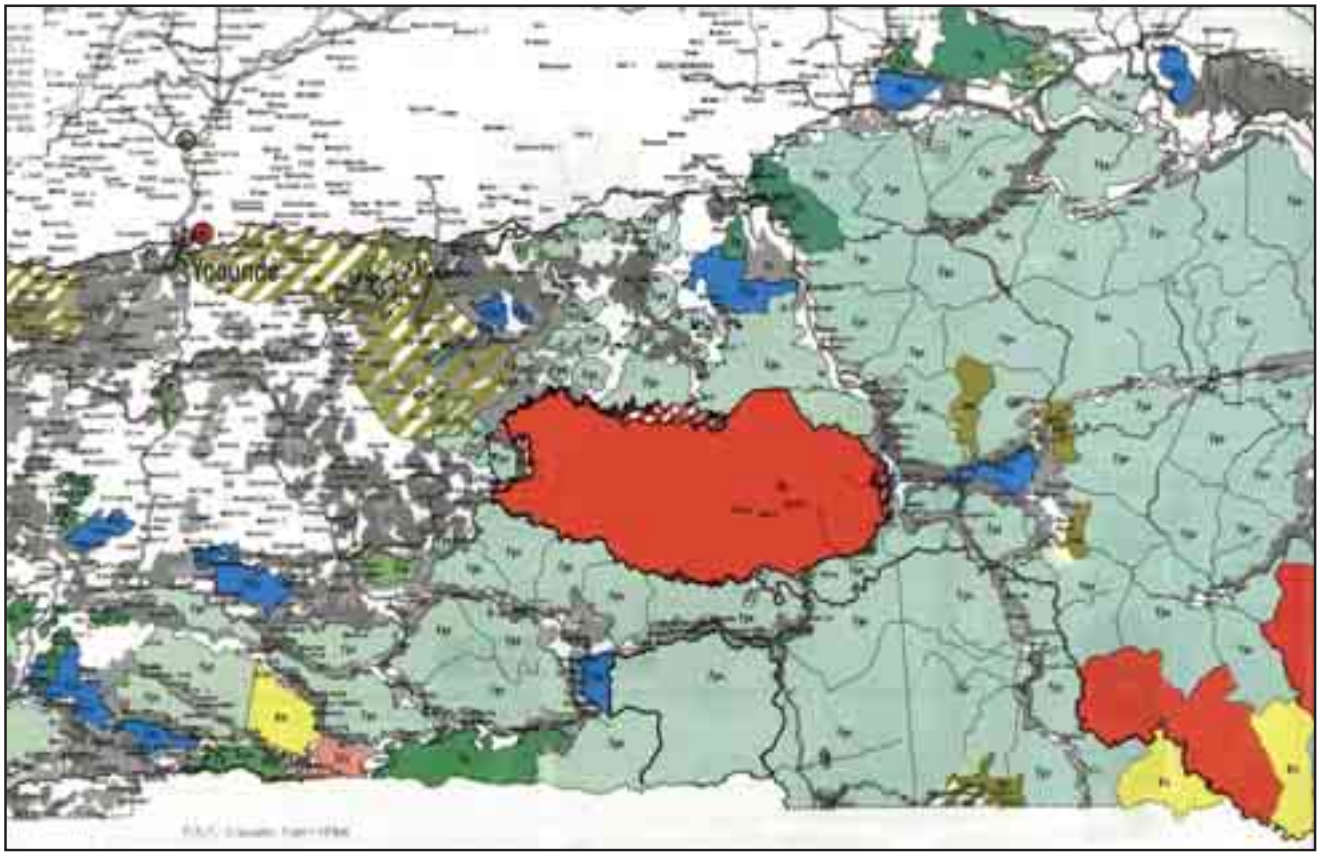



Figure 4. A section of the *plan de zonage* for southern Cameroon. Rf indicates protected areas, Fpx is production forest, and FCc is council forest.

The NPFE is land that may be converted to non-forest uses, and so it is in this category that all agricultural activities must take place. Communal forests are defined by default, this category including those forests that are not defined as State, Council or Private forests (Ooste, 1999). Within this category, communities can apply for community forests of up to 5,000 ha, under 25 year leases, to be reviewed every 5 years. Communities can exploit these forests for timber extraction or other purposes, on the basis of a management plan. Hunting territories, of up to 5000ha., can also be established within the NPFE (Lescuyer, 2003).

The PFE, as its name implies, is designated to remain forested in the long-term. Within the PFE, shifting cultivation is forbidden, and the use of forest resources is restricted. Within production forests (and also in the NPFE) hunting and gathering activities are allowed for subsistence purposes only, and within the various categories of protection forest, such activities are banned (Lescuyer, 2003). Council forests are under the control of the mayor and local council, to be managed according to management plans approved by the Ministry of Environment and Forests. They are defined as "any forest that had been classified on behalf of a local council or has been planted by the local council" (Ooste, 1999). In practice, these forests have been regarded as production forest.

Timber extraction is possible either through forest concessions, *Unités Forestières d'Aménagement* (*UFA*), or sales of standing volume, *ventes de coupe*. *UFA*s are available within production forest for a period of 15 years, up to a maximum size of 200,000 ha. *Ventes de coupe*, which can be granted both in the PFE and NPFE, are reserved for nationals, and either cannot exceed 2,500 ha or a given volume of standing timber (Brown, 1999; Plouvier and Eba'a Atyi, 2000).

In 1993, a *plan de zonage* was drawn up for southern Cameroon, undertaken by the Department of Forests, with the assistance of the Canadian consultancy firm, Tecsult Inc. (Plouvier and Eba'a Atyi, 2000) (Figure 4). The Plan was developed from a series of base maps showing: areas of human occupation and cultivation; ecological types; soil characteristics and tendency for erosion; agricultural potential; accessibility; forest resources (i.e. timber); and other resources (e.g. minerals). Much of this information, including the areas of human influence, was gathered from the interpretation of satellite imagery and aerial photos. Through superimposing this information, the *plan de zonage* was drawn up, at a scale of 1: 200,000 (Pénelon et al., 1998).

In the resulting plan, the vast majority of the land area was defined as State forest (Figure 5). The total area within the plan was 14 million ha, of which about 9 million ha were designated as PFE, two thirds of which was production forest (Lescuyer, 2003). 16 small areas of Council Forest were depicted, together with a few existing Private forests (Ooste 1999). Strips of Communal forest were established along main roads, and also in buffer zones around villages. This was to provide agricultural land for local people, supposedly allowing for future population growth (Lescuyer, 2003).
The buffer zones allowed 3.6 ha per person. This was calculated on the basis that each person could cultivate 0.3 ha per year, with a 5 year fallow period, i.e. 1.8 ha in total.
An equal area was then allocated for other purposes, such as the extraction of forest resources (Vermeulen, 1997).

