

National Parks and Rural Communities

Soekiman Atmosoedarjo

Professor of the Mulawarman University
Samarinda, Indonesia

Lukito Daryadi

Directorate General of Forestry
Jakarta, Indonesia

John MacKinnon

UNDP/FAO National Parks Development
Project, Bogor, Indonesia

Paul Hillegers

School of Environmental Conservation Management
Ciawi, Indonesia

ABSTRACT. *National park development in Indonesia is still at an early stage; none of the first parks are yet fully developed and in no case have the buffer zones and other community projects yet been implemented. But existing government programmes of extension and agro-forestry can be adapted to conservation needs. Indonesia already has much experience in all of the components of the proposed methods for minimizing friction between local people and national parks and in maximizing benefits from these areas. This paper describes a number of these social programmes for protected areas which are being implemented in Indonesia, with hopes that such information will prove useful to other countries facing similar problems.*

1. INTRODUCTION

Land use planning by designation of areas for specific uses produces a pattern of areas with different management objectives. It results in boundaries which did not exist before and restricts the expansion of each form of land use. Adjacent land uses will inevitably have mutual influences, and the degree and extent of these influences depends on the respective land use objectives and the communities living in these areas. This paper is devoted to the interactions and relationships that exist between national parks protected areas and neighbouring rural communities, especially in Indonesia.

About 60% of the 2 million sq km of Indonesian land is forested (unexploited and logged-over forests), 8% is under permanent agriculture (7% smallholders and 1% estates) and the remaining 32% is occupied by other land uses including considerable areas of denuded

and bare critical land. The country includes a full spectrum from some of the least disturbed and least populated areas in the humid tropics, e.g. Irian Jaya with an area of 42 million ha but a population of only 1.1 million (2.6 persons per sq km) and 98% of its natural vegetation left, to some of the most densely populated areas, e.g. Java with an area of 13.5 million ha and a population of 91 million (674 persons per sq km) and only (8% of its natural vegetation left.

The Indonesian population is the fifth largest in the world (150 million) containing many different ethnic groups. The majority depend on subsistence agriculture (i.e. most of their staple food, protein, fuel and other commodities are either directly collected from nature or grown for their own consumption and do not enter the cash economy). The rural population is a very heterogeneous, ranging from isolated groups who live completely on the gathering of forest products and shifting cultivation to sophisticated farmers who are well integrated into the market economy.

The country as a whole can be characterised as humid tropics but in fact there is a broad range of climate from ever-wet to seasonal monsoon. In addition, because of the country's fortuitous position straddling the gap between two major biogeographic regions and the high levels of island endemism in the transition zone, the country boasts longer species lists and greater diversity of biological communities (including very extensive marine habitats) than almost any other country in the world.

With respect to this great natural wealth of species, Indonesia has embarked on an ambitious conservation

programme. Apart from an extensive system of environmental protection forests to preserve water sources and prevent soil erosion in steep and erosion-prone areas, the government has ordered a major expansion of its system of Strict Nature Reserves, Game Reserves, Recreation Forests and, more recently, National Parks. In every case, the success of such reserves depends upon the relationship that develops between the reserve management and the neighbouring rural community.

2. GOVERNMENT OBJECTIVES AND POLICY

One of the general objectives of the Indonesian Government is "the protection of nature and wildlife specifically for scientific, cultural, national defence, recreational and tourist purposes; . . . providing various means of living for the people in and around the forest; . . . Nature conservation and protection are directed to the conservation of ecosystems instead of merely protecting species, through the designation of suitable forest areas as nature reserves." Further, Indonesia has adopted the generally-accepted IUCN criteria for internationally recognized National Parks, but has added some specific criteria of its own. Among these is the stipulation that Indonesian National Parks must also be clearly seen to be in the regional interest so that their establishment will constitute a benefit, rather than an added hardship, to the rural people living around them.

