

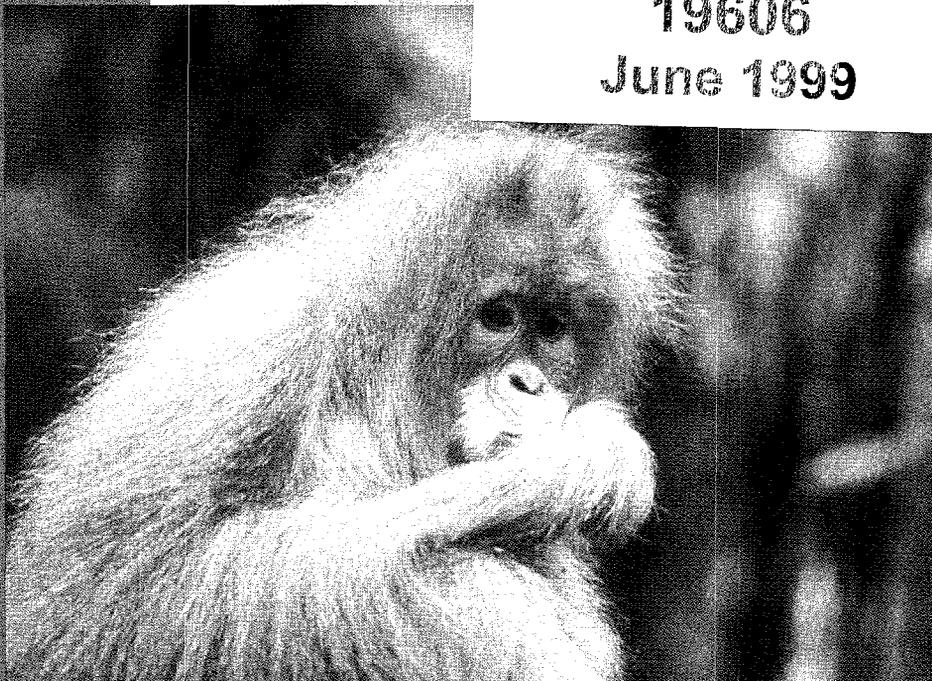
DIRECTIONS IN DEVELOPMENT

# Investing in Biodiversity

*A Review of Indonesia's Integrated  
Conservation and Development Projects*

MICHAEL WELLS, SCOTT GUGGENHEIM,  
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AND PAUL JEPSON

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# INVESTING IN BIODIVERSITY

## A REVIEW OF INDONESIA'S INTEGRATED CONSERVATION AND DEVELOPMENT PROJECTS

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**The World Bank  
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## Acronyms and Abbreviations

ADB	Asian Development Bank
AMDAL	environmental impact assessment (Analisis Mengenai Dampak Lingkungan)
APBN	National Annual Budget (Anggaran Pendapatan dan Belanja Negara)
BANGDA	Directorate of Regional Development (Direktorat Pembangunan Daerah)
BAPPEDA	Regional Development Planning Board (Badan Perencanaan Pembangunan Daerah)
BAPPENAS	Ministry of National Development Planning, Indonesia
BCN	Biodiversity Conservation Network
BII	Bank Internasional Indonesia
BLN	foreign donor funds (Bantuan Luan Negeri)
CA	strict nature reserve (Cagar Alam)
CAMEP	Community Awareness, Mobilization and Environment Program
CIFOR	Centre for International Forestry Research
CITES	Convention on International Trade in Endangered Species of Flora and Fauna
DG	Directorate-General (Direktorat Jenderal)
DIP	approved project budget (Daftar Isian Proyek)
EMDI	Environmental Management Development in Indonesia project
EU	European Union
GEF	global environment facility
GGPNP	Gunung Gede Pangrango National Park
GHNP	Gunung Halimun National Park
GIS	geographic information system
GOI	Government of Indonesia
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ICDP	Integrated Conservation and Development Project
IDT	Presidential Instruction Fund for Poor Villages
INPRES	presidential instruction (Instruksi Presiden)
IPAM	integrated protected area management
ITFP	United Kingdom–Indonesia Tropical Forest Management Programme
JICA	Japan International Cooperation Agency

KNP	Komodo National Park
KPC	PT Kaltim Prima Coal
LATIN	Lembaga Alam Tropis Indonesia
LDP	Leuser Development Program
LIPI	Indonesian Institute of Science
LKMD	village council (Lembaga Ketahanan Masyarakat Desa)
LMU	Leuser Management Unit
LP3M	Lembaga Pengembangan, Pendidikan Masyarakat
MOU	memorandum of understanding
MPA	Marine protected area
NGO	Nongovernmental organization
NRMP	Natural Resources Management Project
NTT	Nusa Tenggara Timur
NTUDC	Nusa Tenggara Uplands Development Consortium
PA	protected area
PCC	project coordination committee
PERDA	local government decree (Peraturan Daerah)
PH	Directorate of Forest Production (Pengusahaan Hutan)
PHPA	Directorate-General of Forest Protection and Nature Conservation (Perlindungan Hutan dan Pelstarian Alam)
PRA	participatory rural appraisal
RTRK	Kabupaten spatial plan
RTRP	provincial spatial plan (Rencana Tata Ruang Propinsi)
SAR	Staff Appraisal Report
SBKSDA	Sub-Directorate for Natural Resource Conservation (Sub-Balai Konservasi Sumber Daya Alam)
SK	decree (Surat Keputusan)
SKEPHI	Indonesian Rainforest Action Group
SMS	Wildlife Reserve Suaka Margasatwa
TFMP	Tropical Forest Management Program
TGHK	Agreed Forest Land Use Classification (Tata Guna Hutan Kesepakatan)
TN	national park (Taman Nasional)
TNC	The Nature Conservancy
TNL	marine national park (Taman Nasional Laut)
TW	Recreation Park (Taman Wisata)
UKDFID	United Kingdom Department for International Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UPT	technical management unit (Unit Pelaksanaan Teknis)
USAID	United States Agency for International Development

WCS-IP	Wildlife Conservation Society-Indonesia Program
WWF-IP	World Wildlife Fund-Indonesia Program
YLI	Yayasan Leuser Internasional
YPMD	Yayasan Pembangunan Masyarakat Desa
YBLBC	Yayasan Bina Lestari Bumi Cendrawasih



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# Executive Summary

## Introduction

The term integrated conservation and development project (ICDP) has been applied to a diverse range of initiatives with a common goal: linking biodiversity conservation in protected areas (PAs) with local social and economic development. In practice, ICDPs refer not just to a general concept but to a specific set of activities targeting a PA and, usually, the inhabited zone around it. ICDPs aim to provide incentives that increase the net local benefits—and therefore attractiveness—of conservation and sustainable resource use in and around PAs. Most ICDPs strongly emphasize local participation in design and implementation.

ICDPs are important in tropical countries primarily for three reasons. First, because they offer the potential to mitigate the rapid loss of biodiversity from PA networks that are generally proving ineffective; second, because they seek to provide benefits to local people based on equity considerations; and third, because they now attract most of the international funds available for biodiversity conservation.

Why are ICDPs so popular? First, because they offer a simple and intuitively appealing alternative to earlier, unsuccessful approaches to PA management that have come to be regarded as politically infeasible. Second, because ICDPs offer the attractive prospect of contributing to three of the most sought-after goals on the sustainable development agenda: more effective biodiversity conservation, increased local community participation in conservation and development, and economic development for the rural poor. These features seem virtually irresistible to many non-governmental organizations (NGOs), government departments, and development agencies.

Despite their popularity, not a lot is known about the ingredients for ICDP success. Establishing ICDPs that actually work has proven to be rather more challenging than marketing the concept and raising funds. This is partly due to most ICDPs having barely started. But nearly a decade after ICDP approaches were first popularized, successful and convincing cases where local peoples' development needs have been effectively reconciled with PA management are still notably lacking. Among other problems, many ICDPs have ignored important lessons from the field of rural development and have been unable to establish coherent linkages between their development activities and conservation objectives. Thus far, the case for ICDPs is far from convincing.

### *Protected Areas and ICDPs in Indonesia*

Indonesia is one of the two most biologically diverse nations on earth. The country's thousands of islands include 10 percent of the world's known plant species, 12 percent of its mammals, 16 percent of reptiles and amphibians, 17 percent of birds, and 25 percent of fish. Indonesia has made a strong commitment to protecting this valuable heritage: in early 1997 the PA network consisted of 35 national parks and 339 other reserves with a combined area of 21.2 million hectares. (4.5 million hectares are marine).

The government agency responsible for PA management is the Directorate-General of Forest Protection and Nature Conservation in the Ministry of Forestry (PHPA). But the task of managing Indonesia's PAs is widely acknowledged as being beyond PHPA's modest capabilities. During the period leading up to Indonesia's economic crisis in late 1997, the government of Indonesia's (GOI's) total annual investment in PAs had been in the range of US\$22–33 million, of which foreign donors were contributing approximately 15–20 percent. Overall national spending on conservation more than doubled between 1992 and 1997.

ICDPs have become Indonesia's main approach to biodiversity conservation. The first ICDPs were launched in the 1980s, although similar ideas had been proposed a decade earlier. In addition to two official, government-sponsored ICDPs at Kerinci-Seblat and Siberut–Ruteng (which form a single project covering two locations), more than a dozen unofficial ICDPs were at various stages of implementation in 1997. These projects have targeted PAs with a total area of 8.5 million hectares, 40 percent of the country's conservation estate. Substantial GOI inputs to ICDPs are being supplemented by US\$130 million in foreign donor funds, including at least US\$7 million dollars being provided by conservation NGOs. Several more ICDPs in preparation are expected to attract at least US\$200 million in new international loans and grants. This shows a serious commitment to ICDPs on their part.

The objectives of this study were, first, to consider the ICDPs' overall contribution to conserving Indonesia's biodiversity; second, to assess their cost-effectiveness, sustainability, and replicability; and third, to identify lessons for future conservation efforts. The study was based on a limited number of site visits supplemented by case studies, interviews, and an extensive review of project documentation (mainly plans, progress reports, and evaluations).

### *Major Findings*

A carefully quantified assessment of ICDP effectiveness proved impractical because of a lack of reliable monitoring systems or performance data. Despite this lack of usable data, however, the results of the study are unambiguous. **Very few ICDPs in Indonesia can realistically claim that biodiversity conservation has been or is likely to be significantly en-**

**hanced as a result of current or planned project activities.** While a few promising ICDP initiatives are underway, most of these do not appear to be sustainable under current conditions.

ICDPs at Gunung Leuser and Komodo, as well as the integrated protected area management (IPAM) initiative at Gunung Gede Pangrango, all show promise. But the remaining ICDPs show little sign of making conservation more effective, despite the valiant efforts of many dedicated and talented field workers and the investment of increasingly large sums of money (“large” by historical conservation standards, at least). Even at this comparatively early stage of implementation, it seems clear that **most of the attempts to enhance biodiversity conservation in Indonesia through ICDPs are unconvincing and unlikely to be successful under current conditions.**

The major problems do not seem to lie with the ICDP concept itself. Instead, the patterns emerging from the field visits, case studies, and interviews point toward flaws in basic assumptions and planning, and a failure to address the real threats and capacity constraints that conservation projects face in the field. Most ICDPs are proceeding as if PAs are failing because of increasing pressure from local people alone. This study suggests that the problems in PAs run much deeper than this and will not be adequately addressed by community-level approaches that are not linked to broader reforms in PA management—if not natural resource management in general.

### *Promising Examples*

The few promising ICDPs share a number of characteristics. First, they benefit from high-level political and administrative support; this often gives PA managers the authority and capacity to address and resolve local issues, and also leads to more effective enforcement of boundaries and land-use rules by local government. Second, an appropriate mandate and adequate resources for strong PA management are complemented by at least some flexibility in planning and the capacity to adjust resources to changing field needs. Finally, the more promising projects ensure close communication with local governments, whether through formal or informal channels. Promising ICDP examples showing these characteristics stand out in all types of PAs, whether supported by GOI resources alone, through NGO assistance, or through international donor support. The source of funds does not appear to be a strong predictor of PA success and seems to have no predictive value for determining sustainability beyond the life span of the project.

### *Strategic Problems*

ICDPs commonly concentrate their resources on threats to PAs from local communities. But community development activities within ICDPs, how-

ever laudable, have very limited prospects of addressing the main threats facing biodiversity in most PAs. A ranking of threats to the 21 PAs covered by this study found that direct threats from local communities ranked well behind road constructions, mining, logging concessions, and sponsored immigration. While ICDPs can address threats posed by local communities, such threats are better addressed through mechanisms such as spatial planning, involvement of PA managers in public investment decisions, and improved development coordination, rather than investments in community economic development.

While sites clearly exist where local villagers and immigrants represent a major threat to biodiversity, the threats from large public and private investments are generally much more serious. Thus, ICDP plans are often aimed at the wrong target. Coming to grips with the most serious threats to PAs has proven very difficult for ICDPs, however, and most projects have had very little influence on economic planning or land-use decisionmaking.

### *Inappropriate Project Models*

For the larger projects, ICDP planning usually conforms to an approach that is more suited to large, concentrated infrastructure projects than to the planning and management needs of PAs. Donor agency project cycles have encouraged the preparation of one-time, detailed, and costly plans by consulting teams, based on questionable information sets, that are followed by unconvincing implementation arrangements that in turn are highly dependent on government agencies with inadequate capacity and commitment. This process simply does not work in the case of ICDPs linked to PAs, where reliable information is scarce and the requirements for on-site flexibility and effective decisionmaking are at a premium.

Appreciation of the importance of the linkages between conservation objectives and development activities is generally very weak, and is usually confined to a small number of stakeholders. Many projects are poorly conceived and are undertaking costly activities that seem to have little prospect of enhancing conservation or generating sustainable benefits.

None of the internationally financed ICDPs appear to be financially or economically sustainable once external funding has been exhausted. While the plans for many ICDPs call for income-generating activities to lead to financial self-sufficiency within a few years, such expectations are usually totally unrealistic.

### *Conservation Agency Limitations*

The lack of capacity within PHPA is a formidable barrier to effective conservation. Neither the conservation nor the development components of

ICDPs can compensate for PHPA's inability to carry out basic PA management operations, and many of the responsibilities assigned to PHPA within ICDPs are well beyond PHPA's capacity. PHPA has recruited and trained a small number of highly capable field staff, providing the basis for some optimism about the future. But most of the benefits from employing these individuals will be lost unless the structure and role of PHPA are clarified and strengthened.

### *Law Enforcement*

ICDP efforts to establish incentives for conservation by investing in development are being frustrated by inadequate law enforcement inside PAs, combined with regulated development and the expropriation of natural resources by powerful interests outside PAs. The extent to which the effective enforcement of laws and regulations is a basic requirement for successful ICDPs is deeply underappreciated.

ICDPs depend on the ability of PA and government authorities to enforce national conservation and land-use laws and PA regulations, as well as any community agreements facilitated by ICDPs. PA managers' ability and willingness to enforce protection laws is limited, sometimes to the point of complete inaction, and very few local authorities have considered PA demarcation and protection in their spatial plans or development activities. Without more effective sanctions and penalties for illegal use of PA resources, the alternative and less environmentally destructive ways of making a living offered through ICDPs will not be effective.

### *Broader Constraints*

These problems are compounded by a general lack of conservation awareness or support for nature conservation and PAs throughout Indonesian society. Powerful and well-connected commercial interests, as well as the national sectoral ministries that control most public sector resources, seem almost totally unrestrained by conservation considerations, frequently flouting laws and regulations for environmental protection. PAs and ICDPs cannot possibly thrive in such an environment.

