

## **Biodiversity and Natural Resource Management in Insular Southeast Asia**

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### **Abstract**

Indonesia and the Philippines are amongst the world's mega-biodiversity countries. Their insular nature has certainly contributed to this level of diversity. However, at the same time, there is rapid environmental degradation in terms of forest loss, loss of plant and animal species and overexploitation of wildlife. Insular Southeast Asia, with a population of over 300 million, is more densely populated than any other insular area. Yet, remarkably, this region plays a low-key role in comparative island studies. Both Indonesia and the Philippines have recently moved from centralized forms of government to regional and even local autonomy. This article presents an overview of the present state of biological and cultural diversity of the two archipelagic states. Recent changes in styles of natural resource management are discussed, with a focus on forest resources in the area.

*Keywords:* archipelago states, biodiversity, environmental degradation, natural resource management, Indonesia, Philippines

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### **Introduction: Insular Southeast Asia**

Insular Southeast Asia is without doubt the largest and the most important insular area in the world in terms of size of land area, number of islands, population and biodiversity. The area comprises the independent countries of Indonesia, the Philippines, Brunei, East Timor and New Guinea as well as the Malaysian states of Sarawak and Sabah. This paper focuses on Indonesia (2005 population estimate: 223 million) and the Philippines (83 million) as the two major countries in the area (United Nations, 2005).

Though the number of islands in the region is officially reported at more than 21,000 (Whitten, 1993; Hicks, 2000), most of these are (as would be expected) small to very small. In the Philippines, the 10 largest islands make up more than 90% of the country's total land area, with Luzon and Mindanao as the two dominating islands. In Indonesia, the situation is similar: the combined land mass of the 5 largest islands (Indonesian Borneo, Sumatra, West Papua, Sulawesi and Java) is also about 90% of the country's area. Some

70 islands have a size of more than 500 km<sup>2</sup> each (Cribb, 2000: 3). Table 1 provides a geographic overview of Indonesia and the Philippines.

Table 1: Key Geographical Details for Indonesia and the Philippines

Country:	The Philippines	Indonesia
<i>Key figures:</i>		
Size (land area) - in km <sup>2</sup>	300,000	1,926,337
Size (archipelagic waters) - in km <sup>2</sup>	220,000	2,820,000
Coast line – in km	22,450	80,791
Number of islands	7,100	17,500
Number of people (millions)	83	223
Number of ethnic groups	109	370

### Biogeography

The area is generally divided into 4 distinct regions or biogeographic provinces (Figure 1):

- (1) Melanesia, including New Guinea;
- (2) Wallacea, comprising the Indonesian islands east of Bali, including Sulawesi;
- (3) Sundaland, comprising all Indonesian islands west of Lombok, including Borneo and Malaysia; and
- (4) The Philippines (Conservation International, 2004).

These regions share strong similarities in biodiversity internally but are markedly distinct from each other. Sundaland is delineated in the north by the Kangar-Pattani line along the Thai-Malay border which marks a transition from wet evergreen rain forest to deciduous forest (Hughes *et al.*, 2003). Wallace's line, between Bali and Lombok and named after Alfred Wallace who first described the striking differences in fauna between these two islands (Wallace, 1869), separates Wallacea and Sundaland and forms the eastern boundary of strictly Asiatic fauna (Moss & Wilson, 1998). Lydekker's line, between Wallacea and Melanesia, is the western boundary of strictly Australian fauna (*ibid.*). Wallacea is now regarded as a transition area with both Asian and Australian fauna and flora elements (*ibid.*). The Philippines is somewhat of an oddity here, having fauna and flora features from all 3 afore-mentioned biogeographic provinces. However, the island of Palawan and its satellites are considered to have more affinities with Sundaland whereas the rest of the Philippines are more Wallacean in flora and fauna (Heaney, 1986). The 'Palawan - rest of the Philippines' division is called Huxley's line (Atkins *et al.*, 2001).

The geological history of South-East Asia is complex. The current location of islands in the region is the result of an ongoing process of plate tectonics, which has dramatically shifted the positions of land masses. The general division of Asian and Australian flora and fauna is mainly the result of the break-up of the ancient super-continent Gondwana during the Palaeozoic and Mesozoic *circa* 400 – 150 million years ago (Holloway & Hall, 1998). Recent geological history helps explain the at times stunning differences in current biodiversity between neighbouring islands. During the last ice-age, vast ice masses trapped so much water that sea level was up to 120 metres lower than it is today (Voris, 2000).



The term *endemic species* is not always used rigorously: a species is endemic if confined to a certain area, but this area can vary from mountain tops to parts of islands to entire islands to archipelagos or even to entire biogeographic provinces. The term is however mostly used based on politics and history rather than biology. Country boundaries are often used to delineate areas of endemism and the term Philippine endemic or Indonesian endemic is generally accepted for species limited in occurrence to those countries.

Endemic species are by the nature of their restricted occurrence (smaller populations, smaller ranges) and usually highly specialised adaptations (to specific island conditions) much more vulnerable to extinction than widespread non-endemic species. Also, the responsibility to conserve country endemic species lies in the hands of one government and not all governments act responsibly or are able to do so. Endemics and the countries that contain them have received considerable attention in recent years from conservationists. Mittermeier *et al.* (1997) identify 17 mega-diversity countries: these have disproportionate numbers of species compared to global per area averages, with an emphasis on endemic species. Indonesia and the Philippines are both included. Myers *et al.* (2000) identified conservation hotspots, using biogeographic provinces instead of countries as delineation of endemism areas. Hotspot areas combine high numbers of endemic species with exceptional loss of natural habitat. The hotspot exercise was meant to prioritize areas and countries which urgently needed conservation action. The Philippines and Sundaland were identified as 2<sup>nd</sup> and 3<sup>rd</sup> respectively on the priority list. Madagascar (another island) topped the list.

### ***Biodiversity in the Philippines and Indonesia***

Those somewhat familiar with the recent environmental history of the Philippines may be surprised to note that it still ranks highly on the list of mega-diverse countries. In fact, more new species are described each year from the Philippines than documented as extinct. It is encouraging to see that numerous taxonomic studies of flora and fauna still yield new discoveries from relatively remote parts of the country, and that most of these discoveries are nowadays to the credit of Filipino scholars.

Of the world's plant and vertebrate species, 1.9% are endemic to (one of) the 7,100 islands of the Philippines. On a per area basis, the Philippines has 64.7 endemic plant species per 100 km<sup>2</sup> and 5.7 endemic vertebrates per 100 km<sup>2</sup> of remaining forest, globally only surpassed by the coastal forests of Tanzania and Kenya which are 10 times smaller in area (Myers *et al.*, 2000). Unfortunately, the Philippines also has the world's highest number of threatened vertebrates per area. [Table 2](#) provides an overview of the currently known species diversity of various taxa in the Philippines, showing the number of endemic species with the proportions of the world's totals and the number of threatened species in relation to the country totals per taxa.