# 5. THE CASE STUDIES

## CAMEROON continued

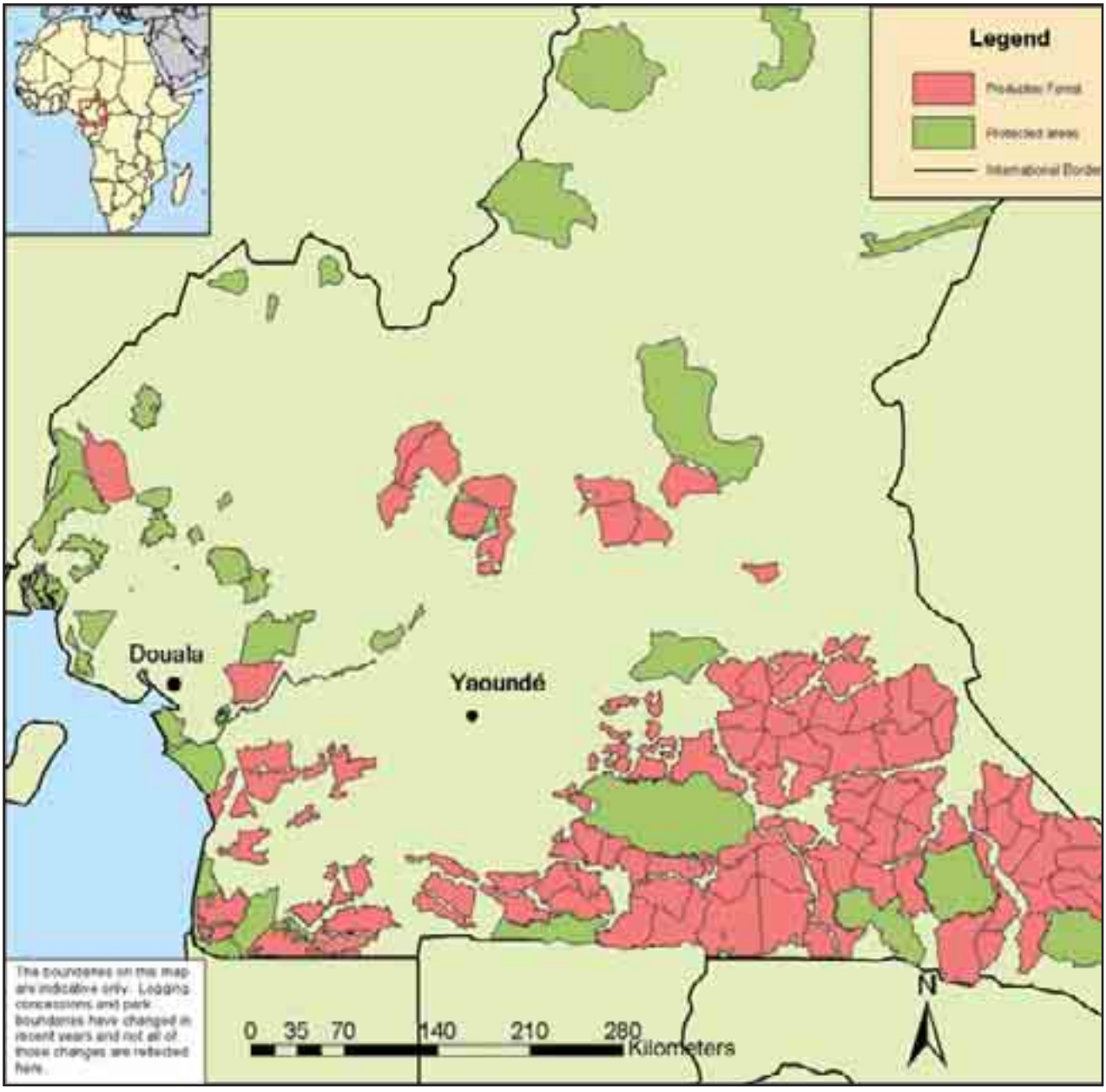



Figure 5. State forest ( protected areas and production forest ) in Cameroon. The original *plan de zonage* was implemented in the southern portion of the country, in the region running from the coast to the east of the country, to the south of Douala and Yaounde.

The *plan de zonage* was conceived of as a preliminary zoning plan, to be converted into a definitive zoning system through the official reservation of the permanent forests. This, in theory, should entail a process of consultation with local communities to determine the boundary between the permanent and non-permanent forest estate. In response to any claims arising from this, a classification committee would decide whether to modify the boundaries. Once the boundaries of the PFE are defined, forest management plans must be drawn up for all forests within this zone. The Forestry Law requires that the local communities are involved in the development and implementation of these plans.

### PROBLEMS WITH THE *PLAN DE ZONAGE*

The outcome of the *plan de zonage* clearly reflects the priorities of the government and the funders of this process, which were primarily revenue from timber production, and to a certain extent, forest conservation. In contrast, the priorities of local people, and forest-dependent communities, were given little attention. This is apparent from the final designation of zones, in which nearly 65% of the total area being zoned was assigned to the PFE, and the majority of this area designated as production forest. Furthermore, the best areas of forest were more often than not included within this zone (Brown, pers.comm.; Vermeulen, 1997). Thus, local people were excluded from owning or managing for economic purposes nearly two thirds of the land area, leaving a severely limited area of forest for cultivation or community forests. Even within these areas, community interests were still in competition with industry, since *ventes de coupe* are available within the NPFE.

This outcome is not altogether surprising, given that under the contract for drawing up the *plan de zonage*, payment was made purely on the basis of the outputs produced. This discouraged widespread public consultation, because of the costs that such an approach would entail. Consequently, the approach taken produced an outcome that did not reflect the requirements of the majority of Cameroonian society (Brown, 1999).

Indeed, the *plan de zonage* was drawn up with little participatory involvement, and on the basis of limited and inadequate information regarding customary territories and existing use of land and forest resources (Burnham, 2000; Vermeulen, 1997). Consequently, the plan bore "little relationship to the systems of land usage actually practised in Cameroon" (Brown, 1999), with some villages being situated in the middle of areas of PFE.

The areas designated as NPFE were identified on the basis of satellite imagery and aerial photos. Such a method does not allow for the identification of areas under agroforestry systems, old fallows, nor those areas used for resource extraction. Consequently, many areas used by local populations for hunting, fishing, and harvesting forest resources were included within the PFE, as were old fallows and agroforestry systems, including cocoa plantations (Lescuyer; 2003, Vermeulen, 1997). Some resource extraction is allowed within the PFE, provided it is for subsistence purposes, but all such activities are banned from the various categories of protected area. Cultivation, including agroforestry, is completely prohibited. Therefore, many rural populations found their activities severely restricted under this zonation.

# 5. THE CASE STUDIES

## CAMEROON continued

The plan also took little account of the dynamic nature of land use, for example, disregarding patterns of shifting cultivation and the shifting nature of settlements. Furthermore, although buffer zones were allocated around villages for future agricultural needs, these were insufficient. One reason for this underestimation is that projections for future land needs were based on unrealistic assumptions regarding the intensification of agriculture (Vermeulen, 1997). In addition, very little consideration was given to other needs, such as resource extraction, hunting or agroforestry. Such activities can take place within community forests, but these areas have to be defined with the NPFE, and so compete with agricultural needs as well as *ventes de coupe*. The buffer zones were not large enough to meet these various needs. Indeed, the restriction of community forests to the NPFE is indicative of the marginalisation of local people's systems of forest exploitation (Brown, 1999), the system clearly favouring the traditional models of large-scale timber production. Clearly, the underlying assumption is that forest use will decline, and there will be a shift to more intensive, settled agriculture.

Particularly disadvantaged were the Pygmy peoples, the Baka, Bakola and Bagyéli, as no allowance was made for their particular way of life. Those living within the forest have found that their territories have been included in the PFE, within which they are unable to apply for community forests. Even should they be able to apply for this, the maximum size of 5,000 ha. for community forests is not sufficient to allow for a hunting and gathering lifestyle. Even those groups who are officially "settled" in villages continue to make extensive use of forest resources, but this was not recognised.

The emphasis was clearly placed on timber production and settled agriculture, local forest management systems being given scant recognition. Even community forests, initially at least, were regarded as being primarily for timber production, with little consideration given to developing alternative strategies, for example, the management of wildlife resources or agroforestry (Brown and Schreckenberg, 2001).

A further problem was that the *plan de zonage* was supposed to be a preliminary plan, but in practice, it was often taken to be the definitive plan, and one that was not open for discussion (Lescuyer et al., 2001; Ooste, 1999). Changes to the PFE boundary are possible during the registration process, and modifications have been made. However, there are restricted conditions under which changes to the zoning plan can be made, with limited time and resources allowed for public consultation, resulting in a bias against rural populations. Consequently, the forest resources of many communities have been absorbed into the state forest (Lescuyer, 2003).

The division that has been made between the PFE and NPFE has created a division between the administration and local populations, encouraging the development of competing land use strategies (Lescuyer et al., 2001). For example, the process of determining the boundary between the PFE and NPFE promoted the clearance of forest areas by local populations, as they sought to lay claim to these areas and so push back the proposed boundary of the PFE (Lescuyer et al., 2001). Furthermore, the fact that there are differences in legislation between the two zones, with

tighter regulations existing for the PFE, has encouraged exploitation of the forest within the NPFE (Brown, pers.comm.). As mentioned above, this has resulted in competition between industry and local communities over land and forest resources. Greater protection for community interests is needed, for example, through excluding industry from within the NPFE (Brown, pers.comm.).

Thus, the *plan de zonage* created the perfect conditions for conflict over forest resources and, indeed, conflicts between communities and logging companies, local and national authorities, and between communities, have become endemic and widespread within Cameroon's forests.

A more integrated approach to forest management is needed, in which each of the various zones is seen as part of a larger whole and managed as part of this wider landscape. Without such a shift, within the NPFE community forests could come to be "scattered like islands in a sea of unregulated forest resource use" (Brown and Schreckenberg, 2001:7). Similarly, conservation zones and agricultural areas could become islands in an expanse of production forest. A more integrated approach would encourage a sense of the common ownership of resources, and avoid a situation in which stakeholders retreat to their respective areas of management within the NPFE or PFE (Lescuyer et al., 2001).

## LESSONS LEARNT

A fundamental problem with the process of zoning in Cameroon is that timber interests were prioritised above the needs and priorities of the country's rural and forest-dwelling populations. Consequently, there was limited participation of local people in the zoning process, and the resulting plan was heavily biased against them.

Not only did the resulting plan limit the amount of land available to local people, even within this area they were competing with commercial interests. The underlying assumption of the whole process was that the future for rural people lay in more intensive agriculture. Thus, they were given limited opportunities to participate in forest management or to maintain traditional ways of life.

Some advances have been made in increasing community participation in forest management in recent years, in particular with greater effort being put into the establishment of community forests, and improving public education strategies. However, this has not gone far enough. More fundamental reform is needed, examining the forest categories and the associated legislation which provide the foundations for the country's forest management strategy. This would enable ways to be explored of recognising the resource rights of forest-based communities, such as the Pygmy peoples, so providing them with opportunities to maintain their traditional way of life. For example, this could be through allowing larger community forests to be granted, to make sustainable resource management feasible, or through introducing the concept of traditional territories, as used in Brazil.