These general objective, policy and management directives place active commitments on the Government to ensure positive benefits to the rural communities when a reserve or national park is established. Indeed, the Government has already developed a strategy for rural community development with objectives which include all the prerequisites to observe these commitments. The general objectives for rural community development not only correspond with the Forestry Policy but they provide a more solid base for rural planning. The objectives read:

1. to conserve the forest, land and water resources;
2. to increase the income and prosperity of the local community and farmers in critical land areas;
3. to improve the attitude and responsibility of the local community members as preservers of natural resources."

Perum Perhutani—a semi-Government Forestry Cooperation—already has ample experience in drawing up and implementing rural community development programmes. Figure 1 portrays an outline of the rural development objectives in Indonesia and the programmes that have been developed by the Forestry Department and Perum Perhutani.

3. MAXIMIZING BENEFITS FROM NATIONAL PARKS

The onus is on Government to show that the rural community is better off with, rather than without, such parks. This stipulation can be easily met in cases where direct benefits evidently exceed the negative effects of the establishment of a reserve national park. Direct benefits for the local community which accrue from a national park reserve may include:

- Conservation or safeguarding of resources, i.e. landforms, rocks, water, soil, microclimates, plantlife, wildlife, fish.
- The balance of the regional environment. This may be the regulation of runoff and the reduction of flood peaks. Decreased rapid surface flow reduces erosion hazard and prevents flooding and sedimentation of valuable agricultural land and irrigation systems.
- Ensuring sustainable supplies of water, wildlife, fish, plants and plant products. Undisturbed catchment areas regulate and filter water runoff so that a steady flow of unpolluted water will be available for domestic and agricultural use. Wildlife and fish will find a refuge where they can breed, restore a healthy population size and from where they can disperse to areas where people are allowed to hunt or fish.
- Employment created by the establishment, development and management of the park. Dependent on the objectives, the habitats and the size of the park, many kinds of labour have to be called in, i.e. to construct and to maintain the infrastructure, accommodations, visitor commodities etc., to manage the habitats and wildlife, to guard and to patrol the park, to man visitor centres and offices, to guide visitors, etc.
- General stimulation of the local economy. Non-local visitors require lodging, food and beverages during their stay in and around the park. Souvenir sales, local craft shops and home and small scale industries to make these articles will get a boost. Often new markets for local agricultural products originate due to better roads and will increase cash crop production. The stimulation of the local economy results in more job opportunities.
- Provision of recreation and tourism possibilities for local, domestic and international visitors. The park will give those living close to it ample time for a regular breather; it will be a healthful resort with creative and aesthetic relaxation opportunities for the region.
- Educational use of the park for visiting classes of school children, student parties, nature lovers groups, scout movements, etc.
- Research uses of the park will not only be of interest for a limited number of national and foreign scientists but it will again bring more money

into the region and provide more jobs as research assistants, guides etc.

The existence or establishment of a national park will always result in some frictions and problems with local communities or individual families living close to the park area. These problems are inherent in the restrictions that must be placed on use of and access to the park (in some cases people have to be actually encouraged to move out of the park areas) and to the negative mutual influences of two different forms of land use. In Indonesia the main disadvantage of a reserve or national parks is that it restricts the land use and consequently takes away subsistence possibilities of the rural community or part thereof. Inevitably local people will try to take advantage of the reserves/parks resources through:

- Encroachment by shifting cultivation or even by permanent agriculture. Fertile, continuous water-fed sites are especially susceptible to encroachment and are difficult to regain once occupied.
- Exploitation of: timber for building materials, for agricultural uses or for sale; fuelwood; fodder; food such as seeds, nuts, fruits, edible palm shoots, fungi, and roots; forest products which can provide cash income, i.e. bamboo, rattan, resins, gums, seeds, tannin, medicinal plants, etc.; honey; and animal protein from hunting and fishing.
- Destruction of dangerous and pest species.