To put this data in perspective: 172 species of birds (30% of the resident birds) are endemic to the Philippines (Kennedy *et al.*, 2000); the United Kingdom, an island state similar in size, has one endemic bird species (the Scottish Crossbill *Loxia scotica*). The Philippines has 126 listed threatened and near-threatened bird species (World Conservation Union, 2004); the United Kingdom has three.

The Indonesian Archipelago consists of some 17,000 islands, covering 1.3% of the earth's surface area. In terms of biodiversity, its relevance is disproportionately bigger. Its wilderness areas include more than 9% of the world's flowering plant species, and 11% of the world's mammal species (including megafauna like elephants, rhinoceroses, *orang utan* and tigers), and 15% of the world's bird species (Table 2). A large proportion of these species is endemic. Its great expanse of territorial waters and the richness of the Indo-West Pacific seas add to the country's biodiversity. Extensive reef systems in the deep clear seas off Sulawesi and Maluku are among the richest in species of corals, fish and other reef organisms. About 34% of the world's fish species occur in Indonesian waters (Table 2). Indonesian flora and fauna is relatively not as threatened as that of the Philippines; yet the situation remains grave. Indonesia has, in absolute terms, more threatened mammals and birds than any other country (World Conservation Union, 2004).

Table 2: An Overview of currently known Biodiversity in the Philippines and Indonesia.

Country:	The Philippines	Indonesia
<i>Biodiversity:</i>		
<b>Plant</b> species (% of global total)	8,931 (3.3) <sup>1</sup>	25,000 (9.3) <sup>2</sup>
Endemic plants (% of global total)	5,832 (1.9) <sup>1</sup>	17,500 (6.5) <sup>3</sup>
Threatened plants (% of country total)	194 (2.2) <sup>4</sup>	383 (1.5) <sup>4</sup>
<b>Mammal</b> species (% of global total)	204 (4.4) <sup>5</sup>	530 (11.4) <sup>2</sup>
Endemic mammals (% of global total)	111 (2.4) <sup>5</sup>	222 (4.8) <sup>3</sup>
Threatened mammals (% of country total)	50 (25) <sup>4</sup>	147 (28) <sup>4</sup>
<b>Bird</b> species (% of global total)	572 (8.8) <sup>6</sup>	1,519 (15.3) <sup>2</sup>
Endemic birds (% of global total)	172 (1.7) <sup>6</sup>	408 (4.1) <sup>3</sup>
Threatened birds (% of country total)	67 (11.7) <sup>4</sup>	114 (7.5) <sup>4</sup>
<b>Reptile</b> species (% of global total)	258 (3.4) <sup>5</sup>	706 (9.5) <sup>7</sup>
Endemic reptiles (% of global total)	170 (2.3) <sup>5</sup>	52 (0.7) <sup>7</sup>
Threatened reptiles (% of country total)	8 (3.1) <sup>4</sup>	28 (4) <sup>4</sup>
<b>Amphibian</b> species (% of global total)	101 (2.0) <sup>8</sup>	340 (5.9) <sup>8</sup>
Endemic amphibians (% of global total)	79 (1.6) <sup>8</sup>	154 (2.7) <sup>8</sup>
Threatened amphibians (% of country total)	23 (22.7) <sup>4</sup>	33 (9.7) <sup>4</sup>
<b>Fish</b> species (% of global total)	3000 (12) <sup>5</sup>	8,500 (34) <sup>2</sup>
Endemic fish (% of global total)	78 (0.3) <sup>9</sup>	108 (0.4) <sup>9</sup>
Threatened fish (% of country total)	60 (2) <sup>9</sup>	95 (1.1) <sup>9</sup>

Sources: <sup>1</sup>Myers *et al.*, 2000; <sup>2</sup>MacKinnon *et al.*, 1996: 633; <sup>3</sup>United Nations Environmental Program & World Conservation Monitoring Centre, 2000: 128; <sup>4</sup>World Conservation Union, 2004: only critically endangered, endangered & vulnerable categories; <sup>5</sup>Ong *et al.*, 2002; <sup>6</sup>Kennedy *et al.*, 2000; <sup>7</sup>Asean Regional Centre for Biodiversity Conservation, 2005; <sup>8</sup>World Conservation Union, Conservation International & NatureServe, 2004; <sup>9</sup>Fishbase, 2006.

<sup>12</sup> *The Ecology of Indonesia* is a useful multi-volume series of the country's natural resources, biodiversity, modes of exploitation and current threats. In this article, reference is made to these publications under individual authors' names.

Many of Indonesia's biological resources are economically important. Several plant species of global importance originated in Indonesia, including black pepper, cloves, sugar cane, citrus and many other tropical fruits. More than 6,000 species of plants and animals are utilized on a daily basis by Indonesians; while 7,000 species of marine and freshwater fish are major sources of protein. Agriculture and fisheries are the mainstay of both Philippine and Indonesian subsistence economies. Numerous wild plants and animals are harvested for domestic or commercial consumption as food, handicrafts, medicine, fuel and building material (MacKinnon *et al.*, 1996)<sup>2</sup>. Lowland forests, dominated by Dipterocarp species, the key hardwood of the international trade, provide the most valuable timber in SE Asia. Timber extraction offers a most lucrative use of natural resources but carries the danger of over-utilization: this is a main threat to the survival of many SE Asian species.

### ***Deforestation and extinction in the Philippines and Indonesia***

Forest loss in the Philippines has been dramatic. Within a 40 year span, the country has changed from the major Asian exporter of logs into the 7<sup>th</sup> importer of tropical timber by the late 1990s. Its own natural forest resources were brought to the point of near depletion. Of the 17.2 million hectares of total forest cover in 1934, less than 0.6 million hectares of old growth forest were left by the year 2000. The remaining forest consisted of logged over and secondary forest of varying quality (Van den Top, 2003: 64-65). However, deforestation figures vary between sources. In a recent Food and Agriculture Organization report - based on official information by the Department of Environment and Natural Resources (DENR) and the National Mapping and Resource Information Authority (NAMRIA) - the Philippines is reported to have a 19.4% forest cover (including selectively logged and regenerating forest) with an annual deforestation rate of 1.4% (FAO, 2003). Kummer (1992) and Heaney & Regalado (1998) use a figure of 3% remaining undisturbed forest. Kummer more recently (2004) concludes that current forest cover figures for the Philippines are unreliable as sound spatial data analysis and ground validation has been lacking since 1950. For those who have flown over the country and seen its barren hills, it is clear that not much forest is left nowadays. Commercial logging, especially during the Marcos era (1965-1986), and conversion of forest to agricultural use, are responsible for the decline of forest area. In Indonesia, forest cover is still much higher compared to the Philippines (50% in 1997); but logging is accelerating and the annual deforestation rate (1990-2000) is 1.7%. Both countries are, at least on paper, protecting a considerable portion of their land area (Table 3).