# 5. THE CASE STUDIES

## MAPPING INDONESIA'S FORESTS

### INTRODUCTION

Indonesia has undergone various stages of zoning and forest mapping, and implemented numerous laws and regulations in an attempt to control its forest resources. The majority of the land area has been classified as "State Forest Zone". Figures for the forest estate vary from 147 million to 119 million hectares, of a total land area of 189 million hectares (Fay et al., 2000). This land and its resources are the property of the state, lying under the jurisdiction of the Ministry of Forestry, and is designated for production, protection or conversion forest.

The traditional rights of forest-dependent communities to this land are given some recognition in law, but only as long as these do not come into conflict with state interests. Typically, state interests have been equated with timber exploitation, and the government's policy has been to exclude local communities from the forest land. Ignoring traditional rights has eroded local communities' incentives to manage the forest for the long term and engendered conflict. Further, the scale and remoteness of the area has overwhelmed the government's ability to enforce the law (Barber et al., 1994). Thus, there is a situation where the communities have lost the authority or incentive to restrict forest use, while the forest ministry lacks the capacity to do so. The outcome of this has been widespread unsustainable and illegal logging.

The failure of Indonesia's system of forest management provides a very strong argument for a change of approach, one in which equity for local communities is a central principle (Barr, 2001). There have been repeated calls from experts and communities to re-evaluate the classification of land in Indonesia, enabling concentration of resources on a smaller area, and to recognise traditional systems of forest management. As yet, these have not been heeded, and the country continues to head the list of nations destroying their tropical forests.

### THE DEVELOPMENT OF INDONESIA'S FOREST POLICY

The category of State Forest, and the assumption of state ownership, was introduced during the colonial era. The Agrarian Acts of 1870 declared that all lands without certified ownership, or not under constant cultivation (which included fallow swidden land, and forests used for hunting and gathering), belonged to the state. This set the stage for the development of forest policy within the country. Nearly a century later, the 1960 Basic Agrarian Law (of the Indonesian Republic) reiterated this principle. Under this law, customary rights (*adat*) were recognised, although they had to be registered, a requirement of which many indigenous communities remained unaware of (Moniaga, 1993). However, state sovereignty took precedence over these (McCarthy, 2000).

Suharto's "New Order" government (1966-1998) further strengthened the state property regime. In 1967, the Basic Forestry Law (No.5/1967) was passed, under which "all forests within the territory of the Republic of Indonesia, including the natural resources they contain, are taken charge of by the state" (McCarthy, 2000: 105). The Law's provisions divided state forest into categories for timber production, conversion to agriculture and conservation. It also stated that *adat* rights to land and resources should be respected, unless these conflict with national or public interest (Peluso, 1995). During this period, national interest was equated with harvesting of timber,

and so customary land use practices were over-ridden (DFID, n.d.). The Suharto government granted extensive timber concessions, because of an urgent need for revenue, and by 1979 Indonesia was the world's largest producer of tropical timber (Chidley, 2002).

In the mid-70s a regulation was passed allowing the Directorate of Forestry to determine the extent of forest land (Chidley, 2002). Since this established the land that fell under its own jurisdiction, not surprisingly the Directorate classified 75% of the nation's land area as forest (Fay and Michon, 2003). However, no mechanism was established for registering this land or for co-ordinating its gazettement with other land registration. This contributed to conflict over land use in the coming years, with different departments allocating land for conflicting uses. For example, the holder of a timber concession granted by the Ministry of Forestry found that local people were using the land for agriculture, while other government departments had given permission for an alternative land use, such as estate crops or transmigration. (DFID, n.d.)

A series of mapping exercises were undertaken by the government, in order to better regulate and control the forest. The "Consensus Forest Land Use Plan" (*Tata Guna Hutan Kesepakatan, TGHK*) was implemented between 1981 and 1985 (McCarthy, 2000). This sought to define the State Forest Zone in the 22 provinces of the outer islands where this had not yet been undertaken (Fay et al., 2000). The forest zone was classified into the following categories:

- Protection forest – watershed protection; protection of soil erosion;
- Conservation forest – National Parks; Nature Reserves;
- Production forest - timber production, through selective or clear felling;
- Limited production forest - selective felling;
- Conversion Forest - clear felling and conversion to agriculture, settlements, etc.;
- Unclassified. (DFID, n.d.; Dick, 1991)

This classification was based on physical and ecological characteristics, including forest cover, topography, soil type, and climate. An erosion index was produced, derived from these criteria, in order to distinguish between protection, production and conversion forest. All land with slope over 45%, over 2000m in altitude, or of certain soil types was classified as protection forest (Moniaga, 1993). Important ecosystems and species, and areas with potential for tourism were considered in the process of classifying conservation forest (Fay et al., 2000). Unclassified land was that for which no information existed, but this usually came to be included in the conversion category (Dick, 1991). The designation of land was shown on maps at a scale of 1:500,000 (NRI, 1996) (Figure 6). Of the 140 million ha. of forest estate, 64 million ha. were classified as production forest, and 27 million ha. as conversion forest (McCarthy, 2000).

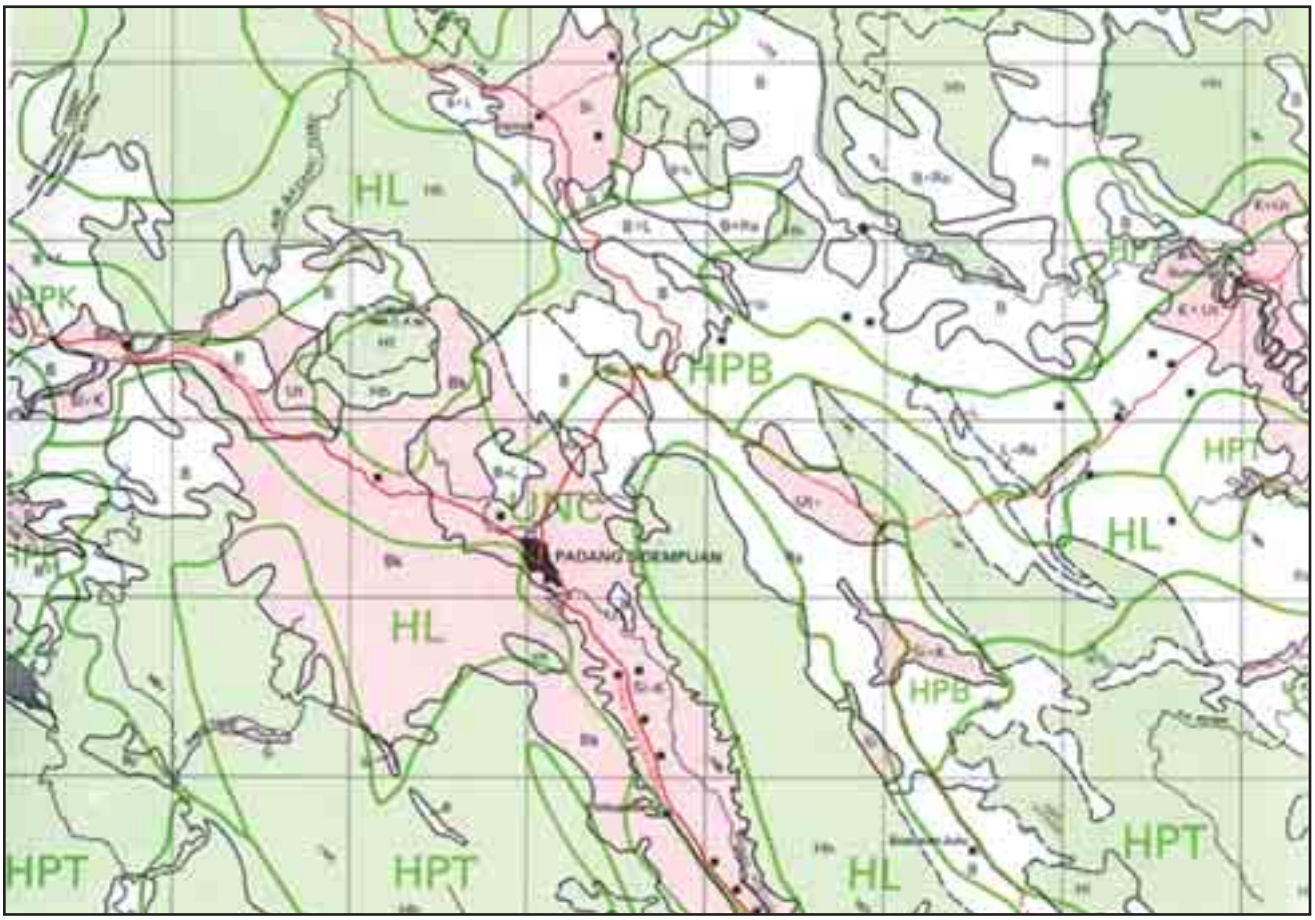
The *TGHK* process was deeply flawed, the resulting maps being described as "little more than sketch maps" (NRI, 1996). A major problem was the lack of information about actual forest cover. Much of the data was derived from existing maps, some of which dated from the colonial period, rather than on accurate field data. Large areas designated as forest had actually been converted to agricultural use or

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settlements (Chidley, 2002). Furthermore, although the scoring system gave the impression of determining land categories on an objective basis, in reality, this was highly subjective both because of a lack of data and the absence of agreed criteria for classification. This enabled the justification of almost anywhere as State Forest (Fay et al., 2000). Determining the boundaries of land categories on the ground was also difficult because of the large scale of the maps and the simple mistake of using thick pens to draw the boundaries, opening the door to disputes and conflict (Sirait et al., 1994).