Considerable progress has been made in establishing one of the world's most important PA networks during the last two decades. But if conservation is to become effective in practical terms, GOI will need to take much stronger actions to increase the capacity and commitment to make conservation happen "on the ground."

Indonesia's biodiversity conservation goals are unlikely to be achieved through ICDPs unless the serious problems highlighted in this study can be remedied for current and future PA management. This is a disappointing assessment for an approach that is absorbing the dominant share of international funding for biodiversity conservation both in Indonesia and

elsewhere. Careful consideration and urgent priority should now be given to a strategic reorientation before further large-scale investments are made.

## Future Actions

### *Design and Implementation*

ICDP components based on simplistic ideas of making limited short-term investments in local development, then hoping this will somehow translate into sustainable resource use and less pressure on PAs, need to be abandoned. ICDPs will only work if GOI and provincial governments first demonstrate a strong commitment to protecting conservation areas and their surroundings. This will require much more rigorous enforcement of PA boundaries, as well as spatial plans for local and regional development. **Then** ICDPs can help build local support and cooperation in communities, work with local government to encourage environmentally friendly development initiatives, and support carefully regulated private-sector initiatives (such as tourism or buffer-zone forest exploitation under license, or even privately run PAs).

Conventional donor agency project cycles, with their heavy emphasis on planning at the expense of implementation, are proving incompatible with ICDPs. Standard blueprint design approaches need to be replaced with alternatives that are more geared toward problem identification and solving through adaptive management. Four essential elements of ICDP success can be identified: (1) establishment of a strong local management and protection capacity staffed by people able to exercise judgment and deploy resources in a flexible manner to both enforce regulations and generate benefits for local communities; (2) outside management or control of projects based much more on the management of *outputs* than on attempts to manage *inputs* (although inputs cannot be ignored); also, performance indicators need to be designed (and for biodiversity this requires more research), and should be applied by an independent agency; and (3) the people who direct projects need to have much better skills in mainstream management. In the past, they have been trained to make lists of birds and mammals, and so forth, but they have not been adequately trained in the skills needed to build collaborative alliances with the variety of actors who influence the use of land in and around PAs.

The early phases of ICDPs should involve much less emphasis on the preparation of detailed plans by outside experts who will have no involvement in their implementation. More resources and attention should be devoted to (a) identification of priority biodiversity features within PAs; (b) more careful analysis of the threats to these features, determination as to whether an ICDP is an appropriate response, and clear identification of objectives and actions to address these threats; (c) early establishment of

independent project management units and strong PA management functions for both planning and implementation, with clear authority over ICDP implementation and with access to outside specialists as needed; (d) extensive consultations with stakeholder institutions; (e) effective enforcement; (f) vigorous and sustained conservation awareness campaigns targeting the media, schools, villages, and public officials; (g) intensive training and capacity-building for individuals and organizations with key roles in the project; (h) lengthening projects and reducing the pressure to disburse large amounts of money quickly; (i) starting with a few simple, small-scale activities and low levels of financing, building gradually on successes, and developing confidence and capabilities based on practical experience—all while continually reexamining the links between development and conservation components; (j) establishing and testing information systems and performance indicators to provide relevant and usable information to management, rather than amassing vast quantities of data during a single, limited preparation phase; and (k) linking incentives to success in conservation.

The optimal form for ICDPs will vary between sites. Some ICDPs may achieve conservation gains most effectively by emphasizing local participatory development, while others may be more effective by concentrating their efforts on regional development policy issues in provincial capitals. International development agencies can further support ICDPs by explicitly linking the development programs that they finance in rural areas to PAs.

Prerequisite conditions for ICDPs need to be spelled out to participating agencies and local governments. Sponsoring GOI agencies and their donors should be ready to terminate projects if key commitments—such as effective law enforcement and adequate environmental screening for infrastructure and other development programs outside PAs—are not being met. Large investments should only be made in agencies and organizations that have demonstrated commitment and competence. Finally, donor agencies should discontinue the fantasy that new revenue sources will make ICDPs financially or economically self-sufficient after a few years. Biodiversity conservation in Indonesia and most other developing countries is clearly going to require substantial external subsidies for as long as some biodiversity remains to protect.

### *Strengthening PHPA*

Experience thus far shows that PHPA's lack of capacity is a critical constraint on effective PA management. If PHPA is to continue in its current role, GOI should help the agency work out a sensible strategic direction based on a realistic assessment of conservation priorities and available resources. A major rethinking of PHPA's role and operation is badly needed.

This should be led by GOI officials from the Ministry of National Development Planning (BAPPENAS), Forestry, and PHPA itself, with NGO input.

Two strategic changes should take priority. First, PHPA needs to deconcentrate considerable planning and implementation responsibilities to PA managers working at the provincial and *kabupaten* levels, so that PA designs become part of regional development. Determining conservation priorities, establishing basic objectives and rules, and ensuring proper national monitoring would remain the responsibility of the PHPA center, working in consultation with PA managers. Day-to-day functions should move to the provincial office of the Forestry Department. PHPA should play a reduced role in PA operations, and instead make much greater use of experienced NGO and private-sector service providers for support. Mechanisms must also be developed for PA establishment and management to become part of regional development planning.

Second, acute training needs are found throughout PHPA, but renewed efforts should be focused particularly at the park director level. Ways need to be found to help these managers develop professional and motivated teams capable of the wide range of challenging tasks that PA management involves. And PHPA needs to redirect its staff and budget allocations so that the bulk of its resources concentrates on improved field performance and presence rather than the central overheads and management that currently exists. Good managers should receive incentives for making PAs work effectively. Recruiting and training a cadre of high-quality park managers for field assignment should be PHPA's top personnel priority. An urgent need also exists to introduce more flexible and appropriate human resource management policies and programs—including staff performance incentives and merit-based promotions; in other words, to professionalize the agency's field operations and introduce a better-defined career structure for management staff.

### *Site Selection*

Most of the large, official ICDP investments are focused on western Indonesia, and the terrestrial ICDPs (except Ruteng and Siberut) are all located on the large continental islands and Sulawesi. Central and eastern Indonesia's large number of medium and small islands with high levels of faunal endemism are therefore poorly represented. Future ICDP conservation investments in Irian Jaya, Nusa Tenggara, Maluku, and Sulawesi would provide the greatest incremental gain for national and global biodiversity coverage. Partly as a result of their isolation, people in the Nusa Tenggara Timur and Maluku island groups are usually poorer, with strong traditions and cohesive communities. Such areas may be appropriate for community-based ICDP approaches, though even here a more judicious, clearly prioritized blend of agendas is needed. Local community

impacts on biodiversity are less evident in Irian Jaya, where most threats come from national development projects. In these regions an ICDP model that limits its focus to integrating biodiversity considerations with spatial and development planning may be the most effective. However, even in these areas, the policy and spatial planning issues bypassed by current ICDP approaches are assuming ever-increasing importance.

### *Scale of ICDP Interventions*

Large ICDPs of the type being supported by donors are generally driven by a belief that (a) donors attain economies of scale by supporting a small number of very large projects; (b) it is better to aim to protect very large areas in the hope that biologically critical core areas can be saved; and (c) small PAs are not ecologically viable over the long term because of fragmentation effects. As a result, of the seven national parks in Indonesia between 10,000 and 100,000 hectares, only one benefits from international support. Consideration should also be given to the argument that in some areas a greater number of small, strategic reserves more capable of being managed by public and private conservation agencies could represent an option that is more cost-effective than current approaches, more likely to be implemented, and still likely to achieve core conservation objectives.

### *National Biodiversity Inventory and Monitoring Unit*

Consideration should be given to establishing a national biodiversity inventory and monitoring unit that would service existing and developing ICDPs as well as the wider PA network. The current situation whereby Indonesian ICDPs function as a collection, rather than a network, of projects is inefficient. The Danau Sentarum ICDP has invested heavily in building a geographic information system (GIS) unit in PHPA. This unit, or a semi-independent unit established outside PHPA, could gradually take on the inventory work for all ICDP sites. Such an institution could help mitigate the skill shortages in inventory and monitoring, develop consistency of approaches, ensure continuity, and be an effective advocate of key issues. It could also bring significant economies of scale when compared with the cost of ICDPs each developing their own expert monitoring capacity.

### *Expanding the Menu*

An acute need to build nature conservation awareness in Indonesia is evident. Increasing domestic support for conservation through urban parks and recreation areas, school curricula, and accessible nature reserves will probably do as much or more to protect Indonesia's biodiversity over the long term as will the current overemphasis on PA gazettement. An intensive national campaign could usefully be aimed at urban populations who will increasingly depend on PAs for recreational opportunities and whose

emerging middle classes represent an important potential source of conservation support. Too much biodiversity support from the donor community has focused on protecting biologically important but inaccessible PA areas, rather than integrating PA protection into a broader program of creating national conservation awareness. Among other possibilities, the excellent city zoo in Jakarta has enormous potential to educate 30 million Indonesians about their own national biodiversity wonders, to instill a sense of pride in them, and to become a flagship for conservation. Donors, including the World Bank, should give serious consideration to support for an urban-based conservation program.

The conservation initiatives of the public and private sectors (including NGOs) must be balanced. The larger, more complex and ambitious PAs will probably have to remain under government control. But room exists to have smaller, more targeted PAs run by NGOs or the private sector with the authority to capture revenues from activities such as tourism. Some of these small PAs might be located adjacent to or within national parks. Kutai National Park provides a potentially exciting model for private-sector support for conservation. But Kutai is one of the few tangible signs of such support for PAs in Indonesia, and ways of strengthening and expanding this initiative need to be explored.

Given the limited success so far of PAs and ICDPs, GOI should give consideration to other, more radical models to create conservation incentives. One possibility would be to simply pay cash in return for PA protection. Selected local or national government entities or NGOs would receive cash, to use as they see fit, in exchange for PA management and conservation commitments. Payment schedules over extended periods would be subject to independent performance reviews. The funding for such arrangements could originate from international sources or from GOI. This is a simplification of the conservation concession pioneered at Gunung Leuser.

GOI could also consider inviting tenders for the management of individual PAs, as follows. GOI would commit to taking whatever steps were necessary to protect a particular PA—perhaps for 25 years—while allowing independent monitoring. Interested parties (such as development agencies, NGOs, and private-sector organizations) would then bid the amount they would be prepared to pay to secure this PA, payable over the full term of the agreement as long as GOI continued to live up to their protection commitment. If adequate offers of international funds were not forthcoming, GOI could then decide whether to finance conservation domestically (perhaps based on an assessment of watershed protection, tourism potential, or other national economic benefits) or to turn the PA over to other uses. Such an approach could help to sharpen the currently rather vague discussion concerning the level of financial resources that should be transferred to developing countries from richer nations to support biodiversity conservation in the global interest.

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# Introduction

## *What Are ICDPs?*

The term integrated conservation and development project (ICDP) has been applied to a diverse range of initiatives with a common goal: linking biodiversity conservation in protected areas (PAs) with local social and economic development. In practice, ICDPs refer not just to a general concept but to a specific set of activities targeting a PA and, usually, the inhabited zone around it. ICDPs aim to provide incentives that increase the net local benefits—and therefore attractiveness—of conservation and sustainable resource use in and around PAs. Most ICDPs strongly emphasize local participation in design and implementation.

ICDPs are important in tropical countries primarily for three reasons. First, because they offer the potential to mitigate the rapid loss of biodiversity from PA networks that are generally proving ineffective; second, because they seek to provide benefits to local people based on equity considerations; and third, because they now attract most of the international funds available for biodiversity conservation.

The ICDP idea generally developed like this: PAs play a crucial role in conserving biodiversity. So-called “traditional” PA management often involved evicting people from areas designated as PAs and then trying to keep local people out, based on the conservationists’ view that human activities were incompatible with ecosystem conservation. Many PA neighbors lost their livelihoods and their homes as a result. PA authorities became deeply unpopular, not only with local people but also with local governments and sectoral agencies. Having comprehensively alienated their neighbors while failing to build political support, most national conservation agencies then proved to have neither the capacity nor the resources to manage the vast PAs under their jurisdiction.

Growing human impacts eventually helped PA managers to realize they needed to work more effectively with their neighbors. Conservationists moved rapidly toward a new consensus that PA survival depended on increasing the local benefits from PAs. This led to a trickle and eventually an avalanche of projects attempting to reconcile PA management with local social and economic development, later described as ICDPs.<sup>1</sup> Support for ICDPs soon spread beyond the international NGOs that had popularized the approach. The concept is now well established throughout the government departments and international development agencies that have become interested in conserving biodiversity.<sup>2</sup> Within many of these

organizations, ICDPs have rapidly advanced from an untested idea attracting seed money to "best practice" for biodiversity conservation.

Why are ICDPs so popular? First, because they offer a simple and intuitively appealing alternative to earlier, unsuccessful approaches to PA management that have come to be regarded as politically infeasible. Second, because ICDPs offer the attractive prospect of contributing to three of the most sought-after goals on the sustainable development agenda: more effective biodiversity conservation, increased local community participation in conservation and development, and economic development for the rural poor. These features seem virtually irresistible to many NGOs, government departments, and development agencies.

Despite their popularity, not a lot is known about the ingredients for ICDP success. Establishing ICDPs that actually work has proven to be rather more challenging than marketing the concept and raising funds. This is partly due to most ICDPs having barely started. But nearly a decade after ICDP approaches were first popularized, successful and convincing cases where local peoples' development needs have been effectively reconciled with PA management are notably lacking. Among other problems, many ICDPs have ignored important lessons from the field of rural development and been unable to establish coherent linkages between their development activities and their conservation objectives. Thus far, the case for ICDPs is far from convincing.

### *Protected Areas and ICDPs in Indonesia*

Indonesia is one of the two most biologically diverse nations on earth (Brazil is the other). The country's thousands of islands include 10 percent of the world's known plant species, 12 percent of its mammals, 16 percent of reptiles and amphibians, 17 percent of birds, and 25 percent of fish. Indonesia has made a strong commitment to protecting this valuable heritage: in 1997 the PA network consisted of 35 national parks and 339 other reserves with a combined area of 21.2 million hectares (4.5 million hectares are marine). The system itself is still incomplete, with 36 of 80 "critical reserves" remaining legally unprotected.<sup>3</sup>

The government agency responsible for PA management is the Directorate-General of Forest Protection and Nature Conservation in the Ministry of Forestry (PHPA), one of five Directorate-Generals within the Ministry of Forestry. But the task of managing Indonesia's PAs is widely acknowledged as being beyond PHPA's modest capabilities.<sup>4</sup> Only 12 national parks have technical management units (UPTs). The 23 national parks without a UPT, as well as the other 339 PAs, are managed by PHPA's provincial conservation offices (SBKSDA), usually with a handful of staff and little or no budget. The management of the major national parks has not lacked funding, however. During the period leading up to Indonesia's economic crisis

in late 1997, GOI's total annual investment in PAs had been in the range of US\$22–33 million, of which foreign donors were contributing approximately 15–20 percent. Overall national spending on conservation more than doubled between 1992 and 1997.<sup>5</sup>

Planning for biodiversity protection in Indonesia follows a well-conceived Biodiversity Action Plan issued in 1991, which identified national conservation priorities and the areas where PA development could most effectively achieve conservation objectives. A major developing country player in international conservation agreements, Indonesia was one of the first signatories to the 1992 Convention of Parties following the Rio Earth Summit; it then hosted the 1996 Second Conference of Parties to discuss implementation of the Convention. The Third World Parks Congress held in Indonesia in 1982 was the first major forum to call for many of the actions now routinely included in ICDPs.