In a key article on hotspots in Nature, Myers *et al.* (2000) quote 3% as remaining original vegetation in the Philippines, 7.8% in Sundaland and 15% in Wallacea. On the basis of these figures, Brooks *et al.* (2002) predict future extinction rates of 58%, 47% and 38% of endemic flora and fauna species for the Philippines, Sundaland and Wallacea respectively. The authors argue that a time lag between habitat loss and actual species extinction explains why hardly any species have gone extinct so far (Brooks *et al.*, 1999).

Local extinctions or extinctions of sub-species have been more common. The loss of both the Javan and Balineses tigers (*Panthera tigris sondaica*; *Panthera tigris balica*) tigers is probably the most spectacular, while the Javan rhinoceros (*Rhinoceros sondaicus*) is on the

brink of extinction. Numerous smaller animals or plants species may go quietly extinct. A further warning of a possible impending biodiversity crisis is the World Conservation Union Red List of threatened species (2004). This is based on observed declines of species populations and includes considerable Philippine and Indonesian exemplars (Table 2).

Table 3: Forest Cover over Time in the Philippines and Indonesia and Key Data on Protected Areas.

<b>Country:</b>	<b>The Philippines</b>	<b>Indonesia</b>
<b>Forest cover in hectares (Ha) (% of total land area)</b>		
Forest cover in 1900	21 million (70 %) <sup>1</sup>	170 million (80-95 %) <sup>2</sup>
Forest cover in 1950	15 million (50 %)	148 million (77 %)
Forest cover in 1985	6.9 million (23.7 %)	119 million (63 %)
Forest cover in 1997	5.5 million (18.3 %)	100 million (50 %)
Annual deforestation rate 1990-2000	1.4 %	1.7 %
<b>Protected Areas</b>		
Number of protected areas	244 <sup>3</sup>	1085 <sup>4</sup>
Area protected (% of total land area)	3,225,777 ha (10.8%)	39,550,472 ha (20.5%)

Sources: <sup>1</sup> Environmental Science for Social Change, 1999: 8-19; <sup>2</sup> Forest Watch Indonesia / Global Forest Watch, 2002; <sup>3</sup> Ong *et al.*, 2002; <sup>4</sup> Chape *et al.*, 2003.

Habitat loss is often cited as responsible for the decline of species populations but over-utilisation is another important cause: two Philippine top timber trees *Almaciga Agathis philippinensis* and *Narra Pterocarpus indicus* are now so rare that small-scale loggers sometimes have to trek for days in the Northern Sierra Madre on Luzon, one of the last forest areas where they occur, to find one (Van Weerd, personal observation). Of the most threatened animals in the Philippines, 75% of birds, 43% of mammals and 100% of reptiles are heavily hunted or collected (World Conservation Union, 2004). All 5 species of endemic Bleeding Heart Pigeons (*Gallicolumba spp.*), large meaty ground-dwelling birds which are easily trapped and therefore popular with hunters are listed as threatened, three being critically endangered (World Conservation Union, 2004). Deforestation and increased hunting pressure often go hand in hand.

Nobody doubts that insular Southeast Asia is among the most important regions in the world in terms of biodiversity; it is among the most threatened areas and it is rightfully identified as a priority region for conservation action. But: how is this to be done? A recent editorial in *Conservation Biology* states: “we know more about what to conserve than how to conserve it” (Bawa *et al.*, 2004). Through what social, political or economic processes can environmental change be best secured? Should change come from national and regional policy makers, the international conservation community or the private sector? Or should it come from local and indigenous communities, an idea which is now firmly rooted in many new conservation paradigms? This idea is often based on the optimistic assumption that local people are in the best position to take positive steps towards conserving the resources on which they depend. This article seeks to throw some light on

this complex issue by discussing some of the recent change processes that have taken place in the Philippines and Indonesia.

What is striking in the case of Indonesia and the Philippines is how similar the countries are in terms of socio-political processes, including environmental degradation; yet, there is a tendency to study the two countries separately from each other. In spite of their similar background in terms of (pre)-historic movements of peoples, the countries are literally island worlds apart. The differences in their colonial history, of which the effects are still felt nowadays in many aspects of life, including legislation, contribute to this state of affairs. There are also important differences in dominant religions, political systems, orientations towards the outside world and numerous other features have created a situation in which both countries pay little attention to each other. Yet, particularly in the field of environmental management, it is interesting to compare the two countries since, from a time perspective, the Philippines started its transition towards decentralisation some 10 years before Indonesia did. Relevant experiences in the field of devolution and decentralization in natural resource management in the Philippines might be of interest to Indonesia.

## **The Philippines**

The Philippines has lost more of its original forest cover than any other country. Yet, it has only received the full attention of conservationists during the last 15 years. It has been claimed that it is already too late to prevent a dramatic impending biodiversity crisis, natural resource depletion and the resulting natural and socio-economic disasters (Terborgh, 1999).

### ***Resource management across the islands***

In terms of environmental management the country has recently gone through a major process of transition. The history of forest degradation in the Philippines started under Spanish colonial rule which lasted until the end of the 19<sup>th</sup> century when it was replaced by American colonial rule. The American colonial government stimulated mining, logging and export of products to the United States by providing assistance to mining and timber companies, giving out free concessions and waiving any export or import taxes. On land more valuable for agriculture than forest growth, clear cutting was encouraged (Whitford, 1911: 61-64). Though a system of forest reserves was established, in practice there was not much real protection. In addition, large tracts of land were opened up for the establishment of plantations by multinational companies for the production of sugar cane, pineapple, and coconuts. After independence (1945), the management of the country's resources was centralised by the state. Under President Marcos (1965–1986), it was the Manila-based political elite closely connected to the economic elites which ruled the country. This was the time of large scale logging concessions granted to big logging companies. Mining activities basically followed the same track. In combination with the structure of large land ownership and population growth this led to encroachment of forested land by landless farmers in search of arable land. Millions of hectares were deforested, initially in the

Central Visayas and later also in Mindanao. In the 1950s Mindanao became the frontier area and was opened up for large scale migration as ‘the land of promise’ for landless farmers from the Visayas. This was also stimulated by the general attitude of the government which promoted the transition of forest land into productive agricultural land. One of the slogans used was: ‘cut the trees, own the land’. Recent political history studies in Mindanao have made clear that the beneficiaries of the land distribution were in the end not the landless or poor people. Through clever manipulation and speculation, land titles ended up in different hands (Turner *et al.*, 1992). At a later stage, the remaining forests of Northeast Luzon and Palawan were turned into the country’s last frontiers.

After the fall of Marcos in 1986, logging continued even though voices against large scale logging became louder. At the end of the 1980s, talk of a logging ban was started and this was actually installed in many areas. Saw mills were padlocked, even though there was much discussion about the pros and cons of a logging ban (Vitug, 1993). In many areas, large scale logging was much reduced; though, in large parts of the country, forest had already been reduced to isolated pockets. Only Northeast Luzon, Central Mindanao, Samar and Palawan retain sizeable forest areas, mainly at higher elevations (Ong *et al.*, 2002).