Social and economic criteria were mentioned, but none were developed and so these were not taken into consideration in the scoring process (Fay and Michon, 2003). This was in




***TGHK* Categories**: **HL** - protection forest **HPB** - normal/fixed production forest **HPK** - convertible forest **HPT** - limited production forest **UNC** - unclassified forest

**Land Use**: **B** - bush **Bk** - regrowth with rubber **Hf** - submontane forest **Hh** - lowland forest **Hi** - forest on calcareous rocks **Hr** - swamp forest **K** - settlements and recreation areas **L** - shifting cultivation **Ra** - alang-alang grassland **Rs** - savannah **Si** - irrigated wetland rice **Ut** - upland crops

Figure 6. Approved *TGHK* boundaries in relation to existing land use around the village of Padang Sidempuan, North Sumatra ( Source NRI and Direktorat Bina Program: 1988 )

spite of the fact that the affected area included land inhabited or used by some 60 million people [8]. Local people's tenurial rights were only recognised in the form of land ownership certificates. These were only granted for individually owned land, not communal land, and for areas under permanent cultivation. Therefore, fallow land and areas used for extraction were ignored. Agroforestry systems were also not recognised – rights could be granted to certain trees, but not to the areas of forest in which they occur.

As a result of the inaccuracies of the *TGHK* plans, and because local management systems were ignored, villages, farmed land and traditionally managed forest systems were all included in the forest estate (Chidley, 2002; Peluso, 1995). Extensive areas of community forests were allocated to outside interests, such as plantation managers and transmigration planners. With the loss of their property rights, local communities were viewed as squatters by the government, and their use of forest resources as theft (McCarthy, 2000). Many communities were resettled from protected areas, and programmes were implemented to settle shifting cultivators and to relocate "isolated and backward tribes" (Chidley, 2002).

The *TGHK* classification was reviewed during the Regional Physical Planning Programme for Transmigration (RePPProT). This programme, which ran from 1984–1990, sought to map land use throughout the country in order to identify transmigration locations. Data were collected on geology, climate, soils, and vegetation cover. Aerial maps and Landsat data were used to map existing land use systems. Little consistency was found between the existing classification (resulting from the *TGHK* process) of the land and its present use or condition, and in particular, considerable areas of protection forest had been cleared (Dick, 1991). Revisions in the existing classification were made, with the new land designations being marked on 1:250,000 maps. Some of the worst designations of the *TGHK* process were rectified during this exercise, and the extent of protection and conservation forest was increased at the expense of production forest (Dick, 1991). However, forest-based peoples still faired badly. Once again, information on their land claims and territories was largely ignored (Chidley, 2002; Peluso, 1995). Land use cover and forest type was largely determined by the interpretation of satellite images and aerial photos, a method which does not enable the differentiation of agroforests or other forest management systems. Furthermore, shifting cultivation was not considered as a permanent use of the land, a requirement for the recognition of territorial rights, and so this land was considered available for development (Peluso, 1995). Although areas of cultivation were marked on the maps, the maps were not at a large enough scale to show the boundaries of customary lands (Eghenter, 2000). A government report on the RePPProT programme highlighted this issue, noting that the boundaries of customary land were not shown on the maps, "although these are essential for detailed planning" (Government of Indonesia, RePPProT report, quoted in Peluso, 1995: 390). The report recommended further study of customary rights, but this never seems to have been implemented, and land allocation continued on the basis of the maps.

The RePPProT programme formed the basis of

8. Estimates of the numbers of people living in, or depending on state forest vary enormously. In 1998 the Ministry of Forestry estimated that 16.5 million people were directly dependent on state forest resources, but this is thought to be a huge under-estimate (McCarthy, 2000).

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Provincial Spatial Plans (*RTRWP – Rencana Tata Ruang Wilayah Propinsi*). Under the Spatial Use Management Act (No.24), passed in 1992, provincial governments were directed to produce "Provincial Spatial Plans" (Barr et al., forthcoming). This was the first attempt at integrated land use planning (McCarthy, 2000). It sought to address the lack of co-ordination between the various ministries responsible for logging concessions, mining, transmigration sites, and regional authorities, which had resulted in overlapping claims and contradictory zoning plans.

There were many differences between the plans resulting from the *TGHK* and Provincial Spatial Plans, and a process ensued to reconcile the two (Barr et al., forthcoming; DFID, n.d.). Negotiations between the Ministry of Forestry and the National Development Planning Agency during the mid-1990s resulted in forest land use plans (*TGH – Tata Guna Hutan*) being agreed in most provinces. However, in this process local community interests were again side-lined. Their rights had not been recognised in either of the previous processes, and so they were not considered in the boundary negotiations (DFID, n.d.).

In spite of the effort put into these various planning processes, the forest authorities were not able to ensure that the plans were adhered to, with limited capacity to monitor logging activities or control protected areas. By 1990 it was found that 4.5 million ha. of protection and conservation forests had been allocated as forest concessions. Further, the government was unable to enforce the obligations of concession holders; Ministry of Forestry figures for 1990 showed that only about 4% of concession holders were fully complying with regulations (Barber et al., 1994). In addition to unregulated forest clearance by logging and plantation companies, there was increased clearing of forest by local communities. Unregulated land use, in combination with the failure to recognise traditional systems of tenure resulted in people trying to gain de facto control of land by clearing new areas of forest (McCarthy, 2000).

## PERMANENT FOREST MANAGEMENT UNITS *KPHPs* [9]

In the 1990s, an attempt was made to place forest management on a more sustainable basis through the introduction of permanent forest management units (*KPHPs – Kesatuan Pengusahaan Hutan Produksi*). These were areas of forest land intended for the production of timber on a sustainable basis, replacing forestry concessions (*HPHs – Hak Pengusahaan Hutan*) which allowed exploitation of a specified area of forest for 20 years.

A pilot programme was implemented, with DFID (then ODA) as the technical advisor (1991-9). Five pilot *KPHP*s were established in the provinces of Jambi, Riau and Central Kalimantan (Figure 7). These sought to establish integrated management plans for these areas, with one of their main aims being to establish a permanent boundary for the forest estate, and so to reduce conflict with the local communities.

The first stage of this process was to prepare draft maps for each of the areas. Provincial land use plans were used as the starting point, and satellite imagery and aerial photography were used to determine current forest cover. Social studies were then undertaken, aimed at producing negotiated boundaries of the *KPHP*s with village areas, and also to draw up community access agreements for concession areas (although these were not implemented during the pilot programme). This process entailed extensive consultations with communities to determine their needs and priorities, and mapping exercises to investigate local tenure and resource-use systems. A forest inventory was also carried out, using satellite imagery and sampling to establish forest types and timber volumes. Using this data, 5 year forest management plans were then developed.

### PROBLEMS ENCOUNTERED

A fundamental problem with the whole concept of *KPHP*s was that they were closely aligned with the objective of timber production, rather than having a more holistic goal in which forest protection, genetic conservation and social issues were also considered. One reason for this was that KPHPs referred only to production forest, and not to protection and conservation areas which had been categorised in earlier mapping processes. Therefore they did not represent an integrated land management unit, within which all forestry activities and values, including conservation, were considered.