The negative effects which accrue when a reserve or national park directly adjoins agricultural land include the following:

- Foraging in the park of domestic animals such as cattle, water buffalo, goats, sheep etc.
- Intrusion and invasion of the park by exotic plant and animal species, pests, and diseases, wildfires.
- Intrusion and invasion of the agricultural lands by destructive and pest animals, weeds, other pests and diseases, fires.
- Pollution of the park by domestic and agricultural detergents and pesticides, soil products from water and wind erosion, litter from visitors, etc.

Maximizing the benefits and at the same time eliminating or minimizing the mutual negative effects is the easiest way for park management to assure the welfare and cooperation of the rural community. Government can maximize these benefits to the rural community by developing as many different activities and uses of the national parks as are mutually compatible and consistent with the objectives of the parks and involving local people wherever possible. In addition Government could:

- Develop suitable barriers or boundary fences to limit damage done by wildlife to community property. In the case of pest species (e.g. pigs, mon-

keys and rats) this may involve suitable control operations.

- Develop compensation systems for damage done by protected animals.
- Select national parks so as to minimize land-use competition and, where possible, to coincide with other protection needs where environmental benefits are clearest (i.e. include important water-catchment areas and critical areas provided these areas meet national parks criteria), and in accessible areas where tourism benefits will be appreciable.

4. RURAL COMMUNITY DEVELOPMENT

In cases where Government wants to establish a park in the national interest, but which appears to be disadvantageous to those close to the park—in spite of the direct benefits from the establishment—then some positive investments and assistance to the local community must be included in the overall land-use package. This policy of Government has to be applied so that conservation is seen as part of the development process rather than a handicap to development—in line with IUCN's World Conservation Strategy—and out of general fairness to the community concerned. This policy is in practice essential to the success of national parks as it is clear that they will fail until they receive the respect and the support of the local rural communities. There are many ways in which Government could compensate local communities to loss of access to or rights within nature reserves and national parks.

4.1. Optimization of land use according to a sound capability classification

This could include a change in cultivation system, i.e., irrigation of dry land; altering the rotation period by planting perennial crops instead of annuals or vice versa; switching from arable farming to shrub, tree or grass-land cultivation or vice versa; reforestation; combinations of forestry with agriculture and/or animal husbandry. Soils and water conservation management, different soil tillage and planting techniques could improve existing farmlands. Government could introduce and stimulate these changes through setting examples on Government land, extension, grants, credits, assistance in cooperatives etc. In the last few decades, especially in areas outside Java, slash and burn practices have stripped large forests and have converted huge areas into along along *Imperata cylindrica* fields. Government is implementing different programmes aiming at the settlement of shifting cultivation communities in order to protect remaining forests and to prevent further devastation of areas under fallow. For instance, in the Population Resettlement Programme started in 1972, families are provided with parcels of cleared arable land, building ma-

terials for housing, social amenities and food, seed and fertilizers for an initial period. The Nucleus Estate and Smallholders Programme is a cooperation between small plantation farmers and large plantation enterprises established by forest concessionaires.

The allocation of extensive forms of land use between areas with conflicting land use objectives (agriculture and parks) can help to minimize the mutual negative effects. On state land Government could establish buffer zones, around parks consisting of areas of state land falling under the overall management of the park authorities, but generally outside the park boundaries proper, where certain levels of utilisation are permitted for the local community. Through the concept of buffer zones it is intended, where possible, to interpose an intermediate land-use zone managed to benefit the local community while at the same time offering an extra layer of protection to the reserve. Various forms of agriculture would be permitted within the buffer zone. The actual form of land use that is most suitable will vary from situation to situation but within the limitations placed by the actual buffering needs of the reserve park, management can generally be aimed at maximizing the benefits to local people.