### ***Democratisation, decentralisation and a new protected areas system***

As a result of the People’s Power revolution of 1986, a wave of democratisation swept through the country. Decentralisation of power to local government units, community based management and a rapid succession of people-centred forestry policies followed. In a general sense community based natural resource management was adopted as a central premise for all sectors of environmental science: in forestry, irrigation, fisheries and to a lesser extent in mining (Utting, 2000).

In 1992, a new law created the National Integrated Protected Area System (NIPAS). This provided guidelines for the establishment and management of protected areas. Existing and new protected areas can only be (re)established after consultation and consent of local communities. People who live or cultivate land within the protected area for a period of at least five years prior to (re)establishment, retain their access and user rights. Every protected area has to be managed by a Protected Area Management Board (PAMB) with a majority representation of local communities and indigenous people.

The PAMB is responsible for all decisions concerning the protected area, including the establishment of zones. Possible zoning includes:

- (1) ‘sustainable use zones’ where the harvesting of natural resources is regulated;
- (2) ‘multiple use zones’ where rural development is encouraged; and
- (3) ‘total protection zones’ where human activity is not allowed.

Large scale funding from the World Bank through the Global Environment Facility (GEF), the European Union, and other donors was initially available to establish several priority sites. Consultations, the retaining of land rights and involvement of local representatives in park management has undoubtedly led to the acceptance of newly established protected areas in the Philippines since 1992, for there has hardly been opposition to these new

parks. This may also be explained by the simultaneous acknowledgement of ancestral land rights, including those within protected areas by the Department of Environment and Natural Resources in 1993 (DENR, 1993). One of the issues in establishing an effective protected area system in an endemic hotspot archipelago is coverage. Islands as small as 240 km<sup>2</sup> have their own endemic species. With seven well situated protected areas, mainland Australia could protect all endemic bird species (based on identification of endemic bird areas in Stattersfield *et al.*, 1998). The Philippines would need 117 parks to protect its birds alone (Mallari *et al.*, 2001). 206 priority areas for biodiversity conservation, including 36 marine sites, were identified during multi-stakeholder workshops in 2001 (Ong *et al.*, 2002).

244 protected areas have been proposed under NIPAS with a total area of more than 3.2 million ha (Ong *et al.*, 2002). Of those areas, 132 overlap with the identified priority areas mentioned earlier. Most of these parks exist only on paper; there is no government funding to establish good management systems and most international donors have recently, for various reasons, withdrawn funding support for environmental projects in the Philippines. Only five protected areas have so far been fully established through a presidential proclamation followed by an endorsement by the Congress of the Philippines.

### ***Indigenous people and the environment***

One of the aspects linked to environmental conservation is the issue of indigenous peoples' rights. To a large extent indigenous people had suffered under Marcos from land encroachment, plantations, mining and logging. In order to undo the injustice of the past the new administration felt they had to do something in their favour. Efforts to grant them special rights in the new constitution were unsuccessful. However, in 1993 a special departmental order was issued by the Department of Environment and Natural Resources (DENR) to provide opportunities to apply for a Certificate of Ancestral Domain Claim (CADC). This policy instrument was at that time presented as 'the ultimate solution for environmental problems in our country', based on the recognition of the value of the knowledge on biodiversity that indigenous peoples have, and on the fact that they have occupied most forest areas since time immemorial.

In the following years about 181 certificates, covering about 2.5 million hectares, were granted to indigenous peoples throughout the country. Supported by the Catholic Church and numerous academics the increasing vocal and organized indigenous peoples succeeded in getting more political support. President Ramos made their position an important item on his social reform agenda. Finally in 1997, the Indigenous Peoples' Rights Act (IPRA) was signed into force by President Ramos. A National Commission on Indigenous Peoples (NCIP) was created to oversee its implementation. It was considered as an act of justice done for the estimated 10 to 12 million indigenous people in the country. For some years the law was not implemented because, soon after the law was passed through Congress, its constitutionality was questioned by a former judge on the basis that all Filipinos are equal and some groups of people should not be granted special rights over the country's resources.

It took the Supreme Court a couple of years before a decision was taken. In 2001, it was decreed that the IPRA was constitutional and that the NCIP could actually start its operations. As in many other areas, land rights are among the most crucial rights and at the moment there are numerous applications for land titles by indigenous peoples.

Just like Colombia, Ecuador, Cameroon and Australia (Maffi, 2001), there is a close link between the traditional territories of indigenous peoples and remaining biodiversity. In all priority sites for biodiversity conservation in the country, there are also claims of indigenous peoples to what they consider as ancestral domains. In most of these cases, the legal situation is extremely complicated as a result of the fast changes in policies. It is not exceptional to have indigenous peoples' rights recognised within a national park in which there are also migrants living who have bought the land from the indigenous people or who hold title to the land as granted to them during earlier state programmes for landless people.

Two cases will be used to illustrate some of the difficulties that surround natural resource management, biodiversity conservation and indigenous people issues in the Philippines. These cases studies are partly based on our own fieldwork, in addition to the work of members of our research team. Case 1 is based on Aquino (2004) and Persoon; case 2 on work by Van Weerd.

### ***Case 1 - The Ancestral Domain of the Bugkalot***

The Bugkalot, an indigenous people in the Southern part of the Sierra Madre Mountain Range (Northeast Luzon), were among the first to receive a Certificate of Ancestral Domain Claim. The area granted to them in 1994 was 108,000 hectares of mainly forest land. Traditionally the Bugkalot who used to be known as Ilongot, were a fierce headhunting tribe. They practiced shifting agriculture in addition to hunting and gathering. Over the years they had lost most of their land to encroaching migrants who were displaced from the Central Cordillera Mountains and migrants who arrived in the wake of commercial logging operations in the Sierra Madre.

The certificate consists of a contract document signed by the government and representatives of the Bugkalot tribe. The contract stipulates the rights and obligations of both parties. It grants the Bugkalot the right to manage the land and to use its resources under certain conditions. It even allows for some logging using traditional technology and according to an approved land use plan. For people not used to live according to pre-defined contracts and with little other alternative opportunities at hand, problems quickly arose. Most of the young people were primarily interested in small scale commercial logging to supply the local furniture industry with suitable timber. Even though outsiders often tend to think that indigenous people or tribal communities act collectively, lack of leadership and social control often hamper collective action. Also in this case, many people were simply not willing to live up to the limitations stipulated in the contract and local leaders were not in a position to control those who ignored the rules. Even though there is a tendency in the Philippines to 'humanize the law', that is to accept non-compliance because of human considerations, in the end the permission to log at a small scale was

suspended to prevent further forest degradation. Since the Indigenous Peoples' Rights Act has become operational, not much has been done in the area in terms of new initiatives. Illegal logging still takes place to some extent.

This example indicates among others that transition in management style from centralised management to local management is full of pitfalls, not only on the part of the government but also on the part of the local communities who, in spite of environmental rhetoric, face serious problems if they are to live up to the expectations of being guardians of the environment (Aquino, 2004).

### ***Case 2 - The Northern Sierra Madre Natural Park***

As an example of the ambitious project to establish a new protected area system in the Philippines under the NIPAS law, we present a brief overview of the history of the Northern Sierra Madre Natural Park (NSMNP).