Another major problem was the lack of correlation between the existing land use classification and actual forest cover (Figure 8). Large areas included within the pilot KPHPs were no longer forested, making the goal of sustainable timber production more difficult. The pilot zones also included communities and their agricultural land. The programme sought to address this problem by negotiating new boundaries between the village land and concession areas. However, this process was not followed up with the legal recognition of village lands by the authorities. Since communities did not gain legal rights to the land allocated to them in the negotiation process, some of these areas were allocated

9. This section is based on the findings of DFID (2000) and NRI (1996) in their reviews of this programme.

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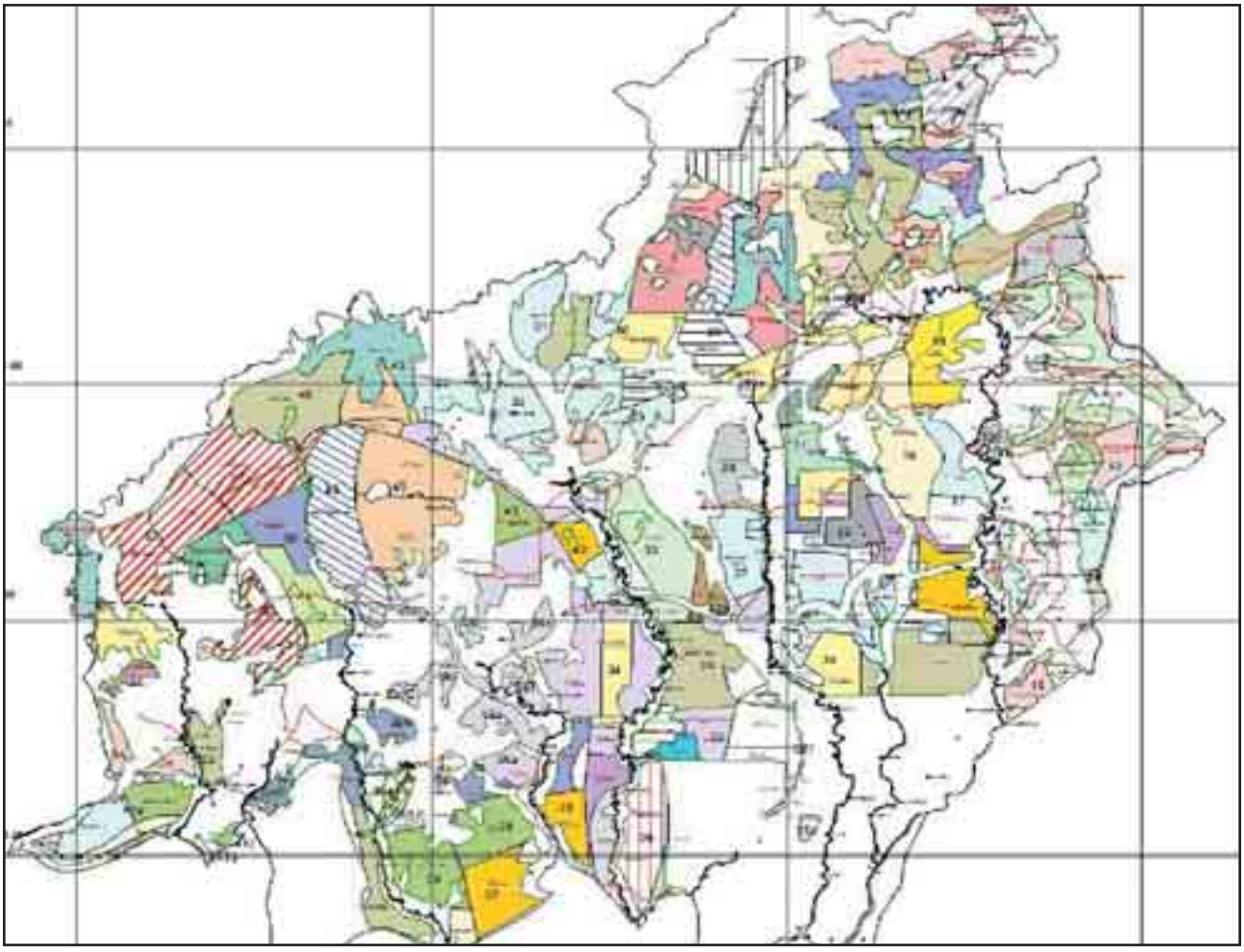


Figure 7. Provisional *KPHP* map for Central Kalimantanshowing *KPHP* units ( Source: DFID, n.d. )

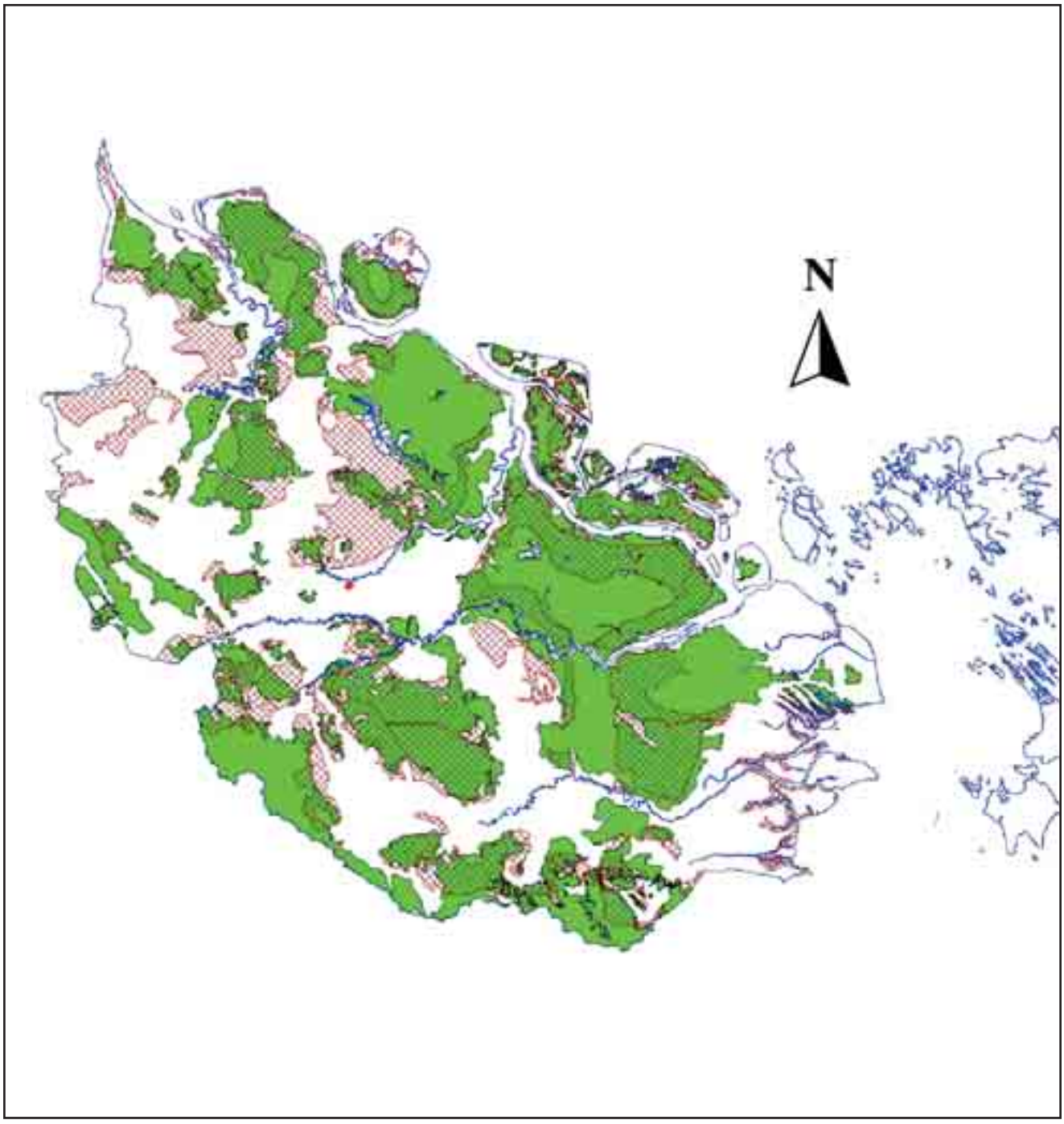



Figure 8. A map of Riau Province showing the ambiguities between proposed *KPHP*'s ( hatched areas ) and remaining forest cover ( green areas ) in 1996. ( Source: DFID, n.d. )

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to plantation companies, leading to disillusionment with the process among local people.

Furthermore, once the forest boundaries were identified there was little consultation with the communities. This was a reflection of the prevailing attitude within the forestry sector, where participation with communities is at best seen as a low priority. Consequently there was little capacity for involving communities in forest management, and few channels for them to express their needs and priorities. Furthermore, the concession companies saw the social and environmental aspects of forest management as a burden, and only implemented these when absolutely necessary.

The prevailing attitude within the government was one of a lack of respect for traditional land use systems, especially swidden agriculture. Official policy was aimed at marginalising local communities from forest management, seeking to transform their way of life so that they were no longer dependent on the forest. Community development programmes implemented under the KPHP system promoted settled agriculture or employment in plantations and cash crop projects. No consideration was given to identifying opportunities for local people to participate in forest management itself, for example, through supporting their existing forestry and farming systems (NRI, 1996).

Given this situation, it is not surprising that problems were encountered with securing the full participation of communities. There were also difficulties in ensuring that all community members were represented in negotiations, particularly in those communities with several ethnic groups, or where there was a mix of traditional members and recent incomers. In addition, village heads or councils did not always represent the interests of the wider community, sometimes using their positions for their own benefit.

While the pilot programme did increase awareness within government of community needs and the importance of their participation in forest management, this was limited. Much greater steps were needed to integrate local communities into forest management, to ensure that they were partners in this process and that they would see some of the benefits.