ICDPs have become Indonesia's main approach to biodiversity conservation. The first ICDPs were launched in the 1980s, although similar ideas had been proposed a decade earlier. In addition to two official, government-sponsored ICDPs at Kerinci-Seblat and Siberut–Ruteng (which form a single project covering two locations), more than a dozen unofficial ICDPs were at various stages of implementation in 1997. These projects have targeted PAs with a total area of 8.5 million hectares—40 percent of the country's conservation estate. Substantial GOI inputs to ICDPs are being supplemented by US\$130 million in foreign donor funds, including at least US\$7 million dollars being provided by conservation NGOs. Several more ICDPs in preparation are expected to attract at least US\$200 million in new international loans and grants. This shows a serious commitment to ICDPs on their part.

### *Study Rationale, Objectives, and Methodology*

Indonesia has gone much further than most countries in adopting innovative ICDP approaches. But only a few Indonesian ICDPs have reached advanced stages of implementation, and these projects have not been systematically examined.<sup>6</sup> GOI and its foreign donors needed a progress report to assess the value and effectiveness of the extensive national and international resources being invested in ICDPs, hence this study. Indonesia is the first major biodiversity country to request a systematic review of its efforts to achieve its conservation objectives through ICDPs.

The objectives of this study were, first, to consider the ICDPs' overall contribution to conserving Indonesia's biodiversity; second, to assess their cost-effectiveness, sustainability, and replicability; and third, to identify lessons for future conservation efforts.

ICDPs are defined here as projects to enhance biodiversity conservation inside PAs that include social or economic development activities: (1)

**Table 1. Key Features of the ICDP Study Sites**

ICDP site	Protected area					ICDP external financing						
	Status/ year estab. <sup>a</sup>	Area (1,000 hectares) in UPT <sup>b</sup>	PHPA Staff in UPT <sup>b</sup>	Annual GOI budget		Total US\$ (1,000)	Annual average US\$ (1,000)	Duration	Annual cost/ha US\$	Source of external financing <sup>d,c</sup>	Provinces/ kabupatens/ pop. density <sup>f</sup>	Park and buffer- zone pop. <sup>g</sup>
				Rp (1,000) <sup>c</sup>	US\$ (1,000)							
<i>Sumatra</i>												
Gunung Leuser	TN/1980	900	208	1,763,010	767	42,356	6,051	1996–2002	6.72	European Union	2/7/110	400,000
Kerinci-Seblat	TN/1996	1,368	71	1,093,768	476	34,145	5,691	1996–2001	4.16	World Bank/GEF	4/9/65	400,000
Siberut	TN/1993	190	No UPT	553,816	241	9,800	1,400	1993–99	7.37	ADB	1/1/84	25,000
Bukit Tiga Puluh	TN/1995	128	No UPT	0	0	713	178	1994–97	1.39	WWF	2/4/49	24,135
<i>Java</i>												
Ujung Kulon	TN/1992	123	114	1,420,046	617	17	4	1992–95	0.03	WWF	1/1/858	16,123
Gede Pangrango	TN/1980	15	89	1,648,671	717	0	0	—	0.00	n.a.	1/3/858	364,067
Halimun	TN/1992	40	45	400,000	174	415	138	1995–97	3.46	BCN	1/3/858	162,000
<i>Kalimantan</i>												
Bukit Baka/Raya	TN/1992	70	No UPT	195,341	85	688	138	1992–96	1.97	USAID	2/2/17	2,400
Kutai	TN/1995	199	58	715,745	311	964	482	1996–97	2.42	UNESCO, FrOK	1/1/18	70,000
Kayan Mentarang	TN/1996	1,360	No UPT	0	0	2,100	420	1992–96	0.31	WWF	1/1/18	20,000
Danau Sentarum	SMS/1994	130	No UPT	0	0	2,000	400	1993–97	3.08	UKDFID/Wetlands	1/1/24	5,000.00
<i>Sulawesi</i>												
Bunaken	TNL/1991	89	No UPT	544,112	237	923	185	1992–96	2.07	USAID	1/1/135	19,000
Taka Bone Rate	TNL/1992	530	No UPT	321,190	140	313	104	1994–96	0.20	WWF	1/1/99	4,700
Dumoga–Bone	TN/1992	287	109	990,829	431	16,000	2,000	1980–87	6.97	World Bank	1/1/135	50,000
Lore Lindu	TN/1993	229	No UPT	342,590	149	1,624	325	1991–95	1.42	TNC	1/2/26	33,000
<i>Nusa Tenggara Timur</i>												
Komodo	TN/1995	173	88	1,149,423	500	574	287	1994–95	1.66	TNC	1/2/71	2,300
Ruteng	TW/1993	32	No UPT	0	0	14,700	2,100	1993–99	65.63	ADB	1/1/71	100,000

<i>Irian Jaya</i>												
Wasur	TN/1990	308	No UPT	0	0	876	175	1992-96	0.57	WWF	1/1/4	2,500
Lorentz	CA/1978	2,150	No UPT	0	0	553	277	1996-97	0.13	WWF	1/1/4	14,000
Arfak	CA	68	No UPT	0	0	180	45	1994-97	0.66	WWF	1/1/4	14,700
Cyclops	CA	22	No UPT	0	0	248	31	1990-97	1.41	WWF	1/1/4	180,000
<i>Total</i>		8,411	782	11,138,541	4,843	129,189						1,908,930

— = Not available.

n.a. = Not applicable.

a. CA = Cagar Alam, Strict Nature Reserve, IUCN Category 1; SMS = Suaka Margasatwa - Wildlife Reserve - IUCN Category 4; TN = Taman Nasional - National Park - IUCN Category 2; TNL = Taman Nasional - Marine National Park - IUCN Category 2; TW = Taman Wisata Alam - Recreation Park - IUCN Category 5.

b. PHPA's on-site national park technical management unit is known as a UPT. Parks without a UPT generally do not have on-site staff (see text for further explanation).

c. Includes the recurring park budget from all GOI sources as well as the GOI contribution to the ICDP.

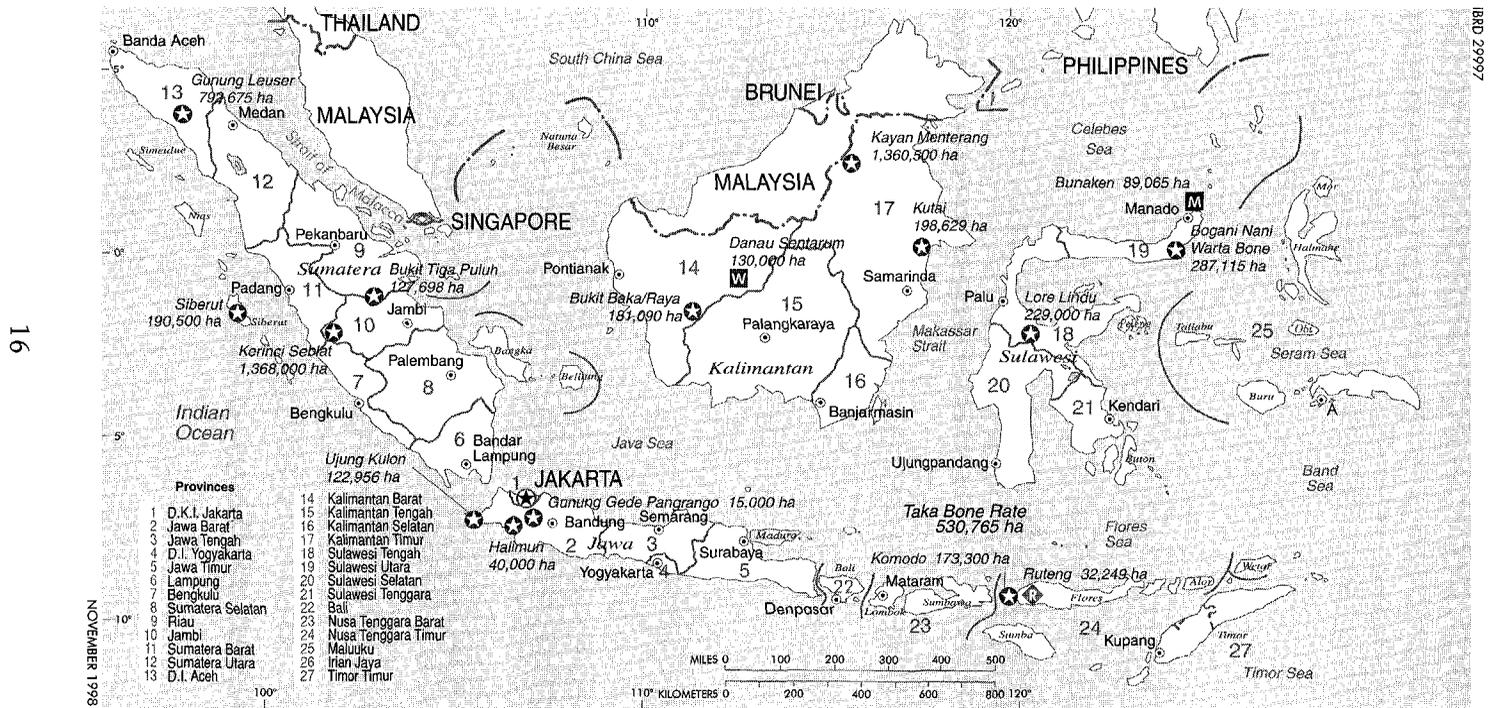
d. GEF = Global Environment Facility; ADB = Asian Development Bank, WWF = Worldwide Fund for Nature; USAID = U.S. Agency for International Development; TNC = The Nature Conservancy; BCN = Biodiversity Conservation Network; UKDFID = U.K. Department for International Development; UNESCO = United National Educational, Scientific, and Cultural Organization.

e. Excluding GOI's contribution.

f. Number of provinces, number of *kabupatens*, and provincial population density (people/km<sup>2</sup>).

g. Buffer zone is loosely defined as the local population considered by the ICDP to interact most clearly with the park. It includes all people living inside park boundaries and, usually, the population within about 5 km.

Figure 1. Map of Indonesian ICDP Study Sites



outside PA boundaries or (2) targeting people living inside the boundaries. In this sense, biodiversity conservation is the principal ICDP objective and any activities undertaken in domains such as community and regional development—on any scale—are simply a means of achieving this objective. ICDPs also include standard PA management tools and activities, but the inclusion of social and economic development activities as part of the means for conserving biodiversity separates ICDPs from traditional forms of PA management, on one hand, and community development, on the other. This definition is consistent with the objectives identified in the planning documents of all of the Indonesian projects considered here, even though some were not explicitly conceived as ICDPs. Social forestry, extractive reserves, and community-based forest management initiatives were excluded from the study on the grounds that biodiversity conservation is not their principal objective.

The study was based on a limited number of site visits supplemented by case studies, interviews, and an extensive review of project documentation (mainly plans, progress reports, and evaluations). In addition to the case studies, senior staff of a variety of government agencies, donor agencies, and NGOs were interviewed to obtain a national policy perspective. The sites to be visited were selected in consultation with the staff of the Ministry of National Development Planning (BAPPENAS), PHPA, the World Bank, bilateral donors, NGOs, and other experts. The sites considered most likely to generate useful lessons were prioritized, and attention was also paid to broad geographic representation and logistical feasibility. Site visits ranged from three to seven days. Where possible, discussions were held with project managers and their staff, PA managers and their staff, provincial and district-level government agencies, local communities and other intended project beneficiaries, community leaders, local NGOs, funding agencies, and other individuals with relevant knowledge and insights. Some of these discussions took place in formal meetings, others in informal settings. Case studies for ICDP sites not visited by the study team were solicited from organizations and individuals actually involved in these ICDPs, and supplemented by project document reviews and interviews with key personnel. In addition, the study team organized a travelling workshop with participants drawn from a variety of government agencies and NGOs.<sup>7</sup> This group visited three ICDPs in Sumatra and Java; their main recommendations are incorporated in this report. Most of the study was carried out between September 1996 and April 1997.

Consistent with the ICDP experience from other countries, preliminary inquiries revealed that very few of the Indonesian ICDPs had initiated systematic project monitoring or data collection programs, although some plan to do so in future. Progress toward project conservation or development objectives was therefore difficult, if not impossible, to measure in

quantitative terms. As a result, this study emphasized the use of qualitative information, supplemented by limited quantitative analysis, mainly in the area of ICDP and PA expenditures.

All 1997 Indonesian rupiah (Rp) amounts in the report have been converted at Rp 2,500 to \$US1. The rupiah subsequently collapsed to about a quarter of this value and has continued to fluctuate wildly.

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## Case Study Assessments

Assessing an ICDP would ideally involve the following procedures: First, the study would identify and measure the value and distribution of any net economic and other benefits generated by the ICDPs. Second, it would examine any changes—hopefully, improvements—in the effectiveness of PA management since the ICDP began. Third, it would work out the extent to which the latter is attributable to the former, to find out what works and how. Finally, a control sample of PAs operating without an accompanying ICDP would be examined, to provide insights into changes in the effectiveness of conservation that are unrelated to ICDPs.

Not enough rigorous information was available from Indonesian conservation projects to perform these steps systematically in this study. A wealth of detailed, quantitative **planning** information has been produced, especially for the largest ICDPs. But establishing and sustaining systems to identify and monitor changes in key conservation and development variables has not been a priority. As a result, the data assembled for ICDPs almost exclusively measure human and financial resource inputs, rather than measuring outputs and outcomes in terms of performance indicators for biodiversity conservation or economic development. This means that any assessment of an ICDP, as well as actual management of the project, by and large has to be based on opportunistic access to qualitative information. The remainder of this chapter briefly assesses a selection of the Indonesian ICDPs, as well as some closely related initiatives.

### *The Larger ICDPs*

The three largest ICDP projects will absorb more than 90 percent of all ICDP funds. Teams assembled by international consulting firms have significant roles in these projects, which are regarded by GOI as “official” ICDPs. Siberut and Ruteng (which together make up a single project) both started in 1993. Kerinci-Seblat and Gunung Leuser both started in 1996 after several years of planning. All except Ruteng are part of Sumatra. Another large project at Dumoga–Bone in Sulawesi (with US\$30 million from GOI and the World Bank during 1980–87) was arguably among the first ICDPs in Indonesia, although biodiversity conservation was not the principal objective here.

#### RUTENG NATURE RECREATION PARK AND SIBERUT NATIONAL PARK

The Ruteng–Siberut ICDP began implementation in 1993 with US\$40 million from GOI and ADB for the two sites. PHPA is the implementing agency, and neither park has a management unit separate from the project. The main thrust of the Ruteng component is to develop park infrastructure and reduce rampant illegal logging by providing income and timber substitutes through local NGO programs in communities surrounding the park. In this sense it is a classic ICDP. But Ruteng is extraordinarily costly in relation to the tiny 32,000-hectare park it is trying to protect, with an annual external financing budget equivalent to US\$66 per hectare, almost 10 times that of any other ICDP (see table 1). Despite this large budget, few local benefits are being generated and the project has little to offer villagers lacking many basic services. Environmental awareness is low, and the project has done little to inform local people about what it hopes to achieve. The biological significance of the partially degraded site is also questionable.

Two main project risks were identified in advance: PHPA's institutional weaknesses and continued park encroachment. No effective steps have been taken to mitigate either. A lack of involvement by senior PHPA officials has contributed to the project not being taken seriously by local government. The relationship between PHPA's project office in Ruteng and the local conservation authorities who are responsible for the park (the Kanwil and Sub-Directorate for Natural Resource Conservation [SBKSDA]) had still not been clarified after three years in the field. Efforts to coordinate between the forestry and other sectoral development agencies have led to committees being set up and meetings held, but little tangible action.