The Sierra Madre Mountain Range is situated along the eastern coast of Luzon. The northern portion of this mountain range is referred to as the Northern Sierra Madre. This remote and inaccessible area is covered by the largest stretch of undisturbed mountain forest in the Philippines. Most lowland forest in the region has been selectively logged during the logging boom of the 1960s till early 1990s and has subsequently been clear cut for agriculture or has, in the hill areas near the mountains, regenerated.

Former President Marcos declared a wilderness area around the town of Palanan in 1979 but commercial logging continued. Established logging roads provided entry into the previously remote mountain areas for land seeking farmers, most of whom depended on slash-and-burn farming (Van den Top, 2003). Logging camps along the wild coast of the Sierra Madre, previously only inhabited by the Agta, the area's Indigenous People, became towns and later municipalities.

In 1990 the Northern Sierra Madre was selected as one of ten priority sites for the establishment of national parks and in 1992 the NIPAS law provided the legal framework for this. With financial support from the World Bank, the Dutch government and Conservation International (CI) three separate conservation projects started in the area. Nine municipalities were entirely or partly situated within the proposed park with around 23,000 people living within park boundaries, among them 2,000 Agta (DENR, 2001).

The NIPAS law stipulates that:

- (1) people living within a proposed protected area cannot be relocated against their will and they will retain land rights; and
- (2) prior informed consent must be secured from inhabitants before proclamation of the park.

All nine municipalities, as representatives of their constituents, adopted a resolution approving the park and in 1997 the NSMNP was established through a presidential proclamation. In 2001, the Congress of the Philippines adopted republic act no. 9125

endorsing the proclamation of the NSMNP. The act holds specific regulations for the park. A Protected Area Management Board (PAMB) was established in 1998 and a management plan for the park was adopted in 2001. Areas where people live have been declared multiple use zones, surrounded by a buffer zone where sustainable use of natural resources is allowed. About 70 % of the park has been designated as totally protected where no human activities are allowed except by the Agta. The park encompasses ca. 360,000 ha of which 270,000 ha are terrestrial and 90,000 ha are marine habitats. Sixty-three globally threatened and near-threatened wildlife species have been recorded in the park, more than in any other protected area in the Philippines (Tan, 2000). Sixty to eighty-five percent of all species, depending on the species group, of Luzon are present in the NSMNP (Van Weerd, 2002).

In return for their endorsement of the park, the nine municipalities were promised assistance in livelihood development and in the establishment of basic services by the three conservation projects. Indeed, schools and health stations were erected and small irrigation projects were started. Eco-tourism was seen as possible future alternative income generating activity, although the potentials for successful establishment are very limited (van der Ploeg & Taggug, 2003). A pilot eco-tourism project by CI failed and this organization shifted focus to areas not covered by the other two projects. The World Bank funded project stopped in 2001 following a disastrous evaluation and a conflict on perceived mismanagement between implementers and donors (World Bank, 2004) which was eventually played out in the media (e.g. Anson, 2001). The Dutch government funded project has been terminated two years in its second phase on the basis of non-performance of its implementer (European Commission, 2005). The Dutch government has also decided to withdraw all support to environmental projects in the Philippines in 2006.

Government funding for the NSMNP is minimal. Logging albeit illegal is still an important income generating activity for local people and is widely practiced inside the park (Department of Environment and Natural Resources, 2001). One municipality in the park is actively promoting immigration, offering free plots for new settlers. Government funds for municipalities are partly based on the number of inhabitants. An evaluation of the Dutch funded project showed that alternative livelihood development did not contribute to lessening pressure on natural resource use in the park (Beets *et al.*, 2002). Law enforcement is hardly present as a result of lack of government funding and a general tendency to allow small scale extraction activities by poor farmers. Groups of more than 500 loggers have recently been observed in the strict protection zone of the park (Van Alphen & Telan, 2002). In forest areas deep in the park which were relatively undisturbed four years ago, all larger trees have now been removed (Van Weerd, personal observation).

Some local governments however are convinced that natural resource protection and biodiversity conservation is in their interest and have taken their own initiatives. The local government code of 1991 decentralizes legislative power to municipalities in the fields of environmental management, among others. The municipality of San Mariano, partly situated in the park, is actively conserving the Philippine crocodile *Crocodylus mindorensis*. This species, endemic and critically endangered, is protected through a municipal ordinance. In addition, a local protected area for the crocodiles was declared by

the municipality. The number of crocodiles reported killed has greatly been reduced and the small population has doubled in size (Van Weerd & Van der Ploeg, 2003).

This example shows that the protected area establishment program under NIPAS had a promising start. Within a few years a new park was established, covering a priority conservation area and with the full consent of local authorities. International donors were lining up to get involved. However, massive funding and new community-based approaches could not solve (at least at the short term) the usual problems that protected areas face: illegal resource extraction, immigration, increased human pressure. Now that donors have backed off, disappointed by the lack of results, there is little hope that these issues will be resolved in the future by cash-stripped national government agencies. Decentralisation has placed the responsibility for the park in the hands of a local management board which does not have the means to actively protect the area. But decentralisation may also provide opportunities for other local solutions, as the example of the active involvement of a municipality in Philippine crocodile conservation shows.

## **Indonesia**

In spite of its richness in terms of biodiversity in both absolute as well as relative terms (relative to global biodiversity), it is hard to be optimistic about the future of Indonesia's biodiversity and natural resources. The intensity and the scale of resource use create serious threats to the area's traditional abundance.

### ***Resource management in a vast archipelago***

For most of its recent history, resource use in Indonesia has been dominated by a centralised form of government. In the New Order Regime under President Suharto, which lasted until 1998, large scale logging and mining operations took place across the country. In addition all kinds of infrastructural facilities were developed to open up the wilderness. A large part of the land was defined as 'empty land' (*tanah kosong*) which could be used for better purposes instead of leaving it as pristine forest. Area development for transmigration, plantations for industrial crops, and industrial complexes took mostly place in the so-called outer islands (Sumatra, Kalimantan, Sulawesi and Irian Jaya (now West Papua)). Since the late 1960s Jakarta-based ministries for forestry, mining and fishing played a dominant role in issuing permits for processes of land conversion or extraction of the country's resources. Benefits generated from these resources were absorbed by the private sector or channelled back to Jakarta. Some of these businesses were set up as joint ventures with foreign companies, particularly in mining and industrial crop production. Large business conglomerates with diversified activities and with intimate relations with the political and military elite became dominant. Throughout the archipelago, local communities lost authority over their traditional lands and fishing grounds, and there were few opportunities to speak out against such situations. To some extent, foreign donor agencies were instrumental to this development by financing transmigration projects or mega-infrastructural works like the Trans Sumatra Highway (The Ecologist, 1985).

Because of the crucial role of forests in the context of biodiversity and resource management, we would like to concentrate on this resource in this section of the paper.