### RECOMMENDATIONS

At the end of the pilot phase of this programme, a range of recommendations were made with respect to *KPHP*s and the forestry sector as a whole. These included:

- The focus of forest resource management needs to shift away from the commercial exploitation of timber, to reflect the full range of forest values, including local people's livelihoods and environmental values.
- Local communities need to participate more fully in planning, implementing and monitoring forestry activities. This would help to incorporate social values into forest management.
- Efficient information systems need to be developed, with reliable data of land cover and

usage. Accurate base maps are needed, at a sufficiently large scale (1: 100,000 and 1: 250,000). New working methods should be developed to increase efficiency. For example, provincial forest departments should be responsible for local mapping, GIS techniques used to improve the quality of data, and satellite imagery used to monitor land use changes. All maps should be computerised, enabling easy updating and dissemination.

- This data must be made more accessible at national and provincial levels, and to all relevant stakeholders, to ensure that the best land use options are chosen.
- The forest categories need to be reallocated, with non-forested areas excluded from the State Forest Zone. Where large tracts of forest remain, these should be divided into management units (*KPHP*s). These should be defined on the basis of physiographic features, such as river basins, and administrative units.
- Legal reform is needed. Forest land should have the same legal status as other land, enabling the granting of tenurial rights. Concessions and other forest utilisation rights do not include tenurial rights, giving no legal protection from land grabbing. Title to land within the forest zone should have a stronger legal basis to give greater security of tenure to forest users. In particular, recognition of the rights of local communities living in and adjacent to forest concessions is needed.

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### REFORM OF THE FOREST LAW AND DECENTRALISATION

Reform of the forestry sector began in the 1980s, but little progress was made until the late 1990s. At this time the introduction of a democratic government (Suharto resigning in 1998) and the economic crisis of the late 90s facilitated the process. The World Bank and IMF took advantage of the financial crisis to impose forest policy revisions (McCarthy, 2000; Silva et al., 2002). These included the specification that forest legislation should accommodate *adat* rights and requirements for regulations on community forest participation. The needs for greater transparency and a comprehensive map to better delimit the forest estate were also highlighted (Barr, 2001; Chidley, 2002).

The process of reform resulted in the introduction of a number of new regulations and decrees, some of which reflected a shift to a more participatory approach to forestry. The main outcome of the reform process was the passing of a new Forestry Act (No.41/1999) in 1999, this replacing the 1967 Forestry Law. This promoted decentralization by giving local administration greater autonomy in forest management. It also included a number of new regulations on concessions, including limits to their size, requirements for concession holders to allow for the participation of local communities in their activities, and regulations allowing *adat* communities to harvest forest products for their daily needs within concession areas. The Act also reasserted the principle of state control, with *adat* forest being included as a class of state forest.

*Adat* forest was defined as "state forest where communities with customary laws are".

Management rights to this forest, but not ownership, can be granted to *adat* communities, defined as those whose rights are in existence, are legitimate and do not conflict with national interests. Recognition of *adat* communities depends on the existence of traditional management practices and institutions, social cohesion, and reliance on the exploitation of natural resources. In allowing management of the forest on the basis of customary law, this legislation gives some recognition to local systems of forest management. However, this is insufficient. Firstly, the law does not allow the extraction of forest resources for sale, a crucial source of income for many communities. Secondly, since *adat* forest is included within the forest estate, there is no legal way to mark the boundaries of *adat* forest, an important step in establishing tenure. Most fundamentally, the legal existence of *adat* communities is dependent on recognition by the government, whose authority to determine this is questionable. Should the government decide that such communities no longer exist, the right to manage the forest returns to the state. Furthermore, the communities cannot gain ownership rights. These are retained by the government, which also has to approve all management practices. This procedure is undertaken by the Department of Forestry, an institute oriented towards the large-scale production of timber (Chidley, 2002; Eghenter, in prep.).

The process of decentralisation began in 2001, with the implementation of regional autonomy legislation. This process has helped to focus more attention on local people's aspirations, and enabled some local communities and organisations to lobby for more equitable forest

management, because of their easier access to local government (Barr et al., 2001; Chidley, 2002). Decentralisation also has the potential to improve the accuracy of land use plans, because of the proximity of district-level planners to the areas over which they have jurisdiction (Barr et al., forthcoming).

However, many district governments have not been open to the concerns of local communities, being more interested in securing potential sources of revenue. Furthermore, many district-level agencies do not have the expertise nor resources for their new responsibilities (Barr et al., forthcoming). Rivalry between the various levels of government has meant that maps and forest inventory data have not been made available at the district level. Regional autonomy has also created a great deal of uncertainty, with a lack of clarity regarding the jurisdiction and authority of national and regional administrations. The validity of ministerial decrees has been questioned, some district officials have instituted reforms that lie outside their authority (McCarthy, 2001) and there has been confusion over who can issue concessions (Chidley, 2002). This has resulted in an increase in overlapping claims and conflict over land rights.

Typical of these problems are those found in Malinau (Barr et al., 2001). This district was created in 1999, and 95% of its land area is classified as Forest Estate. The district authorities face huge problems in administering this land, because of its mountainous terrain and limited transport infrastructure. Furthermore, the district was created by drawing boundaries across the region's major watersheds, making access to the administrative centre by some of the population, who rely on river transport, extremely difficult. This partition of districts also means that members of particular ethnic groups, living along shared watersheds are, in many cases, now in different districts and so under different administrations.

The process of reform and decentralisation raised people's expectations that they would be able to claim land rights, and the incentive to do so increased with the introduction of small concessions allowing logging by local communities. This encouraged a race for claims to forest benefits, which the local authorities did not have the capacity to deal with. The authorities themselves have focused on short-term economic gain, putting little effort into long-term planning. Furthermore, the ability to obtain land and resource rights depends on the political strength of the claimants. This has created particular problems for the Punan, a nomadic hunter-gatherer people who are politically marginalised. As a result of prejudice and their small numbers they have been pressurised into accepting unfavourable land allocations. Their way of life also creates particular problems for determining land rights. Historically they have not defined their territories, and many groups have lived in association with communities of other ethnic groups, and so they are often categorised as living in their villages (Barr et al., 2001).

Malinau, just like the country as a whole, is faced with the dilemma of how to generate forest revenues while also maintaining the resource base. However, the situation here is exacerbated by limited resources and institutional experience. The speed of events following decentralisation has meant that there has not been the chance for long-term planning, resulting in a rush for resources and a rapid

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increase in timber extraction. It remains to be seen whether the opportunities allowed by decentralisation for greater participation and co-operation with local communities will be able to slow this process down, and promote a more balanced, sustainable resource-use strategy. Given that short-term priorities have come to dominate, this does not seem likely.

### PROBLEMS

Forest management in Indonesia has been, and continues to be, biased towards the needs of the conventional forestry sector at the expense of forest dependent people. This is reflected in the lack of recognition of *adat* rights, both to land and natural resources (DFID, 2001). National policy does not recognise that local people have been living in and maintaining the forest, nor that non-timber forest products are important for the economies of many rural areas (Moniaga, 1993). For example, the livelihoods of some 7 million people in Sumatra and Kalimantan depend on rubber-based agroforests, extending over 2.5 million ha. Most of these are classified as state forest, so undermining these management systems (Fay et al., 2000). Furthermore, the government has sought to stop swidden agricultural practices, and the hunter-gatherer way of life, encouraging the introduction of settled systems of agriculture. Instead of seeing forest dwellers as potential partners in forest management, who could be supported by the Ministry of Forestry, they are more often seen as a threat to the forest and in need of "development" (Moniaga, 1993).

A further problem within Indonesia is that its forest legislation is incredibly complicated. There exists a large body of laws, decrees and regulations, some of which have not been fully implemented, and there are ambiguities in the law which enable different interpretations to be made. Furthermore, the status of many areas of forest is uncertain. For example, government figures from 1999 showed that only 68% of land claimed by the Forestry Department had been formally delineated and gazetted, a process required by law. In many of the gazetted areas, local people have claimed that this has been done illegally (Fay et al., 2000). In 2002 it was estimated that as little as 30% of the forest estate had been legally gazetted (Fay and Michon, 2003).

As a result of the confusion surrounding forest law and classification, management of the forest and its resources "has changed from a common property to an open access situation beyond effective control." (Stockdale and Ambrose, 1996: 173) This has encouraged a short-term attitude towards forest management, and in many areas deforestation has increased as people seek to stake their claims to land by forest clearance.

This situation has been exacerbated by the process of decentralisation. Decentralisation can lead to the more sustainable and equitable use of forest resources, as it often allows for greater participation of forest communities in the decision-making processes, and policy makers are more directly accountable to these communities. However, for this to take place, institutional capacity needs to have been created at the local level. This has not been the case in Indonesia, where a situation of uncertainty and lack of local capacity has enabled local elites to exploit the situation, and forest management has suffered (McCarthy, 2001). As well as a lack of capacity, poor

information and resources have also hindered sound land use planning and forest management. Data is all too often inaccurate, and on occasion, has not been shared between departments and different levels of government.