Project staff working with local NGOs in Ruteng are enthusiastically setting up tree nurseries in villages and demonstrating resource-saving innovations. But these activities are spread very thinly over the 50 communities surrounding the park. The project staff have little information on key park biodiversity features that might have allowed development activities to be targeted to protect particularly important areas. A large international consulting team designed the project with minimal input from local counterparts. But the few, junior Indonesian staff assigned to implement the project will only be able to take on a small fraction of the activities specified in the management plan. Neither the park management plan nor the extensive background studies prepared by the consultants are used by project staff.

Very little evidence exists that either local government or communities are committed to support law enforcement or other conservation activities in exchange for the project's investments in development. As a result, loggers have no incentive to stay outside the park and switch to any trees eventually cultivated in the villages, as long as illegal park timber continues to be available at close to zero cost. No attempt has been made to regulate the local timber traders and construction contractors who carry

out their public-sector contracts entirely with illegal, low-cost timber from the park. The project did schedule a local workshop to consider illegal logging, but not until four years after field work had begun.

This Ruteng ICDP was launched with unrealistic institutional arrangements, inadequate staffing, and no realistic plan to confront the major and immediate threats to the park. It therefore seems destined to be an expensive failure. The 190,000-hectare Siberut project is being implemented in a very different context but is suffering from many of the same problems and has reported less progress than Ruteng.

#### KERINCI-SEBLAT NATIONAL PARK

A variety of serious threats confront the biodiversity of Kerinci-Seblat's 1.4 million-hectare park: 15,000 families farming on 50,000 hectares, heavy poaching of endangered species, illegal gold mining, and about 1,500 kilometers of roads that facilitate these destructive activities. Major threats in areas bordering the park include poor logging practices in concessions and the extensive conversion of species-rich lowland forests to plantations. The US\$46 million ICDP now aims to strengthen park management, to provide development grants to villages bordering the park in exchange for commitments to support conservation, and to work with concession holders to minimize biodiversity losses in adjoining forests. External funding consists of a global environment facility (GEF) grant for the conservation component and a World Bank loan for the development component.

This complicated project began in late 1996 after five years of preparation, during which time poaching pressures on large, charismatic megafauna (especially rhinoceros and tigers) increased. The original project concept called for integrating the PA into a much larger regional planning framework, but this was soon rejected in favor of a freestanding ICDP that could be followed later by individual rural development programs. The ICDP project's complexities partly arise from the involvement of four separate provinces and nine *kabupatens* that contain parts of the park, together with three directorate-generals from two ministries (PHPA and Directorate of Forest Production [PH] from Forestry plus Directorate of Regional Development [BANGDA] from Home Affairs).<sup>8</sup> BAPPENAS, yet another agency, has overall responsibility for the project but no field presence. Disagreements and misunderstandings among these stakeholders, the World Bank, and consultants working on the project led to several false starts, culminating in the 1995 rejection of a complex and unfocused project plan prepared by an international consulting firm at a cost of US\$1.2 million. The World Bank's Japanese Grant Fund then provided an additional US\$1 million to revise the project design.

Park management support will include finalizing boundary demarcation and gazettement of the park, developing a management plan, and

providing training to PHPA staff. About 200 “community partners” are to be recruited from local villages to assist PHPA with enforcement. Only 3 senior and 75 junior staff have been assigned to manage the 1.4 million hectare park as well as to monitor the biological impacts of the ICDP activities. Kerinci’s park headquarters is practically cut off from the provincial governments, being seven hours from the nearest capital. Neither PHPA nor local governments have thus far shown any serious inclination toward law enforcement inside the park, with or without an ICDP. PHPA also failed to provide its share of counterpart resources for the first year of ICDP implementation. However, BAPPENAS, BANGDA, and Directorate-General (DG) Bina Marga did take strong actions to revise a provincial plan to build a road into the park; construction was stopped and a permanent barrier erected across the path.

Development programs in 134 buffer-zone villages will be based on scaling up a World Wildlife Fund–Indonesia Program (WWF–IP) community project currently active in 10 villages within 1 *kabupaten*. Substantial planning inputs were elicited from villagers through numerous participatory rural appraisal exercises (PRAs) and workshops. About 270 community facilitators will be hired and trained. Villages will receive development grants of US\$50,000 over six years if they develop an acceptable land-use plan and formally agree to stop encroachment and poaching. This will be the first Indonesian example of a contractual agreement specifically linking development investments with conservation obligations, although the form of the agreements has yet to be determined.

The institutional capacity to implement these ambitious activities has not yet been developed. PHPA and BANGDA are the implementing agencies, but PHPA has so far failed to manage the park adequately and there are no explicit commitments to providing the park staff with necessary resources and mandates. PHPA has yet to take leadership in addressing biodiversity conservation in the concessions that it has granted to logging companies in forests surrounding the park. BANGDA and Regional Development Planning Board (BAPPEDA) staff have little conservation expertise and are unclear about the types of development activities to be supported in villages, while BAPPENAS does not have the field presence to provide on-the-ground coordination and leadership. Despite the long preparation period, WWF–IP is just beginning to work out how to scale up its earlier project, while local NGOs lack the capacity to provide the range of support required by the planned project activities. This does not seem to be a convincing or sustainable set of arrangements.

The heavy concentration on village-level conservation incentives may not be optimal from a biodiversity perspective. The park faces more serious and immediate threats from the large-scale conversion of buffer-zone lowland forests, the impact of poor logging practices by concessionaires, and

road construction based on inadequate environmental assessments. The provincial governments eventually committed to a road construction moratorium and agreed in principle to develop a four-province spatial plan recognizing the conservation value of the park buffer zones. But the provincial governments are often eager to convert more forests to agriculture, and their commitment to help protect the park has yet to be demonstrated (apart from Jambi province, which benefits from the park's watershed protection).

Although the Kerinci-Seblat ICDP includes several innovative and ambitious features, any contributions to biodiversity conservation seem likely to be defeated by the combination of an overly complex project design, lack of institutional capacity, and weak commitments from the key agencies, compounded by doubt as to whether the project is really targeting the major threats to the park.

#### GUNUNG LEUSER NATIONAL PARK

This ICDP has several unique features. It is targeting a 2.1 million-hectare ecosystem that includes production and protection forests, as well as a 0.9 million-hectare national park. Yayasan Leuser International (YLI), a private foundation, received seven-year conservation concession to manage the ecosystem in 1995 through a decree (SK) from the minister of forestry, approved by the president. This was the first example of a conservation concession being granted to a private organization in Indonesia. YLI is led by a very influential and well-connected board, and the project steering committee chaired by BAPPENAS includes three ministers and two provincial governors. GOI's 40 percent contribution to the US\$66 million ICDP budget was paid in advance from the Reforestation Fund, bypassing its own cumbersome budget mechanisms (the annual park management budget is about US\$400,000). The European Union (EU) is providing the external grant funds.

The main threats to the ecosystem include large-scale illegal logging, poaching, agricultural encroachment by small farmers, destructive logging operations, conversion of neighboring forests for estate crops and transmigration projects, and road construction. Blatant encroachment and logging in the park have been unimpeded by PHPA for many years.

The preparation phase of this ICDP gave priority to establishing high-level political support and a strong institutional framework, and recruiting well-qualified staff for a centralized, well-equipped headquarters. The preparation phase deliberately included relatively little detailed planning, with an emphasis instead on finding capable project staff and establishing a framework for flexible and adaptive management independent of the forestry department. Five major program areas are led by foreign consultants and senior Indonesian staff seconded from government agencies and universities: (1) administration, (2) conservation (that is, park management, boundary demarcation, and law enforcement), (3) buffer-zone de-

velopment (outside the park but inside the ecosystem), (4) intensive zone development (outside the ecosystem but within the same *kabupatens*), and (5) research, monitoring, and evaluation.

The ICDP staff will provide advisors to work with provincial BAPPEDAs (economic development planning agencies) in reviewing development proposals for impacts on the ecosystem. Potentially damaging plans for a transmigration scheme and road construction have been resisted by effective lobbying. These achievements have increased pressure on the ICDP to deliver funding for development "alternatives." Modest financial resources are available for project grants to villages and *kabupatens* in exchange for commitments to ecosystem protection. Some revenues are expected to be generated from ecotourism and the licensed exploitation of natural resources in the buffer zone.

Serious field work had not begun by early 1997, and the few pilot development projects undertaken during project preparation are small and unconvincing. A nucleus of goodwill and high expectations established at the *kabupaten* level during the preparation phase was lost because of donor funding delays and exacerbated by misunderstandings among BAPPEDAs expecting the project to finance much of their development budgets. The project has developed some coherent plans for strong law enforcement efforts to control access to the entire ecosystem, but these have yet to be put into place and tested. The ICDP staff expects PHPA's role to be limited to monitoring compliance with terms of the concession agreement within the park. PHPA only partially supports the idea of managing the park and the ICDP through a foundation, despite its own inability to limit degradation of the park. WWF-IP staff have criticized the ICDP for working mainly with government agencies and failing to make adequate provision for villagers to participate.

This ICDP has barely begun implementation, many operational issues have yet to be resolved, and little tangible action has taken place. But the project already breaks new ground in conservation by having (a) paid substantial attention to establishing powerful political support, a sound legal basis, and functional institutional arrangements at a high level; (b) established a strong, centralized, and well-supported park and project management unit independent of the department of forestry (through a concession) in a provincial capital rather than the park; (c) ensured continuity between the preparation and implementation phases with key individuals in preparation now responsible for ICDP implementation; (d) understood the importance of balancing positive incentives with law enforcement; (e) established a flexible financing mechanism; (f) planned contractual agreements specifying the conservation obligations of beneficiaries of project development investments; and (g) adopted a landscape-ecosystem-scale approach.

Gunung Leuser is one of the few projects that is attempting to respond effectively to many of the lessons of earlier ICDP experiences. But the challenges in overcoming decades of ineffective park conservation are enormous, the project has many critics, and it is heavily dependent on a few key individuals.

### *The Smaller ICDPs*

On a very much smaller scale, ICDPs are being implemented by NGOs at 10 PAs, mostly in less-developed central and eastern Indonesia, and all with budgets under US\$2.5 million. WWF-IP has worked in eight of these PAs for many years, only adopting ICDP approaches comparatively recently. The Nature Conservancy's (TNC's) projects in the other two PAs were explicitly designed as ICDPs. The NGO field staff work under cooperative agreements with PHPA. The ICDP at Danau Sentarum (with US \$2 million financed by the U.K. [UKDFID]) shares many characteristics with these projects. The areas that the smaller ICDPs are trying to protect vary enormously, from Arfak and Cyclops (under 100,000 ha), to Kayan Mentarang (1.4 million hectares) and Lorenz (2.2 million hectares). Komodo and Taka Bone Rate include important marine areas. Only Komodo and Ujung Kulon national parks have PHPA UPTs in place, with the other PAs depending on their remoteness for protection. Several of these projects illustrate key aspects of the ICDP experience in Indonesia.

#### CYCLOPS NATURE RESERVE

The Cyclops project began in 1986 as one of the earliest Indonesian ICDPs. About 180,000 people live around this 32,000-hectare reserve, which is claimed by four competing clan groups. This WWF-financed ICDP has had a very limited impact on the various threats to the reserve with its modest \$250,000 investment over 11 years. The ICDP initially emphasized social forestry and largely ignored the impact of expanding urban development, accompanied by land speculation and a series of disputes over the reserve boundary between forest authorities and local people. A succession of community development activities remained disconnected from reserve protection, although a participatory boundary-setting activity did reduce encroachment. WWF-IP recently worked with the local government to develop a decree (PERDA) giving legal recognition to traditional land claims in the reserve buffer zone. This pioneering step could prevent land sales and provide a useful precedent for other PAs. The project ended in 1997.

#### ARFAK NATURE RESERVE

Arfak is the only ICDP to have generated economic benefits on a scale that might influence a reasonable number of the people interacting with a

PA—in this case, a small remote reserve in Irian Jaya. About 1,400 of the 14,700 people living near the 68,000-hectare reserve (perhaps half of the households) are engaged in butterfly farming, which is rapidly expanding. About US\$100,000 worth of pupae were exported in 1996, with WWF-IP and a local NGO organizing marketing, sales, and shipments. Forest products are harvested and endangered species hunted inside the reserve—both illegally. Planned transmigration sites and road construction in the region represent potentially important, if less immediate, threats. Local butterfly populations have apparently not been reduced by the farming and indications are that some conversion of forest to agriculture has been halted by the success of the enterprise. Continued success of this project may depend on the communities' cohesiveness and ability to protect their valuable resource as economic development programs increase contact with the outside world, as well as the international market for butterfly products.

#### LORE LINDU NATIONAL PARK

Biodiversity is seriously threatened by plans for a variety of infrastructure projects, including construction of a road network within the 229,000-hectare park as well as new transmigration sites and a massive hydro-power project just outside. Illegal cacao farming and rattan harvesting are growing problems inside the park. Since 1992, TNC has mobilized more than US\$1 million, provided resources and training for PHPA staff, brought in several NGOs and universities with a variety of skills, used participatory techniques to carefully analyze the problems facing the poor rural communities living in and around the park, and started working in 12 villages to develop butterfly farming, beekeeping, and tourism as alternative, environmentally friendly income sources aimed at reducing pressure on the park. But only a handful of people have benefited from these tiny development programs, which simply do not confront the type and magnitude of problems facing the park. Two recent initiatives may change this picture. First, PHPA has been authorized to establish a management unit. Second, ADB plans to finance a large regional development program on ICDP principles that will include the park.

#### BUKIT TIGA PULUH NATIONAL PARK

Conservation efforts at Bukit Tiga Puluh led to the park's establishment in 1995 in the face of powerful opposition from well-connected logging interests, which did manage to reduce the size of the PA. The limited production forests bordering the park were expected to form a protective buffer, but pressure from powerful commercial interests is leading the forestry authorities to reclassify many of these forests to allow for clear-cut logging and conversion to estate agriculture and plantations. This process is

being driven by the high demand for agricultural land and the growing capacity of local pulp mills. Marginalized local people are being pushed along an expanding road network toward and into the park, leading to encroachment on and poaching in the park. No law enforcement exists within the park. Following on from an impressive international research program, WWF-IP had planned an ICDP approach, including a series of community development activities focused on smallholders at the outer forest edge; however, the buffer-zone forest was then converted into plantation agriculture. It became clear that the park would not benefit from stabilizing land use among smallholders who were no longer at the forest edge, and WWF's plans were then revised.

#### KOMODO MARINE NATIONAL PARK

About 2,300 people live in the 173,000-hectare park and depend on its marine resources, which are threatened by dynamite and cyanide fishing, coral removal, and overexploitation. TNC is implementing the ICDP in cooperation with PHPA's on-site UPT. The annual budget is US\$250,000 and, by including ecotourism and other local investments, TNC expects to invest US\$5 million over the next five years. TNC provided PHPA with boats, radios, and other equipment for law enforcement, and trained park rangers with assistance from the local police. Reef bombing incidents then decreased from 300 to 100 a year over the next three years. The project has an effective local awareness program and is working with local government to develop planning guidelines for coastal development. Dive tourism, mariculture, and pelagic fishery enterprises launched with private-sector collaboration have good job-creation prospects in the communities involved in destructive fishing. Effective monitoring systems to measure the impact of management interventions have also been established.