In recent decades, the extensive forests of Sumatra, Kalimantan and West Papua have been subject to rapidly changing patterns of use and protection. This, in itself, is the result of complex socio-economic and political processes which give rise to a lot of discussion as to who is responsible and to what degree for such forest degradation. Various deforestation studies have tried to reveal the underlying social dynamics (e.g. Van den Top, 2003).

In particular, lowland and mangrove forests have been converted into settlement areas and most recently also into plantations for rubber trees and oil palms (Casson, 2000). Local forms of management were replaced by centrally issued rights of exploitation and conversion. In addition to legal and illegal logging and official transmigration schemes, large tracts of swamp land have been converted into agricultural land by spontaneous migrants. The construction of the Trans Sumatra Highway and the web of connecting roads to the provincial capitals have been vital for facilitating access to forest and mineral resources, even though all modes of exploitation already had a long history (e.g. FAO, 1999). Technological innovations have hastened the scope and impact of forest exploitation.

Though sources vary in the classification of land use patterns and vegetation types, the most recent figures as published by the Indonesian authorities, the World Bank and the Global Forest Watch agree on general tendencies. In a recent overview of the state of the forests of Indonesia, a dramatic picture is presented. Within 12 years (1985-1997), more than 20 million hectares of forests were lost. Within the country as a whole, Sumatra experienced the most serious degree in forest decline (29%), while the figure for the whole of Indonesia is about 17%. The situation is even more dramatic if we focus on lowland forest. Of the accessible lowland forest, more than 60% was lost within 12 years. Montane forest, with elevations over 1000-1200m above sea level, and therefore more difficult to access and with less valuable timber species available, is relatively less attractive to exploit. Proportionately, the loss of lowland rainforest over the period of 1985-1997 is more than twice the overall forest decline. Though the exact figures are debated by scientists, the general tendency in forest decline is not. It is impossible to deny the dramatic decline in forest cover. The Indonesian government is pressed by international organizations to take action, but not all actions imply better management (Forest Watch Indonesia/Global Forest Watch, 2002: xi).

Though conservation of forest resources started in colonial times, a relatively large number of protected areas has been added to the list of reserves in the 1970's and 1980's. At the moment there are some 1,080 protected areas in the country. At least 40 of them have the status of a national park, including a couple of areas of more than 1 million hectares. Other areas have a lower protected status but as a whole the network of protected areas is quite impressive. It also includes marine reserves. For a long time, the management of these areas was supervised directly by the Ministry of Forestry of which the Department for Nature Conservation was part. Some parks have been managed well for a very long time; but in many cases however there is severe external pressure. Encroaching farmers, traders

in illegal timber, and poachers of wild life force forest guards to remain alert, even though in many cases they seem to be fighting an uphill battle for which external support is essential.

### ***Decentralisation***

Since the fall of Suharto in May 1998, Indonesia is facing a period of dramatic political change. Political reformation, regional autonomy, and decentralisation of power are key concepts. In order to undo the negative impact of decades of centralised forms of government, two decentralisation laws were adopted in 1999. The first (Law 22) dealt with administrative decentralisation and granted more political autonomy to the provinces and the districts; while Law 25 spelt out some of the financial aspects of decentralisation, allowing provinces and districts to retain a relatively large share of the income generated from mining and logging. Logging concessions were no longer granted at the national level. Provinces and districts could grant smaller size concessions to village cooperatives and other organizations. Without paying too much attention to the literal text of the new laws, the spirit of decentralisation spread rapidly across the country. Claims to traditional or *adat* land, which were simply ignored throughout the New Order Era, were revived. This also happened in areas designated for protection.

At the same time, and largely modelled after the indigenous peoples movement in Latin America, a large group of ethnic minorities or tribal people united under the banner of the Indigenous Peoples of Indonesia in order 'to redefine their relationship with the Indonesian State' in 1999. Recognition of the traditional territorial rights was amongst those claims of this new alliance called AMAN (*Aliansi Masyarakat Adat Nusantara*). Their voice has since become stronger and in numerous cases they have managed to reclaim land rights. It is obvious that their primary aim is not always nature conservation. After decades of commercial logging without receiving any benefits, many of them make use of the new opportunities to secure at least part of the income that could be generated from their own territory. The tribal communities are reclaiming traditional land use within national parks and other protected areas. Park staff is in an extremely weak position to resist the local people from entering the protected area. The staff is no longer backed up by the police or the military. Local government officials in their turn have to generate an income from the resources within their territory because, as a result of decentralisation, funds from Jakarta are substantially less than what they used to be some years ago. So both local governments and local people just have to make a living from the available resources. As in most cases nature conservation does not generate a great income, it is obvious that some of the resources have to be harvested. This spirit of decentralisation and the conviction that local people are the rightful owners of the land has led to an unbelievable increase in logging operations in Kalimantan and Sumatra in particular. It is recognised that the official statistics of logging do not cover more than about 10 to 20% of the official export. By simply comparing export figures from Indonesia to the People's Republic of China with the import figures of China, the discrepancy becomes all too obvious. Efforts to take firm steps to control illegal logging have been largely futile. There is a tight network behind the illegal logging business, involving money lenders and officials at various levels.

Once in a while there are token confiscations and court cases; but the business continues almost unhampered (Scotland *et al*, 1999; Obidzinski, 2003).

In resource rich areas such as East Kalimantan, West Papua, Riau and Aceh, the struggle is not only for a fair share of the income of the resources, but it is combined with a political struggle for more autonomy if not for independence. In general however, this struggle is unlikely to be successful because of the strong forces in the country to impose limits to the acceptable degree of regional autonomy. Moreover the army, as a strong force behind the political scene, will not accept any further loss of Indonesia as a country after the independence of East Timor.

Two other cases are hereby presented, based mainly on our involvement in research activities within the framework of conservation projects. Case 3 is based on work by Persoon & Perez (in press); case 4 on work by Persoon.

### ***Case 3 - Orang utan conservation in a peat swamp forest (Central Kalimantan)***

As an example of the changes in the involvement of local people in resource management in Indonesia, we refer to an area in Central Kalimantan. Extensive forested areas in Kalimantan have been lost due to commercial logging, the establishment of plantations and transmigration sites often in combination with forest fires. In the coastal zone, mangrove forests have been turned into shrimp ponds and aquaculture. As a result of these combined effects, forest-based wild life is seriously threatened. One of the most spectacular animals is without doubt the *orang utan*. Once common throughout Kalimantan and Sumatra, numbers have dwindled as a result of habitat loss and poaching. Though the absolute number of *orang utan* in Kalimantan is estimated to be at around 25,000 animals, most of them live in forest fragments, or 'islands of forest', without any corridor (Rijksen & Meijaard, 1999).