### LESSONS LEARNT

Indonesia's forest estate is vast and unmanageable. The driving force behind the Ministry of Forestry has been its desire to maintain control over as much of the country's land as possible (Fay et al., 2000). The assumption has been that the government can manage the country's vast forest resources. However this is patently untrue. In 2002, analysis of satellite imagery showed that out of 93.5 million ha of the State Forest Zone, one quarter had no forest cover (Fay and Michon, 2003)

There is a need for a fundamental shift in the Ministry's orientation, and a change to the land classification. Non-forested areas should no longer be included within the forest estate. These areas should become subject to agrarian law, and emphasis given to the distribution of resource rights (Fay and Michon, 2003). *Adat* lands also need to be recognised, and innovative approaches to forest management developed. Millions of hectares of Indonesia's land are covered by community forests and agroforests, including large areas that the Ministry of Forestry classifies as natural forest and so are included within the state forest. It has been suggested that these areas should be re-classified as private lands, a move that could result in halving the size of the State Forest Zone (Fay et al., 2000). Such an "organised retreat" (Fay and Michon, 2003) would enable the authorities to concentrate their resources on the remaining forest areas, resolve widespread conflict and promote forest management by local communities.

To bring about such a change there is a need for an improved understanding of the forest and forest-dependent peoples. More accurate data is needed on the forest condition as well as more efficient systems of gathering data to enable constant monitoring and updating. This is increasingly feasible with advances in computer technology and lowering costs of aerial and satellite images (DFID, n.d.). Emphasis also needs to be placed on sharing of data, so that this is readily accessible by all relevant departments and to those outside of government.

Sound demographic and tenurial data is also a prerequisite for a credible forestry development and management program (Moniaga, 1993). A national programme is needed to determine the area claimed under customary law by indigenous peoples, something that is currently unknown (Barr et al., 2001; Sirait et al., 1994). Delineation of customary lands is also needed, to ensure their legal recognition and protection. Community mapping and participatory forest resource assessments have been suggested as a means of implementing this (Alcorn, 2000; Sirait et al., 1994; Stockdale and Ambrose, 1996). Community mapping has been used in Indonesia since the early 90s as an alternative to government mapping initiatives (Eghenter, 2000; Peluso, 1995). GIS and GPS technology enables local people to compile detailed information on their lands to the high quality usually required by governments and planning bodies. These maps can be powerful tools for negotiating resource use and land use planning, and for resolving boundary disputes between local people and other forest users. However, realising

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## INDONESIA continued

this potential depends on the establishment of a clear and fair government policy that guarantees the rights of local communities (Eghenter, 2000).

While customary rights are given some recognition in the Forestry Law, there are still no clear criteria or processes for how *adat* should be defined (Barr et al., 2001; Chidley, 2002; Moniaga, 2003). There has been some indirect formalisation of *adat* claims through the granting of small concessions to communities, but these do not amount to secure rights to land and forest resources. There is also no legal means of delineating *adat* lands within the State Forest Zone. Legal reform is needed to clarify the various laws and regulations, and to remove ambiguities in the law.

Genuine community involvement is needed in the process of legal reform and in decision-making on natural resources (Chidley, 2002). Any new zonation process must be the result of a consultation process, linked to local standards of land use and preserving locally developed regulations (Eghenter, in prep.). Capacity building within communities is needed to raise awareness of their legal rights, and to strengthen local institutions (Barr et al., 2001; NRI, 1996). Locally developed regulations that are based on sustainable principles should also be supported. Strengthening and legitimating *adat* can enhance the sense of responsibility and accountability among local communities in forest mangement, enabling local people to continue to be effective managers of forest resources (Eghenter, in prep.).

These changes can only be implemented with a change in mindset within the forestry sector, such that the role of forest-dependent communities in managing the country's forest resources is fully recognised and appreciated. Prevailing attitudes within government, exacerbated by a lack of resources and experience, have up till now hindered the involvement of communities in decision-making.

# 6. DISCUSSION – LESSONS TO BE LEARNED

Zoning is a tool which can be employed to meet various ends. All too often, this has been to serve the economic interests of a state. However, zoning can be used to help achieve more equitable and sustainable forestry. If it is to do so, the following lessons need to be taken on board.

### ZONING AND POLITICS

One lesson that comes out of these case-studies is the political nature of zoning. Zoning schemes often emphasise their scientific or technical basis. However, this emphasis on the scientific basis of zoning overlooks the political realities that must be confronted when these schemes are implemented.

In Australia, considerable time and effort was put into scientific assessments for the Regional Forest Agreements (Davey et al., 2000). However, the need to make compromises to produce agreements that were widely acceptable led to criticisms that the scientific credibility of the process had been undermined. The risk of not gaining political support for zoning was highlighted in the Brazilian state of Rondônia. Here, the competing interests of the various stakeholders were not fully acknowledged in the zoning process, and little effort was made to achieve consensus. The lack of support for the outcome meant that the zoning laws were challenged successfully in the courts, and considerably weakened (Lele et al, 2000; Mahar and Ducrot, 1998).

For zoning to be successfully implemented, its political nature must be recognised. The broad involvement of stakeholders is essential, with mechanisms in place for negotiation and the building of consensus.

One manifestation of the political nature of zoning is that it is not a scientifically objective process, as it is often assumed to be. The political environment can have a huge impact on the outcome of a zoning exercise. Thus, Cameroon's *plan de zonage* clearly reflected the priorities of the state, and in the RFA process in Australia, the needs of the conservation and timber sectors were emphasised. Consequently, if there is to be a chance of a zoning plan being just and equitable, these must also be features of the wider political environment.

### USE OF RELIABLE DATA

Although zoning should not be regarded as a purely technical exercise, it must still be based on sound data. Many zoning processes start with a programme of data collection, but all too often, insufficient time and resources are put into this. In Indonesia, the use of out of date information meant that the State Forest Zone included extensive areas that had been deforested and converted to agriculture. Furthermore, inaccurate and poor quality maps resulted in overlapping claims and increased conflict over land.

Reliable information and maps are an essential basis for zoning. Efficient information systems are also needed to enable these to be readily updated and disseminated. This is crucial in situations where land use is subject to rapid change, such that maps readily become out of date. With the development of computer technology and GIS systems, the production of accurate maps and of information systems that enable data to be updated and shared is greatly facilitated.

# 6. DISCUSSION – LESSONS TO BE LEARNED continued

Accurate data is not only needed on the forest itself, but also on existing land use practices and resource rights. In Indonesia, traditional resource rights have been ignored in the various zoning initiatives. Similarly, in Cameroon, the *plan de zonage* was drawn up on the basis of limited information about customary territories and land use, as a result of which many communities found themselves within areas allocated for timber extraction. In both these countries, the mapping process relied heavily on the use of satellite imagery, with little or no effort being put into assessing land use practices and resource rights on the ground.

If zoning is to be an equitable process, the resource rights and management practices of forest-based communities need to be fully investigated, understood and incorporated into base maps. Often, this can only be achieved through community-based mapping and discussions with members of the communities, including different resource-user groups, such as women and specialist hunters. The lowering costs of mapping technology have enabled its wide use for community mapping initiatives, and the potential of linking such programmes to national or regional zoning exercises needs to be explored more fully. A major problem for national zoning programmes is how to produce accurate maps for what are often vast areas of land. Community and regionally produced maps could help overcome this, providing greater accuracy and valuable data on local resource use practices and rights.

### GENUINE PARTICIPATION

Community mapping can be a valuable tool in enabling the participation of local communities in a zoning process. The need for genuine participation of all parties has been highlighted in all these case-studies. In both Brazil and Australia, important steps have been made in facilitating the participation of stakeholders in their zoning processes. However, the problems that they have encountered illustrate the difficulties of achieving this. In the Brazilian state of Acre, despite good intentions, insufficient time was given within the zoning programme to allow for extensive consultations with remote communities. Similarly, in Australia, although considerable effort went into social assessments, these were found to be inadequate to address Aboriginal concerns. Clearly, ensuring the participation of remote and marginalised communities is particularly difficult, and extra time and resources are needed to adequately address this.

Experiences in these countries and elsewhere suggest that the involvement of marginalised people will only take place if there is genuine commitment to this at a high political level. It is easy to espouse participation and consultation in project documents, but in reality, these are often not implemented. This may be because of a lack of commitment to these principles or simply because of a shortage of resources or expertise. In Cameroon, it was suggested that widespread consultations were not held during the development of the *plan de zonage* because of the time and expense that these would entail (Brown, 1999). Effective participation has been hindered in Indonesia by decentralisation. This process has shifted responsibility for land use planning to district and regional governments, whose institutions often have little or no experience in participatory processes, in addition to being hampered by limited resources (Barr et al., 2001).

While the participation of marginalised communities requires particular effort, participation of all stakeholders is essential. The risks of not doing so are illustrated by the case of Brazil's PLANAFLORO programme, in which the exclusion of timber and ranching interests from the planning process meant that this sector did not support, and ultimately undermined, the resulting zonation plan. Furthermore, participation should not only be limited to the preliminary stages of zonation, but needs to be a central element of forest management itself. This is discussed in more detail below.