This promising ICDP is benefiting from a strong on-site management presence, a vigorous law enforcement effort, realistic income-generation prospects, and effective coordination with the park management authorities, as well as from being a genuine tourist attraction with a small resident population. But financial sustainability will require some real successes in revenue generation, local capacity for effective action is acutely lacking, and eliciting cooperation and support from the vast number of government agencies with coastal jurisdiction is proving very difficult. Future success will also depend on local government's control of development outside the park.

#### *Other ICDP-Related Initiatives*

While none of the initiatives described in this section were conceived as ICDPs, their experiences are directly related to ICDPs and to the search for more effective approaches to PA management.

#### GUNUNG GEDE PANGRANGO NATIONAL PARK

About 30 million people live within 100 kilometers of this tiny West Javan park. The PHPA management unit has launched an innovative integrated protected area management (IPAM) program with these features: (a) performance incentives for all levels of PHPA staff; (b) pilot agricultural development activities in villages, with local government and NGO support; (c) law enforcement actions against people farming in the park, which were preceded by consultations and negotiations with the farmers; (d) coordination meetings to integrate national park and regional development planning involving BAPPENAS and local government; and (e) a consortium of 14 domestic and international organizations supporting the park.

These activities, while modest in some respects, are pioneering achievements for PHPA and show that genuine improvements in basic park management are within the agency's capabilities. Illegal encroachment, timber felling, and poaching have all decreased. Perhaps the most important lesson is that an externally funded project is not necessary for more effective park management, which can be significantly improved on several fronts by imaginative and competent leadership. Many of the positive aspects of this case should be tested elsewhere, although it is important to remember that this is a very small park containing few valuable resources and it receives plenty of attention because of its proximity to Jakarta and Bogor. It also has a large staff (89), a relatively high budget (Rp 1.6 billion or US\$700,000 in 1996), and very clear boundaries that were established several decades ago.

#### BUNAKEN MARINE NATIONAL PARK

About 10,000 people live within the boundaries of the Bunaken marine park, whose reefs are a major diving attraction. Threats include destructive fishing techniques (poison and bombs) and overharvesting by both residents and outsiders. The Bunaken project was not conceived as an ICDP. However, a large consulting team used a "participatory" approach to develop a management plan and background studies for the park and its large resident population, thereby planning what amounts to an ICDP at a cost of almost US\$1 million (from the U.S. Agency for International Development [USAID]) over five years.

It is not clear, however, how the park management plan can be implemented. PHPA has not yet established a UPT, leaving a management vacuum as well as unresolved disputes over resource use and access between local people and the provincial government. PHPA's periodic enforcement efforts have been directed at local people carrying out activities they have pursued for generations, with no attempt to regulate dive operators or outsiders entering the area for illegal fishing. A seaweed cultivation enterprise has generated an economic bonanza and reduced fishing

on one of the park islands but is causing severe environmental damage through mangrove depletion and by attracting work-seeking immigrants. Management has not responded to this spontaneous and destructive “alternative livelihood” enterprise.

It is not clear how the park management plan can be implemented. Although detailed baseline studies were carried out using maps, photographs, several species inventories, and geographic information system (GIS) imaging, no biodiversity monitoring is planned, and currently no plans exist to repeat the surveys or update the maps. The momentum gained by the project during the planning process—with increasing engagement of communities, NGOs, local government, the private sector, and PHPA in reasonably productive discussions—is now being lost. Ironically, a follow-up USAID-financed project that also focuses on the north Sulawesi coast specifically **excludes** Bunaken Marine National Park. A regular National Annual Budget (APBN) will support park management, but there are no indications that PHPA is interested in either continuing consultation with local communities or collaboration with local government on tourism development and regulation. The participatory aspects of the project may prove to have been so brief as to barely merit being labeled an ICDP process.

#### KUTAI NATIONAL PARK

Kutai is one of the most threatened and vulnerable parks in Indonesia. The original boundaries of the park were twice the present size of 198,000 hectares. Large areas were excised for oil exploitation, logging, and coal mining in the 1970s. Current threats come from expanding coal and oil exploration activities (there are 174 oil wells in the park), large-scale illegal logging, and conversion of forests to plantations, compounded by a rapid large-scale influx of migrants carrying out agricultural encroachment and wildlife poaching. The oil exploration has been conducted with little regard for environmental impacts, and the illegal logging seems to have been organized at a level that inhibits PHPA or any other agency from effectively opposing it. Most of the migrants seem to have been attracted by the prospects of employment with one of the very large private industrial operations situated around the park, although relatively few jobs are available and most migrants end up clearing forest land inside the park. The park has also been substantially affected by large fires. To say that the park complement of 85 rangers is hard pressed to contain these threats would be a considerable understatement.

In 1985 a park management plan proposed creating a committee of local government and industry representatives to help conserve Kutai. This concept was developed further through a development plan financed by PT Kaltim Prima Coal (KPC), which proposed financial support for con-

servation from several of the large private companies leasing land next to the park. A council to oversee these activities, "The Friends of Kutai National Park," was officially established by a PHPA decree (SK). The United Nations Development Programme (UNDP) and United Nations Educational, Scientific, and Cultural Organization (UNESCO) provided technical support to help PHPA and the "Friends" implement the management plan. This partnership provided US\$300,000 for activities in 1997, supplementing the park's US\$150,000 budget. Some tentative steps have been taken to begin negotiating with the rapidly expanding communities inside the park, but these seem unlikely to have major impacts in the short term. While these activities fall some way short of securing the park, they do provide an important precedent for private-sector financial support for an Indonesian park, and have significant potential if they can be placed on a more solid and permanent footing.

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## Analyzing the Case Studies

This chapter analyzes ICDPs in five areas: (1) PA management; (2) local community activities, including income generation, improved resource-use practices, and environmental awareness building; (3) attempts to influence regional economic development through lobbying and direct investment; (4) institutional arrangements; and (5) project design and implementation.

### PA Management

#### *The Role of PHPA*

PHPA's involvement in ICDPs has tended to highlight the agency's weaknesses: staff and budgets are skewed toward the central bureaucracy in Jakarta and toward PAs on Java; the on-site capacity of PA staff and managers is low; managers have little control over the use of resources; involvement in regional and local decisionmaking is minimal; and the relationship between field-level needs and budgetary decisionmaking is a very distant one. While PHPA's overall budget has grown significantly, the cost-effectiveness of PHPA investments remains low, and its use of resources remains inefficient.<sup>9</sup>

Reliance on PHPA beyond its capabilities has resulted in some ICDPs being launched in the face of alarming deficiencies in implementation capacity that are compounded by inconsistent high-level support from within the agency (for example, Siberut–Ruteng, Kerinci-Seblat, and Bunaken). Not surprisingly, such projects are encountering severe difficulties. ICDPs require a broad range of capabilities that would severely test even a well-organized, highly motivated, and adequately empowered government conservation agency. PHPA lacks these qualities and shows few signs of acquiring them in the near future.

Serious attempts have only been made to manage Indonesia's 12 national parks with UPTs, and these have generally been ineffective in stemming encroachment and loss of habitat. A study group of PHPA park directors and other GOI officials involved in ICDPs recently attributed the "poor management" of national parks to several factors: (a) lack of leadership and initiative from park directors, (b) low-quality staff; (c) no performance incentives to motivate staff, (d) staff numbers that do not correspond to park needs, (e) inadequate data to support decisionmaking, (f) lack of coordination and support from other GOI agencies, (g) inadequate finan-

cial support for village development projects, and (h) unclear or disputed park boundaries.<sup>10</sup> The first five of these are operational issues for PHPA within park boundaries, while ICDPs usually focus on the last three issues on or outside park boundaries. This means that **ICDPs are proceeding with investments in social and economic development while virtually ignoring fundamental deficiencies in park management.**

PA management weaknesses have so far resisted nearly all “institutional strengthening” components added to donor-financed conservation projects, including ICDPs, with the important exception of some training programs to recruit and develop a few young, well-educated PA managers. Development agency support for both PAs and ICDPs has mainly financed infrastructure within PAs (that is, buildings) and the preparation of PA management plans by foreign consultants. Both these cases have in common a tangible product, no messy social issues, large contracts to be awarded, and deadlines that are easily met. An argument can also be made that these items are a necessary starting point, but as a contribution to biodiversity conservation, they remain suspect. Expensive buildings are not always well used and maintained, few signs indicate that costly management plans actually guide PA management, and basic flaws in management remain unaffected. But international development agencies continue to finance such investments.

Remarkably, despite PHPA’s poor reputation and low credibility, the agency has attracted and retained a handful of very capable middle-ranking staff and promising junior staff who do sometimes find opportunities to take steps toward turning Indonesia’s official commitment to biodiversity conservation into practical reality. For example, the IPAM initiative at Gunung Gede Pangrango and—to some extent—at Komodo has demonstrated how PA management can be dramatically improved using existing resources. Park management’s willingness in these cases to show initiative, explore new approaches, build coalitions, and take well-judged bureaucratic risks has led to notable innovations that have been effective in motivating staff, improving relations with local communities, coordinating with other agencies, and building important institutional partnerships.

### *Law Enforcement*

Law enforcement inside Indonesia’s PAs is woefully inadequate. Illegal and damaging activities often continue with very little restraint, even in those national parks with on-site management units. PHPA is authorized to arrest offenders and hold them for 24 hours before either turning them over to the police or releasing them. But even in collaboration with the police, PHPA’s sporadic and inconsistent PA enforcement efforts are usually limited to small-scale infringements by local people, while large-scale and well-organized illegal activities controlled by powerful interests continue

unchecked, often with the involvement or awareness of the authorities. Not unreasonably, local people are unlikely to support PAs if they see powerful groups or individuals helping themselves to protected resources. Dumoga-Bone, Komodo, Gunung Leuser, and Ujung Kulon are the only ICDP sites where reasonably serious law enforcement efforts could be confirmed.

The lack of law enforcement has serious implications for PAs based on the ICDP approach, which rests on the premise that economic incentives can be established to encourage the conservation and sustainable use of natural resources in and around PAs. But when the rewards from using PA resources illegally are high and the costs to the culprit are relatively low, why would anyone—rich or poor—voluntarily forgo such benefits in exchange for the possibility of (perhaps sustainable but almost-certainly lower) income from activities promoted by an ICDP? The answer is that they wouldn't, not until serious sanctions and penalties start to be applied to existing illegal practices, making the alternative and less environmentally destructive ways of making a living promoted by ICDPs more attractive. **Without at least some effective provision for law enforcement, ICDPs stand little chance of being successful.** ICDPs should generally not be undertaken without effective law enforcement. The case studies suggest that this will not be forthcoming without strong support from local and, in particular, provincial government.

Two exceptions are worth considering. First, in those few remote PAs where local self-regulating resource management systems are still intact, externally imposed law enforcement may be unwarranted. But such cases are few in number and are proving highly vulnerable to the growing impacts of development programs. Second, it can be argued that granting local communities effective control over land and resources in and around PAs might encourage more sustainable land-use practices and custodianship. But such a radical development seems unlikely in Indonesia in the near future, and still it might not strengthen biodiversity conservation.

### Local Community Programs

Most ICDPs concentrate their efforts on selected communities in or around PAs. A variety of initiatives have been launched to consult with villagers, identify their constraints and opportunities, and then launch activities to increase local incomes and improve the efficiency of natural resources use, all with the objective of reducing pressure on the PA. These activities have involved significant numbers of social scientists in rural information gathering and development planning for ICDPs. Some, but not many, of these village-level initiatives seem to have the potential to increase incomes and improve the livelihoods of at least the limited numbers of villagers in the

targeted communities who participate. However, for several reasons, this does not mean they will enhance biodiversity conservation.

First, **even if villagers cut timber, hunt wildlife, and plant crops illegally in PAs, local communities are usually not the main threat facing most Indonesian PAs.**<sup>11</sup> The case studies show that the most serious threats within PAs usually derive *directly* from illegal activities that are organized and financed by outsiders, such as logging, mining, and wildlife poaching, as well as *indirectly* from (a) poor logging practices in forests adjoining PAs, (b) conversion of these forests to uses that are incompatible with conservation, (c) badly sited and poorly built roads in and around PAs that facilitate access for illegal activities, and (d) urban expansion and transmigration projects that often place huge demands on the resources of nearby PAs. There are localized cases where buffer zone communities are the main cause of degradation, but the study survey showed that these other direct and indirect threats account for more overall damage than do the local communities targeted by ICDPs.

Combating these threats is more a matter of strengthening **law enforcement** and influencing **regional planning and development** than stimulating community development. Even where local people's actions do threaten PAs, no convincing evidence can be found to support the view that such pressure can be reduced simply by raising incomes and agricultural productivity in villages. In fact, successful community-level interventions could as easily lead to increased pressure from migrants attracted by new economic opportunities (for example, Bunaken's seaweed industry). But this is hard to test because very few ICDPs have so far managed to generate measurable local benefits.

Second, even though strong evidence exists that "top-down" approaches rarely prove effective in stimulating rural development, this does not mean that projects based almost entirely on "bottom-up" approaches to local economic development will help protect PAs. Decisionmaking in Indonesia remains highly centralized, even though some steps have recently been taken toward decentralization. Key decisions affecting PAs are made in Jakarta and the provincial capitals. This means that ICDPs that overemphasize a decentralized village-level approach are often ignoring the reality of decisionmaking. Rural communities in Indonesia are far from empowered and are likely to remain so long after most ICDPs have run out of funds.

Third, scale is a problem. Many millions of people live in or around Indonesia's PAs, with about two million reported in and around the ICDP sites. Limited project resources and institutional constraints usually restrict the targeted beneficiaries of even the most costly ICDPs to either a few villages around a PA or a small proportion of the individuals in each community—sometimes both. Most of the ICDPs being undertaken by

NGOs in Indonesia appear very small indeed in relation to the scale of the problems they are confronting. The implication, or perhaps hope, is that these pilot or demonstration projects, if successful, will one day be scaled up and replicated either spontaneously within the communities or by attracting more external resources. Neither of these outcomes appears likely, and it seems unlikely that a limited number of village-level income-generation programs—however “successful” in their own terms—will have much impact on the loss of biodiversity from PAs in the near future.

This is not to say that community-level activities are unimportant for ICDPs. Local involvement can help develop trust and understanding of PA conservation goals and make law enforcement more humane. At Gede Pangrango, management used enforcement and development support activities selectively to negotiate understandings with encroaching communities, and these arrangements have been maintained over time. Communities living inside PAs with traditional land tenure rights and depending on PA resources need to be involved in management (for example, the Irian Jaya and Kalimantan ICDPs, except Kutai, plus the marine ICDPs and Siberut). Community mapping can also help with PA boundary setting (as in Bukit Baka–Bukit Raya, Bunaken, Cyclops, Kayan Mentarang, Kerinci-Seblat, Komodo, and Taka Bone Rate).<sup>12</sup> But while community-level work is often necessary, it is virtually never a sufficient means to eliminate the major threats to PAs, because local communities are usually not the main problem facing PAs.

### **Regional Development**

There are two closely related reasons to connect PAs to regional planning and development. First, PA managers actually involved in regional planning activities and better informed about public- and private-sector development initiatives that could adversely affect PAs should be in a stronger position to argue for such initiatives to be resisted or modified; this approach is already in place at Gunung Leuser. Second, stronger PA involvement in regional planning should help ensure that the ICDP’s modest resources for development and at least some of the substantial resources available for development through GOI’s sectoral agencies are both used in ways that complement each other while supporting PA management.