The area with the largest population is probably the peat swamp forest of Sebangau in the coastal zone of Central Kalimantan. Traditionally an almost uninhabited area, modern technology has made it possible to harvest some valuable tree species by digging canals which can be used for the transport of the logs. During the dry season however the canals keep on draining the forest which becomes susceptible to forest and peat fires. Even though the area was never officially protected, newly acquired knowledge that this area might contain the largest and most viable population of *orang utan* in the world has raised awareness among the local people. Instead of waiting for Jakarta, the local government has taken the initiative to declare it a protected area. Within the same awareness, and clearly stimulated by widely used international conservation jargon, the traditional leaders of the Ngaju Dayak people have declared the area as an eco-region to safeguard its resources. In doing so, they employ the idiom and rhetoric of the international indigenous peoples' and environmental discourse. The aim is that the area will be managed by the local government in close cooperation with the local communities, for which the latter hope to receive external support from a number of sources. If, for some reason, this support does not materialize, the spirit of conservation may suffer (Persoon & Perez, in press).

#### **Case 4 – Siberut Island as ‘Man-and-Biosphere’ reserve**

The island of Siberut off the west coast of Sumatra (over 4,000 km<sup>2</sup>) is one of very few cases in Indonesia in which an entire island was declared a reserve. This happened when UNESCO (with the support of the Indonesian authorities) included it in its ‘Man-and-Biosphere’ (MAB) programme in 1981. There were high expectations that a core reserve area would only be surrounded by a ‘traditional use zone’. In this zone, the local people, who then numbered less than 25,000, could still practise their hunting and gathering activities, cultivate some perennial crops and raise semi-wild pigs and chickens. The staple was sago starch collected from the sago palm (*Metroxylon sagu*). Large scale logging would be cancelled completely while initial plans for the transmigration of people of Java to the island would be shelved. In this way Siberut, described as a ‘paradise island’, would be ‘saved’ (Whitten & Sardar, 1981). The endemic wildlife, including 4 species of primates, and the rich traditional culture with its elaborate ritual cycles, could survive. The combination of a lush tropical nature with what was often described as ‘Stone Age culture’ on a relatively small island attracted the interest of Western conservation agencies and eco-tourists. The battle against commercial logging was finally won when in the early 1990’s all concessions were cancelled and half of the island was declared a national park. The Asian Development Bank made Siberut the prime focus of its Indonesia Biodiversity Conservation project, spending millions of dollars on alternative livelihoods, promotion of tourism and park management (Asian Development Bank, 1995).

Soon after the fall of Suharto, the Mentawaiian Archipelago of which Siberut is the largest island, received the status of district. It was no longer just a small administrative part of the mainland of West Sumatra, but a unit with relative autonomy. At the same time however support for the national park from the central government in Jakarta diminished, tourism decreased as a result of political unrest, and the district was faced with the task to generate new sources of income for the development of the archipelago. The easy and logical choice was to resume logging. The possibility of granting small logging concessions to local co-operatives was adopted and Padang-based contractors were hired to do the job. As a result of the strong position of the local patrilineal family groups, who also hold the titles to the land, decision making at the higher level is extremely difficult. With no longer a powerful central authority in place to take a view overlooking the entire island, communities decide for themselves how to exploit local resources. At present they often act out of frustration over years of resource extraction or limitations over resource use for the sake of nature conservation by outsiders. The idea of maintaining the island Siberut as a relatively intact MAB reserve has become more difficult under the present conditions than 25 years ago when Siberut was considered a ‘pearl’ in UNESCO’s programme (Persoon, 2003).

#### **Comparison of case studies**

All four case studies deal with relatively remote parts of the Philippines and Indonesia that were until recently of little interest to national governments. The main inhabitants of all case areas are indigenous peoples that did not enjoy land rights, until major political reforms took place in both countries. In the case of the Bugkalot and the Nyaju Dayak, the

indigenous people are a relatively strong and vocal group with a history of resistance. The Agta and the Mentawaians of Siberut however do not have such a history when it comes to confrontations with outsiders; even though nowadays, they do benefit from the general achievements of the indigenous peoples' movement.

Looking at the cases from an island perspective, three of them (the Bugkalot domain, the Sierra Madre Natural Park and Sebangau *Orang Utan* Reserve) are to be considered as landlocked biodiversity 'islands' surrounded by land use types of a very different nature. They consist of 'islands of rainforest' of various types (mountain forest, or peat swamp forest) as part of large island land masses amidst intensively used agricultural land with radically different degrees of biodiversity. The only 'real' island is Siberut, surrounded by water with, at least until now, little or no encroachment from migrants looking for arable land. After a few decades of centralized forms of resource management and large scale exploitation, in all cases cooperation with the indigenous people is crucial if biodiversity is to be conserved. At the same time, the conditions under which resource management should take place are not favourable at all. The present pleas for nature conservation are often confronted with frustrations of deeply felt injustice over misappropriation of resources in the past. Many local people argue that the time has come for them to cash in on what they consider as their resources. Time will tell whether the conflicting principles on making immediate profits on resource use, or safeguarding them for a more distant time horizon, will create cleavages within the local population, as seems to be the case at present.

What all four cases show is that the process towards decentralization and stronger involvement of local people in natural resource management is perhaps more problematic than anticipated, and that there are strong parallels in both developments and emerging issues between the Philippines and Indonesia. Though decentralization of responsibility over natural resources is advocated as a solution for largely ineffective, corrupt and failing central government programs, unsustainable resource extraction is often continued on a local scale (illustrated in all four cases). Although this arguably leads to a fairer distribution of wealth, it is now mostly local elites who prosper and the resources are still being lost at an unsustainable rate. Biodiversity conservation is not being advanced in this way and the partial withdrawal of central government from the management of natural parks, in terms of funding and supra-local authority, in both Indonesia and the Philippines (illustrated in the Sierra Madre and the Siberut cases) is currently not providing good prospects for effective biodiversity conservation in the near future. On the other hand, decentralization also offers possibilities for local governments to take actions themselves (Philippine crocodile conservation in the Sierra Madre and the declaration of a protected area in Sebangau), though examples are still rare and sustainability is questionable with dwindling foreign and national funding support.

### **Comparison between the two countries**

Behind the figures and narratives of forest cover and forest degradation, there is of course a wide range of causal chains and actors caught up in various ways. Present-day

deforestation studies usually distinguish between so-called immediate and underlying causes, all of which have their implementing agents, and their primary and secondary actors (Sunderlin & Resosudarmo, 1996; Kaimowitz & Angelsen, 1998; Van den Top, 2003; Forest Watch Indonesia/ Global Forest Watch, 2002; Persoon *et al.*, 2004). The most direct and most visible cause of forest decline is of course the destruction of the forest through complete clearing or burning. Such destruction is often the final stage of a gradual degradation process that would have taken off many years earlier. Underlying causes of these processes refer to the general attitude towards primary forest as 'empty land' ready to be turned into 'better use' as plantations, farms or settlements. In both countries, large tracts of forest were classified as such (Sumatra and Kalimantan in Indonesia; Mindanao in the Philippines).

Agents identifiable as actors involved in the various stages of this process of deforestation, range from forest dwelling communities, to expanding agriculturalists to logging companies, plantation owners and government institutions. At a greater distance are the financing institutions within or outside Indonesia and the Philippines and the purchasing power of consumer markets in various parts of the world (Wakker, 2000). At the other end, one finds the agencies and institutions that fight for the protection and conservation of resources. Here too, one can differentiate between various actors: apart from local people resisting forest ruin, one finds national NGO's, state units, religious bodies and international agencies.