### GOOD GOVERNANCE

Ensuring the genuine participation of people within forest zoning is dependent on the right political environment, in which there is transparency and freedom to negotiate and to be heard (Garrison and Aparicio, n.d.). Transparency is important, as this can help to provide legitimacy. For example, the lack of transparency in the decision-making process within certain of Australia's RFAs served to undermine confidence in this process. Freedom to negotiate is linked with the existence of a democratic government. A comparison of forest policy reform in a number of countries (Silva et al., 2002) highlighted the importance of democracy for affording political space to indigenous groups, peasants, small-scale timber producers as well as local government.

Good governance is also facilitated by a consistent approach. To achieve this, good co-ordination is needed both vertically, between different levels of government, and horizontally, between departments. In Brazil, because of a lack of communication between the federal and state governments, new settlements were established within areas allocated for sustainable forest management (Mahar and Ducrot, 1998). Similarly, in Indonesia, bad co-ordination and competition between government departments resulted in the allocation of rights for conflicting land uses and overlapping claims to land (DFID, n.d.).

Decentralisation can help to improve governance, the argument being that local politicians are more answerable to their constituents and have a better understanding of local circumstances (Barr et al., forthcoming). However, there are risks involved, as has proven to be the case in Indonesia where insufficient institutional capacity has hampered effective regional governance. Furthermore, the rapid process of decentralisation, involving the devolution of authority over forests and other resources to local government, has resulted in destructive competition among officials of different jurisdictional levels (Baker et al., 2003). Decentralisation should be implemented gradually, with the provision of adequate resources and training to ensure that local institutions can function effectively.

### CLEAR LEGISLATION

Lack of clarity over jurisdiction can greatly impede forest management, as can confusing or contradictory legislation. For example, in Cameroon, the establishment of community forests was hampered because the necessary legal procedure was unclear, and there was also limited awareness of the legislation among local people (Plouvier and Eba'a Atyi, 2000). In Indonesia, the forest laws are particularly complex and confusing. This has resulted in a situation in which it is unclear who has

# 6. DISCUSSION – LESSONS TO BE LEARNED continued

jurisdiction over certain areas of forest, or how legal rights can be established (Chidley, 2002; Fay et al. 2000).

Clear criteria and processes for defining and establishing rights are essential, particularly with respect to customary rights ). In addition, education and capacity building initiatives are essential, particularly among marginalised peoples, so that they are aware of their legal rights and options.

### RECOGNITION OF TRADITIONAL RIGHTS

The need for local people to participate in forest zoning was highlighted above. However, unless this is backed up by the recognition of their resource rights, such participation is meaningless. For example, in Indonesia, the pilot programme to establish permanent forest management units (outlined in section 4.4.2) entailed extensive participation with local communities. However, local resource rights were not given legal recognition, and subsequently, some areas of land were acquired by outside interests, rendering the process of consultation somewhat pointless. Furthermore, as highlighted in the case of Australia, recognition of resource rights is essential in enabling marginalised peoples to negotiate effectively.

The legal recognition of traditional resource use practices and land claims is also crucial in enabling local people to have a role as forest managers. All too often zoning programmes, such as those of Cameroon and Indonesia, have excluded local people from the forest. However, many traditional systems are good examples of sustainable management, and so should be supported.

Greater attention needs to be paid to the needs and rights of forest-based societies, in particular, through the recognition of their resource rights. This would help to tip the balance in favour of greater control of forests and land by local communities. Within Indonesia, an important step towards this would be reducing the size of the State Forest Zone, as this would increase the land that would be available for individual or community ownership (Fay et al., 2000). However, legal reform is also needed, to enable secure tenure to be granted for *adat* lands and forest resources. In Cameroon, larger areas could be made available for community forests, and these defined in relation to traditional territories (Lescuyer, 2003). Changes in the law should also be explored to allow tenurial rights to be granted, rather than only leases by which community forests are granted. Alternative systems of land tenure should be developed which would give greater opportunity for the maintenance of traditional resource use practices and rights, such as the establishment of extractive reserves or territorial areas.

### INTEGRATED APPROACH TO FOREST MANAGEMENT

The sharp distinction drawn between forestry and agriculture, and also between forest conservation and exploitation, neither reflects the reality of forest ecosystems nor of many traditional forest management practices (Kaiyoorawong, in prep.). A holistic view of land use planning and management is needed. Forest management, and in particular environmental issues, cannot be adequately addressed by focusing only on some of the resources. This conclusion was drawn from experiences in Australia, Cameroon, and

Indonesia. In these three countries, it has been suggested that the distinction drawn between state and non-state forest lands, or permanent and non-permanent forests in the case of Cameroon, has hampered sustainable forest management.

These categories of land reflect a perception in which forest and agricultural activities are separated, with forest activities being regarded as the domain of the state. Thus, throughout the history of forestry in Australia, forest policy has been primarily concerned with state lands, and this continues under the regional forest agreements. This has meant that the vast areas of woodland found on private lands have been subject to agricultural policy. Consequently, these have been severely degraded. In both Cameroon and Indonesia, a distinction is also made between forestry and agricultural activities, the latter being confined to the non-permanent forest in Cameroon, and to non-state land in Indonesia. The separation of these two domains has resulted in increased competition between the government and local populations, as well as between government departments, as they struggle to control land and resources.

This competition could be lessened if the state did not lay claim to such large areas. In addition, a consistent forest policy needs to be applied to all land categories. This would help to avoid the situation found in Cameroon, where forest exploitation within the non-permanent forest estate has been encouraged because the permanent forest estate is subject to tighter regulation.

### IMPLEMENTATION AND MONITORING

It is relatively easy to draw up zones on a map, but somewhat more difficult to translate these into reality. In many countries there is a huge discrepancy between zoning plans and the situation on the ground, as was highlighted in the case of Indonesia. To ensure that a zoning plan is implemented, adequate resources need to be ensured to demarcate these zones and monitor them, otherwise they will only exist on paper.

In addition, to ensure that a zoning plan continues to reflect reality, continuous monitoring is needed. Typically, great effort is put into baseline surveys, rather than the establishment of dynamic arrangements such as continuous forest inventories, which would enable monitoring of changes in the forest area. As mentioned above, advances in technology and the lowering costs of satellite technology make this increasingly feasible.

### FLEXIBILITY

Zoning maps should not be set in stone. Rather, they should be tools for negotiation which can be adapted to changing requirements and understanding (Kanowski, 1997; Margulis, 2004). An issue raised by the RFA process in Australia is the tension between the goal of certainty within forest management and its inherent uncertainty. One of the goals of the RFA was to give industry and local communities security over resource availability and management. However, certainty can never be assured in forest management, because of developments in understanding and technology, as well as changing needs and priorities. Sustainable forest management should be approached more as "a continuing journey", for which the best strategy is one of adaptive management (Kanowski, 1997: 4).

# 6. DISCUSSION – LESSONS TO BE LEARNED continued

## A CHANGE IN PERSPECTIVE

A fundamental problem with forest zoning, and indeed forest management more generally, is that there is often an underlying assumption that the state should have control over its forest resources. Consequently, zoning exercises prioritise state interests. The justification for this approach lies in the view that the state is best placed to manage its forests, and that it will do so for the good of the majority of its population. The example of Indonesia clearly demonstrates that this is a false assumption.

Here, 70% of the country's territory has been claimed as State Forest Zone. This has resulted in alienating people from their land and increased conflict over resources. Such a situation has worsened the government's already difficult task of controlling activities across such a vast area. In addition, because the state has been closely allied to economic interests, these have taken precedence over the needs and rights of forest-based peoples. The result has been rapid deforestation throughout the country.

For zoning to be an effective tool in achieving socially and ecologically sustainable forest management, it needs to provide opportunities for local people to be involved in forest management and to continue their traditional practices, rather than seeking to exclude them from forests. In Indonesia, traditional claims to resources and lands were ignored, as a result of which traditional management systems were undermined, and all too often, broke down. Thus, the potential of local people to continue in their role of managing the forest was ignored, to the detriment of the forest. Similarly, in Cameroon the *plan de zonage* only made limited provision, through the establishment of community forests, for the continuation of traditional forest management practices, and it severely limited the ability of forest-based communities to maintain hunting and gathering activities, central to the lives of many Pygmy peoples.

A fundamental change in perspective is needed, in which forest peoples are regarded as potential partners in forest management, rather than a threat to the forest, and in which the potential of their management systems is explored. Therefore, local people should not automatically be excluded from forest land, as has been the case in the State Forest Zone in Indonesia and PFE in Cameroon. Forest lands should have the same legal status as other land, enabling the granting of tenurial rights. This would enable the development of innovative approaches to forest management, in which the rights of local people are recognised, and their existing management practices supported.

One government which has made some steps towards involving local people in forest management is that of Acre. Although the government faces considerable challenges in implementing its proposed system of forest management, its approach of prioritising the sustainable use of the standing forest by local communities, rather than its exploitation for timber and conversion to agriculture, represents a significant shift in perspective.

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