#### *The Negative Impacts of Large-Scale Development Programs*

The roads, transmigration projects, forest conversions, mining operations, and other development programs that are the most serious threats to PAs in Indonesia do not happen spontaneously. They are discussed and planned by local and provincial governments, by the national sectoral ministries, and by BAPPENAS. Environmental impact assessments (AMDALs and

forestry department permits) are required for all new development projects, but these cannot be relied on to protect PAs, since road construction and other infrastructure projects often proceed without having fulfilled the AMDAL requirements. High-level intervention was required in 1996 to stop both the construction of a road being built into Kerinci-Seblat National Park and the issuance of a coal mining exploration permit inside Kutai National Park. To become informed in advance about such threats—and to stand a chance of resisting them, proposing alternatives, or mitigating their worst effects—individual PA managers must be informed and represented in regional planning and development processes. Making sure that PAs are at least recognized in provincial spatial plans is a useful start.<sup>13</sup> But ICDPs need to give considerable attention to governmental decisionmaking long before work in the field begins, and then sustain this involvement as an integral part of PA management.

Among the larger ICDPs, the Gunung Leuser and Kerinci-Seblat projects have both established connections with regional planning and development processes at the provincial level, with support from BAPPENAS at a national level. Even so, powerful sponsors of both ICDPs are constantly battling to prevent or delay harmful development projects being undertaken by a variety of government agencies. At Gunung Leuser, for example, the Ministry of Transmigration approved a site and 300 new houses were built inside the conservation area, despite Leuser's well-connected management. This happened not because of any deliberate attempt to intrude upon the park, but because the transmigration activities were identified and their budgets approved without any reference to park planning. Elsewhere, the Bunaken Marine National Park has been established in the face of opposition from the provincial government, which perceives this area's marine tourism industry as a key element of regional economic development and resents PHPA's legal authority over the park. The remaining ICDPs appear to be outside regional planning and development processes and, as a consequence, very vulnerable to a variety of unpredictable external threats. The Bukit Tiga Puluh project did manage to resist powerful logging interests intent on preventing the national park being established, but only at the cost of a large part of the proposed park and most of the surrounding forest. Many other PAs are increasingly being threatened by the effects of urban sprawl, large-scale mining, plantations, and logging interests that their associated ICDPs seem virtually powerless to resist. Furthermore, because PHPA remains a centrally controlled agency not integrated into provincial and local government, opportunities for PA managers to participate in spatial and development planning are limited.

The smaller, NGO-supported ICDPs struggle to be taken seriously by economic planners and decisionmakers. WWF-IP's major successes to date have been in terms of lobbying effectively to have PAs established

and then providing a field presence in some key PAs lacking PHPA staff or resources. WWF's leverage as a foreign NGO is limited, and a local foundation (Yayasan) was established in 1996 to support fundraising and lobbying under the leadership of a high-level board. This could help provide increased influence over some of the development programs threatening PAs.

### *Generating Development Resources to Support Conservation*

One of the principal thrusts of ICDPs is to demonstrate to local people and governments that PAs can contribute to local economies, that conservation pays, and that PAs deserve to be taken seriously when land use and economic development decisions are taken. But in practice, even the larger ICDPs have relatively meager financial resources to put on the table to stimulate local development in exchange for more effective conservation. The Gunung Leuser ICDP was seeking EU financing for an airstrip and roads outside the PA in compensation for having lobbied successfully against the construction of a road across it, and also has modest funds to invest in projects at a *kabupaten* level. Kerinci-Seblat's development resources will mainly be used at village levels. Ruteng and Siberut, despite their high cost, have relatively little to offer as development investments. The Dumoga-Bone project did invest heavily in irrigation, and successfully engaged local government in park protection as a result. But the overall project was not principally a biodiversity conservation initiative and would be expensive to replicate elsewhere. The NGO-sponsored ICDPs generally do not have funds to support regional development and rely upon educating and persuading public officials.

Generating local benefits directly from PAs has not been easy. Tourism revenues have not so far lived up to expectations, although they could become significant for a few PAs on Java and the marine PAs with attractive coral reefs. Entry fees are very low (less than US\$1), with 70 percent of the proceeds passing to local government and 30 percent to the central government. This provides no incentive for PA managers to increase the number of visitors or improve the quality of visitor experiences. Under existing fee and regulatory arrangements the opportunities for even the most-visited PAs to become financially self-sufficient are very limited.

Outside the tourism sector, butterfly farming in Arfak has proven quite lucrative to local participants, and Danau Sentarum has generated minor revenues from natural products. Further examples are difficult to find, and links to conservation remain unproved. This relative lack of income-generating potential from PAs is perhaps not surprising, as most of the viable sources of income from natural resources in Indonesia have already been expropriated by government or by powerful commercial interests. But commercial success based on PA resources can be dangerous for con-

servation when it is uncontrolled, as demonstrated by seaweed farming in Bunaken and ecotourism development at other sites.

Awareness is growing that PAs can provide valuable environmental services, such as watershed protection, as well as economic benefits that provide private investors, governments, and technical agencies with incentives to support conservation. Recognizing the limited scale of their own resources, some ICDPs have begun to concentrate on persuading sectoral ministries, such as Agriculture and Public Works, to invest more of their resources in the communities around PAs, which often receive few government services, and to use PAs to buffer investments such as dams, drinking water reservoirs, and irrigation systems. In 1997, local governments were expected to receive Rp 500 billion (US\$200 million) in central government funding through INPRES sources that could potentially be linked to ICDPs.<sup>14</sup> These include Rp 60 billion (US\$24 million) set aside in a new buffer zone fund (INPRES *Kawasan Lindung*) to partially compensate provinces and *kabupatens* for land taxes lost as a result of land set aside as conservation areas. ADB is trying to find ways of directly financing conservation-friendly activities by GOI line agencies with ICDP resources at Ruteng and Siberut.

ICDPs are often associated with ideas such as *compensating* for the loss of local income or services from protected lands, or *substituting* for income opportunities forgone locally. These imply that ICDPs are setting out to provide a set of economic incentives through externally funded development that—irrespective of the efficiency of PA management—are sufficient to induce local people and governments to support conservation as opposed to conversion of a PA to other uses. Virtually all of the ICDP planning documents include words to this effect. Is this realistic? Probably not. ICDPs setting out to provide economically viable alternatives to PAs or to reimburse local people and governments for the entire opportunity costs of the forgone use of parklands are surely starting down a very costly path.

None of the ICDPs have attempted to estimate the value of the net benefits forgone by local or regional economies as a result of PAs (or even the financial net benefits forgone by individual commercial interests, which may be more relevant). Such opportunity-cost calculations could provide a useful starting point for working out what levels of externally funded development might provide a positive inducement for local authorities to support conservation (assuming that such investments could be tied to guarantees of sustained and effective conservation). In aggregate, such calculations could help estimate the funds that northern countries and multilateral agencies would need to mobilize if effective conservation is to become economically viable and attractive in Indonesia—which it clearly is not at the moment.

## Institutional Arrangements for ICDPs

Two types of institutional arrangements are critical to ICDPs: project management and intersectoral coordination with government agencies with relevant jurisdiction.

### *Project Leadership and Management*

Finding satisfactory ICDP management arrangements for the larger ICDPs has been difficult. BAPPENAS plays a key role in supporting ICDPs at a national policy level, but it is not a field agency. BANGDA and provincial-level BAPPEDA staff are involved in implementing some ICDP development activities (at Kerinci-Seblat and a planned ADB–GOI-financed ICDP at Lore Lindu), but they lack conservation expertise or mandate. PHPA is hampered by its modest capabilities, relative powerlessness, and lack of jurisdiction outside PAs. The Directorate of Forest Production (Penguasaan Hutan [PH]) focuses on serving the process of forest use and not on preserving these resources and their associated biodiversity. BANGDA, PHPA, and PH do not find it easy to work collaboratively with rural communities or local NGOs, and they also have problems coordinating with one another. Thus, while policymakers recognize and support ICDPs in principle, by and large they lack the institutional vehicles that would let them be more effective in implementation.

Gunung Leuser has established a strong and independent project management unit outside the government system. This is an important, if controversial, experiment that has already attracted criticism. The conventional wisdom in development is to reject such approaches, on the grounds that special arrangements outside government will almost never be absorbed into routine operations after external inputs cease and are therefore unsustainable. While that is often true, two of the key assumptions underlying this argument may not apply to biodiversity conservation. First, none of the costly conservation projects being implemented in Indonesia show any sign of being financially sustainable after external inputs dry up. This means that external inputs will need to continue well beyond standard project time horizons if biodiversity is to be conserved. If financial sustainability is not assumed, then the arguments for always working within the existing system become weaker. Second, the prospects of introducing more effective institutional arrangements for conservation in Indonesia may be quite limited. So the usual project ambition of eventual integration into a functional government operation may not be optimal in the conservation sector. In practical terms, this means it may be preferable to design site-specific interventions that simply go around the mass of special exemptions, specific decrees, overlapping or even competing regulations and laws, and often-incompatible agency jurisdictions

in each project area. Finally, many of the threats to species and habitats require urgent action. It is not realistic to wait 5 to 10 years to develop capacity in a weak government agency and expect endangered species still to be there.

### *Intersectoral Coordination*

BAPPENAS and PHPA have made a start on intersectoral coordination by leading a series of provincial-level meetings on PA management and buffer-zone development issues. These have provided opportunities to educate local officials about PAs and the types of development activities that are compatible with conservation, and to discuss major conflicts and problems. But the technical line agencies controlling the centrally financed development projects identified as the major threats to PAs usually do not take part, thus limiting the impact.

The individual ICDPs have adopted a variety of ad hoc arrangements for intersectoral coordination with the government agencies making many of the key development decisions affecting PAs. The smaller ICDPs have barely attracted the attention of most higher-level government agencies and have tended not to establish formal coordination mechanisms or partnerships, except with PHPA (some of WWF-IP's recent work in Irian Jaya excepted). The larger ICDPs have typically formed provincial or *kabupaten* coordination committees and invited various agencies to periodic meetings. This provides a useful forum for discussion and possible consensus building between arms of government that may not even have thought about, let alone discussed, PAs previously. But effective coordination does not result automatically from having a lot of different agencies participate in meetings.

The Gunung Leuser ICDP has adopted the most convincing approach, by setting up a high-powered coordination committee including ministers and provincial governors (although coordination closer to the field level has yet to be tested). This provides a forum for addressing and resolving intersectoral problems within the general land-use plan. Examples of planning at cross purposes (that is, road developments into the park) that bedevil other ICDPs have already been solved in at least some instances. With this exception, finding examples of ICDP coordination committees that have been effective is difficult. This is consistent with other development sectors' experience that multisectoral projects requiring national agencies to play minor contributory roles in projects "owned" and controlled by others are fraught with risks. Bureaucratic incentives and constraints usually compel agencies to give priority to their own programs at the expense of others. "Better coordination," while highly desirable and often proposed, is rarely effective without clearly defined authority lines and commitment of resources to support agreed actions.

## Weaknesses of ICDP Design and Implementation

The following aspects of ICDP design and implementation are cause for serious concern.

### *Weak Conservation and Development Linkages*

Most of the ICDPs, and especially the larger ones, were designed and began implementation without sufficient common understanding of objectives and methods among the stakeholders—that is, anyone likely to be involved in the project, anyone affected by the project, or anyone whose cooperation with the project was needed. For example, many local government officials simply see the large, official ICDPs as a chance to receive a subsidy for their favorite development projects, with only a vague idea at best that some practical steps to support conservation might be expected in return. This has had a number of repercussions. Considerable confusion and disagreement exist over **what** the ICDPs are supposed to be doing, as well as **why** and **how**. ICDP activities have also tended to stray from the overall objective of enhancing PA management, often leading to an overemphasis on local development programs that lack coherent linkages to biodiversity conservation.

### *Inappropriate Approaches*

The larger ICDPs in particular have followed a series of design and implementation procedures that—although familiar in international development projects—seem totally unsuited to the long-term investments in PA management, capacity building, and constituency development required within ICDPs. As a result, the chances of these projects achieving their stated conservation objectives appear quite limited. International consulting teams carried out extensive background studies and prepared comprehensive, multivolume project plans in advance for Ruteng, Siberut, Bunaken, and Kerinci-Seblat. These expensive exercises seemed more designed to satisfy donor requirements than to lead to effective action, and were frequently characterized by (a) minimal local collaboration or involvement from the agencies or individuals who would be responsible for implementation, (b) no provision for transition into the implementation phase, (c) detailed sets of documents that are rarely used and rapidly become obsolete, and (d) virtually no tangible conservation or development benefits in the early years to sustain stakeholder interest.

Such approaches, which are encouraged by PHPA's own guidelines for PA planning, discourage executing agency ownership and commitment to the ICDPs and increase the chances of failure. They also defy the fact that most policymakers, government officials, and other Indonesian stakeholders do not often refer to such studies but become informed by discussion,

negotiation, collaboration, and direct experience. The overwhelming importance attached to report preparation within large ICDPs does little to transfer knowledge within Indonesia, increase the local capacity for effective action, or contribute to a process of change.

A direct consequence of putting so much effort into planning at the expense of quickly moving to implementation is that some of the ICDPs are trying to address a wide range of problems simultaneously and, as a result, have become too complicated. Even if all ICDP issues are correctly identified, project institutions lack the capacity to handle them all and are more likely to do nothing in the face of insufficient prioritization. Kerinci-Seblat is the prime example. The history of integrated rural development projects clearly demonstrates that overly-integrated implementation virtually never works.<sup>15</sup> Despite this lesson, the larger ICDPs in particular seem to have too many loosely related components combined in a single project-financing package.

### *Need for Adaptive Management*

Intensive planning phases that assemble relevant information and then specify in detail the steps needed for implementation are useful for constructing buildings or bridges. This is because (a) the outputs are obvious and tangible, (b) most of the key variables can be studied and understood in advance, (c) the needed actions can be reduced to a series of simple and mechanical steps, (d) the implementing organization usually has relevant experience and capabilities, and (e) little strategic thinking, creativity, or sophisticated judgment is needed during implementation. Even though ICDPs do not have any of these characteristics, blueprint approaches continue to dominate among ICDPs financed by the official donor agencies.

It does not make sense for ICDPs' designs to be prepared in great detail on the basis of sets of assumptions about the future that are clearly unreliable. ICDPs need to avoid specifying meaningless targets in advance and concentrate instead on building problem-solving capacity among the people involved. Such an approach can be described as "adaptive management." The Gunung Leuser ICDP appears to come closest to having the potential for adaptive management, although it, too, is struggling for autonomy and flexibility within its donor-financed master plan. ADB's Staff Appraisal Report for the Ruteng and Siberut projects argues for an adaptive approach, but in practice these projects and Bunaken have both followed blueprint approaches.

### *Biological Information for ICDPs*

All of the ICDPs have carried out at least some biological inventory activities, mainly compiling lists of species. Information that a particular re-

serve supports  $x$  bird species or  $y$  endemic primates has proved useful in arousing the interest of donors and, sometimes, government. But surveys to identify important or sensitive locations within PAs are more useful for ICDP design and management, helping to focus land-use and community-level interventions where they can have their greatest impact on biodiversity. Such surveys are planned at Gunung Halimun, Kutai, Kayan Mentarang, Leuser, and Lore Lindu. Only Gunung Leuser has clear plans to inventory and monitor large mammal populations.