Buffer zone development around Indonesian reserves and parks is still a new concept. Guidelines for buffer zone development have been recommended by FAO and PPA and are still the subject of Government review, but no legislation for the establishment of such buffer zones yet exists. Nevertheless there do exist ample examples of new land uses that are suitable for buffer zones. For a long time, agroforestry has been commonly practised and today various different systems of mixed, strip-and inter-cropping are used successfully. The humid tropics are suitable for the plantation of perennial bush and tree crops such as tea, coffee, pepper, cinnamon, cloves, nutmeg, cocoa, oilpalm, coconut, rubber, fruits, etc. Firewood shortage forced the Forest Department a long time ago to establish tree and shrub plantations for energy production.

4.2. Provision of social amenities

These include training centres, housing, water supply, electricity etc. Government has already provided many of these facilities for local communities through different programmes. The Magersaren Programme creates small villages for forest labourers, including houses, water supply and a community centre for religious and educational purposes. Another programme consists of the building of central bath and wash facilities in villages with clean water drawn from undisturbed forest watersheds.

4.3. Improvement of education, extension and information systems

A typical example of transfer of knowledge through community personalities is the MALU programmes. MALU stands for the close cooperation between the responsible forest officer, the mantri, and the head of a village, the Lurak. The residence of the mantri in the village functions as information and extension centre. Here, seedlings of fruit trees and other perennials are raised in small model nurseries and distributed to the villagers to be planted in home gardens and on village lands bordering forest areas. Through the mantri, people are advised on and assisted in apiculture, sericulture, growing fodder, medical plants, fuelwood etc.

5. HOW TO EARN COMMUNITY SUPPORT

To gain community support it is necessary to indeed ensure that development will be a benefit to the community. It is then necessary to undertake extension programmes so that local people understand the objectives of the national park and their own direct and indirect benefits. Extension can be achieved through direct approaches by specialised extension teams or mobile units, by inviting village representatives to meetings, by introducing conservation education into school courses, by the activity of nature lover groups and through general media such as television, magazines, newspapers, education centres, etc. In practice, the direct approach is best and mobile education units in North Sumatra and Aceh received very good response to their slide programmes and film shows in villages. A number of suitable programmes have been made and such units are being established in other areas.

PPA will never have enough guards to physically patrol and protect all parts of all reserves so if reserves, are to be respected, local communities will have to help protect them. To achieve this, each community adjacent to a park will have to be made responsible for the actions of their own individual members. Luckily there usually exist in most parts of Indonesia traditional rules or *adat* to control individual behaviour, particularly with respect to exploitation of communal resources. The idea of community taboo is also still strong in most rural areas. It is important to harness and build on these existing traditions to get villages to respect park regulations. These same *adat* principles are also extremely useful in helping devise the framework for developing harvest and utilisation rights and control within buffer zones.

Government can declare buffer zones, devise regulations, give advice and even assistance in establishing plantations etc. but the labour and main expense of marking, planting and working of the buffer zones must come from the communities that are to benefit from them. Elaborate recommendations have been devised that try to find a formula that will give fairness to all concerned and avoid acting as a magnet that attracts

ever more people into the privileged zone around the park. Again, there is quite a lot of local tradition in organizing community cooperatives in Indonesia; fishing cooperatives, agricultural and agroforestry cooperatives and marketing cooperatives can all be used as a basis for organizing buffer zones.

Ultimately the guard force must be available to arrest and to prosecute the park abusers where necessary. So long as there is no penalty for reserve abuse no amount of extension and goodwill can achieve protection.

6. EXAMPLES

While no park in Indonesia can be said to be fully developed nor any buffer zone fully established, it is worth describing some of the practical examples and case studies that exist in Indonesia of the successful operations of some of the suggested ideas.

6.1. Recreation development at Ujung Kulon, Gunung Gede-Pangrango and Pangandaran

The contrast of the situation in three parks in West Java is instructive.