There is also a variety of non-corporate forest users, ranging from traditional hunters and gatherers, to shifting agriculturalists, expanding agriculturalists who combine subsistence farming with the cultivation of cash crops, and areas with intensive agriculture. In contrast to other tropical forest areas (e.g. South America), extensive cattle raising and thus extensive grasslands for grazing are absent in Indonesia and of marginal importance in the Philippines. Cows and buffalo are limited in number and so their impact on land is negligible.

There is a general pattern of stages of forest conversion. This pattern seems to be relevant to the way this process has occurred in many parts of Indonesia and the Philippines during the last few decades when mechanised large scale logging became significant. Another important aspect is the influence of the international market for forest products and timber. Interestingly, the various stages can also be linked with ideas and perceptions that forest users have with respect to the characteristics and the productive capacities of the forest. Is the forest considered as the 'home' of the people as is the case with indigenous forest dwellers? Or is forest considered as a 'wild' resource to be harvested, domesticated and used in radically different ways, as is the case with plantation owners?

With regards to resource use and particularly the forms and intensity of forest exploitation, there are certainly similarities between the two countries. In recent years both countries have lost substantial parts of their forests under strong centralized forms of government. In the period 1960-1990, large scale commercial logging was big business; but, given the size of the country and its population density, not much was left at the end of the 1980s in the Philippines. Then, the phrase 'plundering of the country' was often used (Broad &

Cavanagh, 1993). There was a widely felt need for immediate nature conservation action. A nation-wide logging ban was installed and soon the Philippines became an importer of tropical timber. In the field of resource management, the big transition in management style (late 1980s, early 1990s) occurred when most of the forest was already gone. The country was also struck by a series of major disasters which, though 'natural' in character, had a more serious impact because of the state of the environment: so, land slides on denuded and eroding mountains had a dramatic effect when combined with typhoons or earthquakes.

In Indonesia, the situation was markedly different: the size of the country, the wealth and the amount of its resources and their location had left large tracks of forest relatively intact. At the end of the New Order, there was still much undisturbed forest, in spite of the country's history of resource exploitation. Here, the need for strong conservation measures was not widely felt. On the contrary: many local communities felt that national parks and other protected areas were being imposed upon them. Now that the central government was weaker, people took their chances to reclaim areas that they considered to be theirs. From a conservationist outlook, these events refer to an encroachment of national parks.

Indonesia also has much less wild life trade and bushmeat consumption than the Philippines. Differences in culture and particularly in religion play an important role in this respect (e.g. Persoon & De Iongh, 2004). While in the Philippines wild life poaching and bush meat trade is a country-wide phenomenon, this is not the case in Indonesia. Numerous wild animals cannot be consumed by Muslims and from the perspective of the animals it is certainly better to be hated than it is to be loved. A high economic value is more likely to bring an animal to the point of extinction than deeply felt feelings of dislike.

Until recently, both countries enjoyed relatively strong interest from the international donor community which supported government programs and conservation agencies. However, in recent years, donors like the German Development Aid (GTZ), the European Union (EU), Asian Development Bank (ADB) and the World Bank, have pulled out, disillusioned by the outcome of a number of projects. Corruption, lack of commitment and political will, and complicated bureaucratic procedures are some of the reasons blamed for this. Less emphasis is put on the possibility of ill-designed projects in terms of duration, organizational structure and of lack a failure to learn from past mistakes. At present, both countries suffer from this rapid decrease of foreign interest in conservation activities. It seems likely that, given the decentralized forms of government, the two countries will not be able to sustain the level of personnel and infrastructure necessary to maintain the protected status of the areas involved.

## **Conclusion**

The fact that the insular world of Southeast Asia consists entirely of large and small islands is hardly reflected in the management of its resources, nor in its efforts to conserve biodiversity. Some of the large islands comprise land masses, and socio-political and cultural complexities, which are beyond an intuitively felt 'islandness'. With few

exceptions, no use is made of the island nature of the region to define the units of conservation or environmental management. Mainly because of political or historical reasons, management units are determined differently. Exceptions include the island of Komodo with its National Park to protect its famous dragon, Siberut as a Man-and-Biosphere reserve in Indonesia, and the island of Palawan in the Philippines. Yet, it would make sense to design biodiversity conservation strategies on a 'per island' basis. Each larger island in Indonesia and the Philippines has its characteristic cultural diversity, climate, vegetation and, more importantly, endemic species. Conservation priority areas in the Philippines have already largely been defined along island boundaries (Ong *et al.*, 2002). Island based natural resource management could benefit from the coherence that this specificity offers, and be more appropriate and effective in comparison with general management approaches. There could theoretically also be an advantage of having the natural boundaries that islands possess: islands as management units are easier to oversee; and processes of natural resource extraction easier to monitor and control.

Also, in terms of administrative divisions, there is both in Indonesia and the Philippines hardly an example to be found where an island is administered by a single authority. Big islands are simply too big to handle for administrative purposes. There are being subdivided into smaller units, without a single supervising body. Islands like Sumatra, Kalimantan, and Sulawesi in Indonesia, and Luzon and Mindanao in the Philippines, do not have island-wide governing bodies, not even coordinating units. Smaller islands in both countries are being lumped together with others. Most likely, this has a political bias: the obvious choice for islands as units of administrative division could have strengthened the call for political autonomy or even independence (e.g. Baldacchino, 2004). The somewhat arbitrary nature of nation formation, largely on the basis of the historical strength and policies of the colonial states in the region, was to be reinforced by cross cutting any kind of natural division.

Though the world of insular Southeast Asia is still globally unsurpassed in terms of biodiversity richness and endemism, it is impossible to ignore the dramatic decline in lowland forest cover and the impacts this will have on both biodiversity and the sustainability of natural resource use. Recent transitions in political power under processes of decentralization and democratization reflect a widely felt need to give power back to the people, after years of centralized elite rule which has led to an unequal accumulation of wealth from natural resource extraction. However, this process has led to unstable forms of governance and management of natural resources. Instead of more effective, socially justifiable, devolved and island-based natural resource management under a centralized framework, the national governments of both the Philippines and Indonesia seem largely to have lost control over natural resource management and biodiversity conservation. Local communities and indigenous people have been given responsibility over resources under the optimistic premise that they can do what central government could not: conserve. At the same time, central government resources for national park management and protection have diminished and so has international donor funding for this goal. The responsibility to conserve biodiversity has been decentralized as well and, with few exceptions, local communities cannot carry this burden. The outcome of this process in terms of sustainability and maintenance of biodiversity remains unclear (Colfer & Resusodarma,

2002). Many experts are pessimistic. From centralized state-induced plunder of natural resources (Broad & Cavanagh, 1993), the tide has turned to a localized “grab and run” attitude. Communities try to make up for past injustices by reclaiming traditional territories or cashing in on what resources may be left before a change of political wind. New initiatives will need to be developed in order to change current trends.

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