None of the ICDP projects have yet established convincing biological monitoring and evaluation programs that provide current performance information to PA managers, although a promising program is being developed at Komodo based on biological and socioeconomic baseline surveys. The Danau Sentarum project established a GIS unit in PHPA's head office in Bogor that has generated useful maps of subhabitats, land uses, and species inventories. Unfortunately, this promising ICDP biological inventory and monitoring unit was closed when project funding ran out in 1997. The Bunaken project also used remote sensing data to identify key areas for intervention, and both the Danau Sentarum and Bunaken projects found GIS outputs to be a powerful advocacy tool. At considerably less expense, the Kutai project simply used hard-copy satellite images to identify areas of park encroachment.

#### *Lack of Information and Awareness*

Very little public constituency or sentiment supports nature conservation in Indonesia. This makes the information and advocacy role of PAs and ICDPs very important indeed. The Danau Sentarum, Kerinci-Seblat, Komodo, and Bunaken projects have made reasonably serious efforts to communicate effectively. Otherwise, effective nature conservation awareness campaigns to inform urban as well as rural communities, government officials, and the private sector about the purpose of PAs and ICDPs have been acutely lacking. PAs and ICDPs must develop and use environmental awareness techniques and materials suited to the major task of convincing Indonesians that they have some extraordinary natural assets to be proud of, and that they should make greater efforts to preserve these assets for future generations.<sup>16</sup>

#### *Sustainability*

Little at present indicates that **any** of the ICDPs examined here will be replaceable by local institutional and financial arrangements once external funds have been used.

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## Conclusions

A carefully quantified assessment of ICDP effectiveness proved impractical because of a lack of reliable monitoring systems or performance data. Despite little usable data, however, the results of the study are unambiguous. **Very few ICDPs in Indonesia can realistically claim that biodiversity conservation has been or is likely to be significantly enhanced as a result of current or planned project activities.** While a few promising ICDP initiatives are under way, most of these do not appear to be sustainable under current conditions.

Is it reasonable to assess the ICDPs when so few projects have progressed beyond start-up phases and in the absence of reliable biodiversity performance indicators? Yes, it is. Some difficulties may well be due to “teething problems” that will be worked out as project staff gain experience and procedures become familiar. But the most significant problems show little sign of being related to the short working lives of most of the projects. To the contrary, these challenges show every sign of intensifying as time passes. Many key ICDP staff have been refreshingly open about their extremely limited capacity to overcome the major constraints facing biodiversity conservation. The staffs of PHPA, the NGOs, the consulting firms, and some of the development agencies have not only been very cooperative but also notably self-critical in their assessments of their own projects. Therefore, attributing the difficulties identified so far to a lack of data or to the fact that many projects are relatively new would be reckless.

The ICDPs at Gunung Leuser and Komodo, as well as the IPAM initiative at Gunung Gede Pangrango, all show promise. But the remaining ICDPs show little sign of making conservation more effective, despite the valiant efforts of many dedicated and talented field workers and the investment of increasingly large sums of money (“large” by historical conservation standards, at least). Even at this comparatively early stage of implementation, clearly **most of the attempts to enhance biodiversity conservation in Indonesia through ICDPs are unconvincing and unlikely to be successful under current conditions.**

The major problems do not seem to lie with the ICDP concept itself. Instead, the patterns emerging from the field visits, case studies, and interviews point toward flaws in basic assumptions and planning, and a failure to address the real threats and capacity constraints that conservation projects face in the field. Most ICDPs are proceeding as if PAs are failing solely because of increasing pressure from local people. This study

suggests that the problems in PAs run much deeper, and will not be adequately addressed by community-level approaches that are not linked to broader reforms in PA management, if not in natural resource management in general.

### **Promising Examples**

The few promising ICDPs share a number of characteristics. First, they benefit from high-level political and administrative support; this often gives PA managers the authority and capacity to address and resolve local issues, and also leads to more effective enforcement of boundaries and land-use rules by local government. Second, an appropriate mandate and adequate resources for strong PA management are complemented by at least some flexibility in planning and the capacity to adjust resources to changing field needs. Finally, the more promising projects ensure close communication with local governments, whether through formal or informal channels. Promising ICDP examples showing these characteristics stand out in all types of PAs, whether supported by GOI resources alone, through NGO assistance, or through international donor support. The source of funds does not appear to be a strong predictor of PA success and seems to have no predictive value for determining sustainability beyond the life span of the project.

### **Strategic Problems**

ICDPs commonly concentrate their resources on threats to PAs from local communities. But community development activities within ICDPs, however laudable, have very limited prospects of addressing the main threats facing biodiversity in most PAs. A ranking of threats to the 21 PAs covered by this study found that direct threats from local communities ranked well behind road construction, mining, logging concessions, and sponsored immigration (see annex). While ICDPs can address threats posed by local communities, such threats are better addressed through mechanisms such as spatial planning, PA managers' involvement in public investment decisions, and improved development coordination, rather than through investments in community economic development.

While local villagers and immigrants clearly represent a major threat to biodiversity at some sites, the threats from large public and private investments are generally much more serious. Thus, ICDP plans are often aimed at the wrong target. Coming to grips with the most serious threats to PAs has proven very difficult for ICDPs, however, and most projects have had very little influence on economic planning or land-use decisionmaking. This is at least partly due to (a) the low priority given to conservation

among government agencies in general, (b) the lack of PA and ICDP leadership and representation at the field level (a role played by BAPPENAS at the national level), and (c) the complex and overlapping agency responsibilities affecting local and regional development. BAPPENAS and PHPA have recently started a series of province-level meetings on PA management and buffer-zone issues, but the technical agencies controlling the investment posing the biggest threats only rarely take part in these discussions, and their own internal environmental assessment review procedures have not been sufficiently effective.

### **Inappropriate Project Models**

For the larger projects, ICDP planning usually conforms to an approach that is more suited to large, concentrated infrastructure projects than to the planning and management needs of PAs. Donor agency project cycles have encouraged consulting teams to prepare one-time, detailed, and costly plans based on questionable information sets, followed by unconvincing implementation arrangements that are highly dependent on government agencies with inadequate capacity and commitment. This is simply not working in the case of ICDPs linked to PAs, where reliable information is scarce and the requirements for on-site flexibility and effective decisionmaking are at a premium.

Appreciation of the importance of the linkages between conservation objectives and development activities is generally very weak, and is usually confined to a small number of stakeholders. Many projects are poorly conceived and are undertaking costly activities that seem to have little prospect of enhancing conservation, generating sustainable benefits, or both.

None of the internationally financed ICDPs appear to be financially or economically sustainable once external funding has been exhausted. While the plans for many ICDPs call for income-generating activities to lead to financial self-sufficiency within a few years, such expectations are usually totally unrealistic.

### **Conservation Agency Limitations**

The lack of capacity within PHPA is a formidable barrier to effective conservation. Neither the conservation nor the development components of ICDPs can compensate for PHPA's inability to carry out basic PA management operations, and many of the responsibilities assigned to PHPA within ICDPs are well beyond its capacity.

PHPA has recruited and trained a small number of highly capable field staff, providing the basis for some optimism about the future. But most of

the benefits from employing these individuals will be lost unless the structure and role of PHPA are clarified and strengthened. PA managers lack the authority necessary to work with local governments and to enforce PA regulations, staff and financial resources remain heavily centralized, the capacity of most staff is inadequate, and managers lack initiative as well as flexibility in their use of resources. Donor-financed "institutional strengthening" efforts within PHPA have generally been unsuccessful (with the exception of some longer-term training programs to develop individually selected national staff). Foreign technical assistance and institutional support have tended to substitute for—rather than promote—capacity development within PHPA.

### **Law Enforcement**

ICDP efforts to establish incentives for conservation by investing in development are being frustrated by inadequate law enforcement inside PAs, combined with regulated development and the expropriation of natural resources by powerful interests outside PAs. **The extent to which the effective enforcement of laws and regulations is a basic requirement for successful ICDPs is deeply underappreciated.**

ICDPs depend on the ability of PA and government authorities to enforce national conservation and land-use laws and PA regulations, as well as any community agreements facilitated by ICDPs. PA managers' ability and willingness to enforce protection laws is limited, sometimes to the point of complete inaction, and very few local authorities have considered PA demarcation and protection in their spatial plans or development activities. Without major improvements in law enforcement, both large and small actors will continually intrude into PAs and further destroy habitat. Without more effective sanctions and penalties for illegal use of PA resources, the alternative and less environmentally destructive ways of making a living offered through ICDPs will not be effective.

### **Broader Constraints**

These problems are compounded by a general lack of conservation awareness or support for nature conservation and PAs throughout Indonesian society. Powerful and well-connected commercial interests, as well as the national sectoral ministries that control most public-sector resources, seem almost totally unrestrained by conservation considerations, frequently flouting laws and regulations for environmental protection. PAs and ICDPs cannot possibly thrive in such an environment. The Gunung Leuser ICDP is attempting to bypass some of these problems by setting up special arrangements under high-level protection outside existing agency structures.

How effective this will be is impossible to say. Other large ICDPs, including some still being planned or prepared, have proceeded as if most of the problems highlighted here are easily overcome or do not exist.

GOI has shown an inclination toward biodiversity conservation by establishing PAs and a conservation agency, by entering into various international conservation agreements, and, most recently, by allocating resources to ICDPs. Considerable progress has been made in establishing one of the world's most important PA networks during the last two decades. But if conservation is to become effective in practical terms, GOI will need to take much stronger actions that increase the capacity and commitment to make conservation happen on the ground. People and organizations currently helping themselves to PA resources or promoting investments harmful to PAs will need to be discouraged much more firmly. There are only very limited signs of this happening in Indonesia.

The goals of biodiversity conservation in Indonesia are unlikely to be achieved through ICDPs unless the serious problems highlighted in this study can be remedied for current and future PA management. This is a disappointing assessment for an approach that is absorbing the dominant share of international funding for biodiversity conservation both in Indonesia and elsewhere.<sup>17</sup> Careful consideration and urgent priority should now be given to a strategic reorientation before further large-scale investments are made.

The impetus for solving the major governance problems highlighted here will not come from within the conservation sector, but some supportive actions are described in the next section.

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## Future Actions

Incorporating the findings of this study into the next generation of biodiversity protection efforts will require some significant improvements in conservation planning and management.

### Design and Implementation

ICDP components based on the simplistic idea of making limited short-term investments in local development and then hoping this will somehow translate into sustainable resource use and less pressure on PAs need to be abandoned. ICDPs will only work if GOI and provincial governments first demonstrate strong commitment to protecting conservation areas and their surrounds. This will require much more rigorous enforcement of PA boundaries, as well as spatial plans for local and regional development. **Then** ICDPs can help build local support and cooperation in communities, work with local government to encourage environmentally friendly development initiatives, and support carefully regulated private-sector initiatives such as tourism, buffer-zone forest exploitation under license, or even privately run PAs.

Conventional donor agency project cycles, with their heavy emphasis on planning at the expense of implementation, are proving incompatible with ICDPs. Standard blueprint design approaches need to be replaced with alternatives more geared toward problem identification and problem solving through adaptive management. Four essential elements of ICDP success can be identified:<sup>18</sup> (1) establishment of a strong local management and protection capacity staffed by people able to exercise judgment and deploy resources in a flexible manner to both enforce regulations and generate benefits for local communities, (2) outside management or control of projects based much more on the management of outputs than on attempts to manage inputs (although inputs cannot be ignored), (3) performance indicators need to be designed (and for biodiversity this requires more research) and should be applied by an independent agency, and (4) the people who direct projects need to have much better skills in mainstream management; in the past they have been trained to make lists of birds, mammals, and so on, but they have not been adequately trained in the skills needed to build collaborative alliances with the variety of actors who influence land use in and around PAs.

ICDP early phases should involve much less emphasis on the preparation of detailed plans by outside experts who will have no involvement in their implementation. More resources and attention should be devoted to (a) identification of priority biodiversity features within PAs; (b) more careful analysis of the threats to these features, determination as to whether an ICDP is an appropriate response, then identifying clear objectives and actions to address these threats; (c) early establishment of independent project management units and strong PA management functions for both planning and implementation, with clear authority over ICDP implementation and with access to outside specialists as needed; (d) extensive consultations with stakeholder institutions; (e) effective enforcement; (f) vigorous and sustained conservation awareness campaigns targeting the media, schools, villages, and public officials;<sup>19</sup> (g) intensive training and capacity building for individuals and organizations with key roles in the project;<sup>20</sup> (h) lengthening projects and reducing the pressure to disburse large amounts of money quickly; (i) starting with a few simple, small-scale activities and low levels of financing, building gradually on successes, developing confidence and capabilities based on practical experience, all while continually reexamining the links between development and conservation components; (j) establishing and testing information systems and performance indicators to provide relevant and usable information to management, rather than amassing vast quantities of data during a single, limited preparation phase; and (k) linking incentives to success in conservation.

The optimal form for ICDPs will vary among sites. Some ICDPs may achieve conservation gains most effectively by emphasizing local participatory development, while others may be more effective concentrating their efforts on regional development policy issues in provincial capitals. International development agencies can further support ICDPs by explicitly linking the development programs they finance in rural areas to PAs.

Prerequisite conditions for ICDPs need to be spelled out to participating agencies and local governments. Sponsoring GOI agencies and their donors should be ready to terminate projects if key commitments—such as effective law enforcement and adequate environmental screening for infrastructure and other development programs outside PAs—are not being met. Large investments should only be made in agencies and organizations that have demonstrated commitment and competence. Finally, donor agencies should discontinue the fantasy that new revenue sources will make ICDPs financially or economically self-sufficient after a few years. Biodiversity conservation in Indonesia and most other developing countries is clearly going to require substantial external subsidies for as long as some biodiversity remains to protect.

## Strengthening PHPA

Experience thus far shows that PHPA's lack of capacity remains a critical constraint on effective PA management. PHPA's role as a junior actor promoting conservation in a large, powerful ministry dedicated to forest exploitation is a difficult one. There have been suggestions that PHPA should be replaced by an independent agency outside the Ministry of Forestry,<sup>21</sup> although this seems unlikely in the near future. If PHPA is to continue in its current role, GOI should help the agency work out a sensible strategic direction (presently lacking) based on a realistic assessment of conservation priorities and available resources. In addition, PHPA's preoccupation with community development and captive breeding may not be the best use of limited resources. A major rethinking of PHPA's role and operation is badly needed. An ADB-financed international consulting team recently examined PHPA and generated a variety of strategic and operational recommendations, but the agency has not responded positively (one recommendation was to launch ICDPs at all major conservation sites in Indonesia, which the findings of this study suggest would be premature).<sup>22</sup> A reexamination of PHPA's priorities, operations, and resources led by GOI officials from BAPPENAS, Forestry, and PHPA itself, with NGO input, might be more effective.

Two strategic changes should take priority. First, PHPA needs to deconcentrate considerable planning and implementation responsibilities to PA managers working at the provincial and *kabupaten* levels, so that PA designs become part of regional development. Determining conservation priorities, establishing basic objectives and rules, and ensuring proper national monitoring would remain the responsibility of the PHPA center, working in consultation with PA managers. Day-to-day functions should move to the provincial office of the Forestry Department. PHPA should play a reduced role in PA operations, and instead make much greater use of experienced NGO and private-sector service providers for support. Mechanisms must also be developed for PA establishment and management to become part of regional development planning.

Second, acute training needs are located throughout PHPA, but renewed efforts should be focused particularly at the park director level. Ways need to be found to help these managers develop professional and motivated teams capable of the wide range of challenging tasks that PA management involves. PHPA also needs to redirect its staff and budget allocations so that the bulk of its resources concentrates on improved field performance and presence rather than the central overheads and management that currently exist. Good managers should receive incentives for making PAs work effectively.