Ujung Kulon, Indonesia's showpiece reserve, is a rare piece of coastal lowland forest of high conservation value with rare Javan rhinoceros and an abundance of easily-viewed wildlife; but it has never attracted large numbers of visitors despite large financial investment in the reserve, including several excellent guest houses. The problem is the difficulty and expense of access. The overland access route is over terrible roads with no proper bridges while the alternative access involves prohibitive charter of uncomfortable fishing boats and a rough seven-hour sea passage. The local communities adjacent to the reserve are completely bypassed by what visitors there are so that there are no rub-off benefits from the park. Little extension work has been done, the local people do not respect the reserve and abuses in the eastern part of the park remain very serious.

Gunung Gede-Pangrango is of less conservation value and has few animals to be seen by visitors, but has an attractive botanical garden and the park itself has a challenging climb, good views, beautiful forest scenery and waterfalls, a good trail system and an information centre. As a result, several thousand visitors enter the park each year and although they do a great deal of damage in littering and graffiti, they bring a considerable income to the local people, who run weekend refreshment stands and several of whom are employed in the reserve. The reserve is thus fairly well respected and apart from a bit of illicit firewood collection is reasonably unabused.

Pangandaran, a tiny coastal isthmus with a nature reserve and small recreation forest, offers visitors well-laid-out walks through a forest covering interesting

limestone blocks with curious caves. There is an abundance of almost-tame wildlife—deer, banteng, monkeys—and some attractive sea beaches for bathing. The entrance fee is kept at a very modest 100 Rp (US\$0.15). There is almost no accommodation in the park so that the village benefits from all the visitor accommodation, refreshments, sale of souvenirs and running of boat trips over the coral reefs. As a result, the whole area is now in a tourist boom with half a million visitors each year and no serious threat to the forest.

6.2. Recreation forests by Perum Perhutani

Apart from PPA, the State Forest Cooperation for Java, Perum Perhutani, has had considerable experience in developing Recreation Forests. Perum Perhutani is responsible for the management of about 3 million ha of forest area consisting of a wide variety of man-made and natural forest types, e.g. teak and pine plantations and beach, mangrove, lowland, mountain and deciduous monsoon forests, located all over Java in varying and beautiful landscapes. Since 1976, as part of the multiple use policy of the forest resources in Indonesia, the management started to develop the recreation function of their forests. For this purpose an increasing number of forest areas are scattered over Java to serve as Recreation Forests; substantial investments are made in visitors' facilities such as camping grounds, parking lots, nature trails, day and night shelters, etc. Apart from these selected forest areas, many well-visited forest sites are equipped with picnic areas and rest stops. The number of people who are using these facilities is overwhelming and Perum Perhutani is unable to cope with the demand.

6.3. The encouragement of private organizations

Much can be achieved through the activities of private and non-governmental organizations to foster appreciation of wilderness and protected areas. In Java, for instance, there are already 300 Nature Lover Groups and in addition the *Pramuka* or Scouting Movement is of widespread popularity. The Minister of Development Supervision and the Environment has drawn together many of these groups into a representation body called *Wahana*, whose secretariat is housed in his offices. A good example of such a non-government organization is the Green Indonesia Foundation, which publishes a regular illustrated nature magazine aimed at students and interested nature lovers, produces slide programmes with commentaries about reserves and other conservation issues, publishes posters, stickers, educational booklets etc. and also lays on exhibitions at public fairs, conducts extension services and runs a mobile educational unit showing wildlife and environmental films.

6.4. Forest, land and water conservation

The Forest, Land and Water Conservation Programme in the current Five Year Development Plan is a major effort to conserve forests, to battle further degradation of critical lands and to develop rural communities in forest areas. The programme consists of reforestation and greening of State lands as well as private lands, terracing of agricultural lands and the construction of checkdams for regulating run-off, sedimentation of eroded soil materials and irrigation purposes. *Penghijauan*, the nationwide greening programme, is financed by the Ministry of Home Affairs. It combines the facilities and goodwill of the local authorities, the labour forces of the local communities and the managerial skills of the Ministry of Agriculture (the Directorate of Reforestation and Land Rehabilitation), to implement tree planting projects in critical areas. The type and size of the plantations and the tree species to be planted depend on the local needs and the site requirements and may consist of fruit tree orchards, fuelwood plantations or timber and pulp plantations.

6.5. Buffer zones

While detailed guidelines now exist for the establishment of buffer zones no official buffer zones around reserves have yet been established. However, there exist some plantations adjacent to reserves that already act as buffers. Baluran National Park, for instance, is bounded by an extensive teak plantation which is carefully managed and does clearly help to protect the reserve from agricultural encroachment and invasion by livestock and

fire. Moreover, since this monoculture is rather sterile for wildlife, it deters deer and pigs from wandering out of the reserve. As a buffer zone, the plantation provides benefit only to the plantation employees. It could certainly do more to assist local communities if the profits were shared with villages. Other experiences, such as tea plantations around Gn. Gede-Pangrango National Park and the durian and coffee groves adjacent to Gn. Leuser National Park and Kirinci Reserve, confirm the effectiveness of plantations as conservation buffers. In addition, it is clear from experience that fruit or berry plantations survive better than firewood plantations which tend to be cut as fast as they can be planted.

6.6. The involvement of *adat*

Introduction of *adat* principles into the exploitation of buffers is again still to be tried out. However, in some cases the existence of strong traditional regulations and taboos are clearly being harnessed directly to reserve needs. In Siberut Island, for instance, the new management plan for a major reserve includes a large 'Traditional Use Zone' where local people who maintain very strong rules about disturbing the balance of nature and have lived in a stable balance with the forest for hundreds of years will be permitted to continue most of their traditional harvesting of wood, medical plants, fruits, thatch, fish and game that is hunted with bows and arrows. By getting the local people to jealously protect these rights in the Traditional Use zone, the inner sanctuary zone becomes completely protected from other outside pressures.

Figure 1: Outline of the rural community development objectives and programmes in Indonesia

General Objectives	Specific Objectives	Programmed				
		Forest, Land & Water Conservation	Reforestation, Terracing, Checkdams, Resettlements, Nucleus estate smallholders, Isolated community development, Transmigration, Development estates of export crops, Radio & TV, National Campaigns, Emphasis on farmers on critical lands			
Rural Community Development	Outside Java	1. Conserve forest land & water resources	Shifting Cultivation Management	Mixed-cropping (rice, corn) during first years of tree plantation establishment.		
			Information and Extension	Tumpangsari	Strip-cropping of fast growing trees and annual agriculture (rice, corn).	
				Agroforestry	Mama	Inter-cropping under older tree plantations (grass, medicinal plants, firewood).
					Tanaman Sela	
			On Java & densely populated areas	2. Increase income & prosperity of local community & farmers in critical land-areas	1. Increasing efficacy of forest lands	Reforestation
	Malu	Agriculture				bee keeping
		Sericulture		silk caterpillar culture		
		Fodder		elephant grass		
	3. Improve attitude & responsibility of local community members as preservers of natural resources	2. Increasing capacity of land around forest lands			Fruit trees	mango, jack-fruit, citrus
			Medicinal plants		Curouma xanthorrhiza, C. domestica, Zingiber officinale, Dioscorea spp., Kaempferia galanga, etc.	

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Figure 1 (cont.). Outline of the rural community development objectives and programmes in Indonesia

<i>General Objectives</i>	<i>Specific Objectives</i>	<i>Programmed</i>		
		Fuelwood	Gliricidia sepium, Calliandra calothyrsus, Leucaena laucocephala, etc.	
		Checkdams	Erosion Control	
			Irrigation	
		Terracing		
		Reforestation		
	3. Development of local community	Magersaren	Housing	
			Facilities	mosque, community hall, etc.
			Cooperative	
			Water Supply	
			Information & Extension	