In 1997, the Ministry of Forestry announced plans to increase the number of park management units from 12 to 34, although the resources to be made available to support this expansion are still unknown. PHPA, with support from donors, thus has a significant opportunity to build on its small but promising IPAM initiative at Gunung Gede Pangrango and Komodo, to intensify training for the new park directors and their junior field staff, and to introduce more flexible and appropriate human resource management policies and programs—including staff performance incentives and merit-based promotions. In other words, it should professionalize the agency's field operations and introduce a better-defined career structure for management staff. If PHPA's senior officials could be persuaded to make a serious effort to improve the agency's operational performance, Gunung Gede Pangrango could be an ideal location to set up a new national residential training center for the most promising park managers and staff. Recruiting and training a cadre of high-quality park managers for field assignment should be PHPA's top personnel priority.

To make law enforcement more effective, patrols should be adequately supervised and supported with specialized, trained staff. PHPA should take on legal specialists to advise staff and pursue cases in the courts and should establish a fund to meet prosecution costs. Allocating resources to *kabupatens* to support law enforcement could help build local government support for parks.

Consideration should be given to increasing PA entry fees (currently less than US\$1), especially for foreigners. At least some part of the additional revenues generated should be added to the PA budget to provide more of an incentive for PA managers to develop their own local funding sources. It is important to note that lack of financial resources is far from PHPA's major constraint, however—the extremely inefficient and inflexible use of existing resources is the key issue.<sup>23</sup>

### Site Selection

Most of the large, official ICDP investments are focused on western Indonesia, and the terrestrial ICDPs (except Ruteng and Siberut) are all located on the large continental islands and Sulawesi. Central and eastern Indonesia's large number of medium and small islands with high levels of faunal endemism are therefore poorly represented. Future ICDP conservation investments in Irian Jaya, Nusa Tenggara, Maluku, and Sulawesi would provide the greatest incremental gain for national and global biodiversity coverage. Partly as a result of their isolation, people in the Nusa Tenggara and Maluku island groups are usually poorer, with strong traditions and cohesive communities. Such areas may be appropriate for community-based ICDP approaches, though even here a more judicious,

clearly prioritized agenda blend is needed. Local community impacts on biodiversity are less evident in Irian Jaya, where most threats come from national development projects. In these regions, an ICDP model that limits its focus to integrating biodiversity considerations with spatial and development planning may be most effective. However, even in these areas, the policy and spatial planning issues bypassed by current ICDP approaches are assuming ever-increasing importance.

### **Scale of ICDP Interventions**

Large ICDPs of the type being supported by donors are generally driven by a belief that (a) donors attain economies of scale by supporting a small number of very large projects; (b) it is better to aim to protect very large areas in the hope that biologically critical core areas can be saved; and (c) small PAs are not ecologically viable over the long term because of fragmentation effects. As a result, of the seven national parks in Indonesia between 10,000 and 100,000 hectares, only one benefits from international support. Consideration should also be given to the argument that, in some areas, a greater number of small, strategic reserves more capable of being managed by public and private conservation agencies could represent an option that is more cost-effective than current approaches, more likely to be implemented, and still likely to achieve core conservation objectives.<sup>24</sup>

### **National Biodiversity Inventory and Monitoring Unit**

Consideration should be given to establishing a national biodiversity inventory and monitoring unit that would service existing and developing ICDPs as well as the wider PA network. The current situation whereby Indonesian ICDPs function as a collection, rather than a network, of projects is inefficient. The Danau Sentarum ICDP has invested heavily in building a GIS unit in PHPA. This unit, or a semi-independent unit established outside PHPA, could gradually take on the inventory work for all of the ICDP sites. Such an institution could help mitigate the skill shortages in inventory and monitoring, develop consistency of approaches, ensure continuity and be an effective advocate of key issues. It could also bring significant economies of scale when compared with the cost of each ICDP developing its own expert monitoring capacity.

### **Expanding the Menu**

#### *Environmental Awareness*

The acute need to build nature conservation awareness in Indonesia has already been mentioned. Indonesia is a middle-income country well ad-

vanced along its urban transition. Over the long term, its increasing domestic support for conservation through urban parks and recreation areas, school curricula, and accessible nature reserves will probably do as much or more to protect its biodiversity, as will the current overemphasis on PA gazettement. An intensive national campaign could usefully be aimed at urban populations who will increasingly depend on PAs for recreational opportunities and whose emerging middle classes represent an important potential source of conservation support. Too much biodiversity support from the donor community has focused on protecting biologically important but inaccessible PA areas rather than integrating PA protection into a broader program of creating national conservation awareness. Among other possibilities, the excellent city zoo in Jakarta has enormous development potential to educate 30 million Indonesians about their own national biodiversity wonders, instill a sense of pride, and become a flagship for conservation. Donors, including the World Bank, should give serious consideration to support for an urban-based conservation program.

### *Private-Sector Roles*

The conservation initiatives of the public and private sectors (including NGOs) must be balanced. The larger, more complex and ambitious PAs will probably have to remain under government control. But room exists for smaller, more targeted PAs run by NGOs or the private sector with the authority to capture revenues from activities such as tourism. Some of these might be located adjacent to or within national parks, as has been done in Costa Rica, South Africa, and Zimbabwe.

Kutai National Park provides a potentially exciting—if not exactly robust—model for private-sector support for conservation. KPC has set an important precedent by providing funds and bringing in private-sector partners. The institutional mechanisms still have to be improved (as yet there is no legal entity for the “Friends of Kutai”), and coordination with local government is limited. Not surprisingly, the companies are interested in seeing quick results from their support and are unwilling to support controversial activities such as law enforcement or resettlement. But Kutai is one of the very few signs of tangible private-sector support for PAs in Indonesia, and ways of strengthening and expanding this initiative need to be explored.

### *Providing More Effective Incentives*

Given the limited success so far of PAs and ICDPs, GOI should give consideration to other, more radical models to create conservation incentives. One possibility would be to simply pay cash in return for PA protection. Selected local or national government entities or NGOs would receive cash, to use as they see fit, in exchange for PA management and conservation

commitments. Payment schedules over extended periods would be subject to independent performance reviews. The funding for such arrangements could originate from international sources or from GOI. This is a simplification of the conservation concession pioneered at Gunung Leuser.

GOI could also consider inviting tenders for the management of individual PAs: GOI would commit to taking whatever steps necessary to protect a particular PA, say for 25 years, while allowing independent monitoring. Interested parties (for example, development agencies, NGOs, and private-sector organizations) would then bid the amount they would be prepared to pay to secure this PA, payable over the full term of the agreement as long as GOI continued to live up to their protection commitment. If adequate offers of international funds were not forthcoming, GOI could then decide whether to finance conservation domestically (perhaps based on an assessment of watershed protection, tourism potential, or other national economic benefits) or to turn the PA over to other uses. Such an approach could help to sharpen the currently rather vague discussion concerning the level of financial resources that should be transferred to developing countries from richer nations to support biodiversity conservation in the global interest.

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## Notes

1. Wells, M., and K. Brandon with L. Hannah. 1992. "People and Parks: Linking Protected Area Management with Local Communities." World Bank, World Wildlife Fund, and USAID, Washington, D.C.

2. The World Bank's interest in and commitment to ICDPs, especially in Asia, is evident from Braatz (1992) and Sanjayan et al. (1997).

Braatz, S. 1992. "Conserving Biological Diversity in Asia: A Strategy for Protected Areas in the Asia-Pacific Region." Technical Paper No. 193, Asia Technical Department Series, World Bank, Washington, D.C.

Sanjayan, M.A., S. Shen, and M. Jansen. 1997. "Experiences with Integrated Conservation-Development Projects in Asia." Technical Paper No. 388, World Bank, Washington, D.C.

3. The main sources for this view are MacKinnon and Artha (1981) and BAPPENAS (1993).

MacKinnon, J., and M.B. Artha. 1981. *National Conservation Plan for Indonesia*, Bogor: UNDP/FAO National Parks Development Project, FAO.

BAPPENAS. 1993. *Biodiversity Action Plan for Indonesia*. Jakarta: Ministry of National Development Planning and National Development Planning Agency.

4. A variety of studies have analyzed or commented on the performance and capabilities of PHPA, including:

Barber, C., S. Afif, and A. Purnomo. 1995. *Tiger by the Tail? Reorienting Biodiversity Conservation and Development in Indonesia*. Washington, D.C.: World Resources Institute.

British Council. 1996. *Indonesia: ADB Institutional Strengthening for Biodiversity Conservation Study*. Manila: Asian Development Bank.

MacAndrews, C., and L. Sanders. 1997. "Conservation and National Park Financing in Indonesia." Occasional Paper No. 6. Natural Resources Management Project. BAPPENAS, Ministry of Forestry, and USAID, Jakarta.

NRMP. 1994. "Policy towards Protected Areas in Indonesia." Report No. 38. Natural Resources Management Project. BAPPENAS, Ministry of Forestry, and USAID, Jakarta.

5. Compiling the data needed to even roughly estimate GOI's protected area management expenditures proved a complex undertaking. This estimate is based on a compilation of various PHPA data sets. For an alternative but broadly consistent estimate, see MacAndrews and Sanders (1997).

6. Barber et al. (1995) examined three of the ICDPs.

7. Suratri, R., W. Wardoyo, W. and A. Khan, eds. 1997. "Integrated Conservation and Development Projects in Java and Sumatra: A Traveling Workshop Report." BAPPENAS, PHPA, and World Bank, Jakarta.

8. Indonesia consists of 27 provinces (*propinsi*), often referred to as Level 1 (*tingkat 1*). The administrative units immediately below the provincial level consist of 243 counties or regencies (*kabupaten*) and 58 municipalities (*kotamadya*), often referred to as Level 2 (*tingkat 2*). Each province is led by a governor, who reports to the president. Counties are led by a *bupati* and municipalities by a *walikota*, all of whom report to the governor of the province.

9. Other reviews have drawn the same conclusion (see note 3). ADB's *Institutional Strengthening for Biodiversity Conservation Study*, for example, concluded that:

Although PHPA is the primary agency responsible for managing Indonesia's protected areas, it faces a daunting series of constraints and limitations in carrying out its mandate, including its general lack of stature within its own Ministry, lack of support from and cooperation with other government agencies and ministries, inadequate capacity and ability in monitoring and evaluation of protected areas, insufficient funding, an undermotivated staff which is also insufficient in numbers and in training....

(British Council, 1996)

10. Suratri et al.

11. See the annex on threats to protected areas.

12. Momberg, F., K. Atok, and M. Sirait. 1996. *Drawing on Local Knowledge: A Community Mapping Training Manual. Case Studies from Indonesia*. Jakarta: Ford Foundation, Yayasan Karya Sosial Pancur Kasih, WWF-IP.

13. Spatial planning is used in Indonesia to “integrated development interests through citizen participation in the planning process” for provinces and *kabupatens* (Law No. 24, 1992). Each plan specifies management of protection and cultivation areas; management of rural, urban, and special areas; and development of rural and urban settlements, infrastructure, and urban transportation networks. The key agencies involved include BAPPENAS, BANGDA, the Ministry of Public Works, and BAPPEDA I and II. Major disputes are resolved by the National Spatial Planning Coordination Board.

14. INPRES refers to a presidential instruction or special GOI allocation. Central government funding sources that could potentially be linked to ICDPs include INPRES Desa Tertinggal (IDT [fund for poor villages]), INPRES Kawasan Lindung (buffer zone funds), and INPRES Penghijauan (regreening funds).

15. For example, see World Bank. 1993. “Area Development Projects: Lessons and Practices.” Operations Evaluation Department, World Bank, Washington, D.C.

16. On-site awareness measures have traditionally consisted of posters and small visitor centers. Yayasan Indonesia Hijau, a national awareness program growing out of a 1978 WWF initiative, has supported a conservation magazine. Other encouraging signs have been the growing frequency of nature reporting in national newspapers and the steady improvement in and use of the national zoo in Jakarta.

17. For example, most of the biodiversity conservation projects supported by the GEF — the single largest source of international biodiversity funding — include an ICDP approach.

18. Jeff Sayer’s review comments helped significantly in clarifying these elements.

19. The Nusa Tenggara Upland Development Consortium (a consortium of local and international NGOs and government) has started promoting nature conservation awareness in Sumba, stimulating the Bupati to propose several new conservation areas.

20. Such training should preferably not include sending the most promising ICDP staff overseas for several years of graduate study *during* the project, as some ICDPs have done.

21. Barber et al. (1995).

22. British Council (1996).

23. See MacAndrews and Sanders (1997).

24. For example, see Zuidema, P.A., J. A. Sayer, and W. Dijkman. 1996. "Forest Fragmentation and Biodiversity: The Case for Intermediate-Sized Conservation Areas." *Environmental Conservation* 23(4): 290–297

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## ICDP Case Studies

### Case Study Locations

#### *Sumatra*

Gunung Leuser

Kerinci-Seblat

Siberut

Bukit Tiga Puluh

#### *Java*

Ujung Kulon

Gede Pangrango

Gunung Halimun

#### *Kalimantan*

Bukit Baka–Bukit Raya

Kutai

Kayan Mentarang

Danau Sentarum

#### *Sulawesi*

Bunaken

Taka Bone Rate

Bogani Nani Wartabone (formerly Dumoga–Bone)

Lore Lindu

#### *Nusa Tenggara Timur*

Komodo

Ruteng

#### *Irian Jaya*

Wasur

Lorentz

Arfak

Cyclops

## Sumatra

### *Gunung Leuser National Park*

#### DESCRIPTION

The 2.1 million-hectare Leuser ecosystem includes the 905,000-hectare park plus adjacent production and protection forests. The ecosystem overlaps two provinces (Aceh and North Sumatra) and eight *kabupatens* with a combined population of two million people. The forests protect the upper watersheds of nine economically important rivers that are increasingly prone to costly flooding.

YLI, a private foundation, received a seven-year conservation concession to manage the ecosystem through a decree from the Minister of Forestry in 1995. Management of the conservation concession is explicitly to be based on an ICDP approach. The ICDP budget is US\$66 million (for seven years, from 1991 to 1997), financed by the EU (60 percent) and GOI (40 percent—all from GOI's Reforestation Fund). The annual park management budget is about US\$400,000.

#### BIODIVERSITY VALUE AND THREATS

Dipterocarp lowland rainforests occurring below 600 meters are the most important vegetation type, covering 12 percent of the park area. The 105 species of mammals recorded in the park represent 60 percent of the Sumatran total, many of which are threatened elsewhere. The park supports the last viable population of Sumatran rhinoceros, estimated to be 130 to 200 individuals. Other important large mammals include tiger, clouded leopard, leopard cat, Asiatic golden cat, orangutan, white-handed gibbon, Thomas's leaf monkey, Asian wild dog, sun bear, Sumatran serow, and Asian elephant. The 325 bird species present represent 60 percent of the Sumatran total.

The main threats to the park include (a) large-scale, organized illegal logging; (b) poorly managed forest concessions on the park boundaries; (c) agricultural encroachment by small farmers; (d) conversion of neighboring forests for estate crops and transmigration; (e) road construction in and around the park; and (f) poaching of protected mammals, especially rhinoceros.

Involvement of the army and police in illegal logging has been reported. PHPA receives minimal support for law enforcement from local governments that strongly resent the large proportion of their territories occupied by the park, even though the infertile and steep park lands are unsuited for agriculture or sustainable logging. Illegal encroachment and logging inside the park are clearly expanding and are apparently not constrained by any enforcement measures.

#### KEY FEATURES OF THE ICDP

This is the first example of a conservation concession being granted to a private organization in Indonesia.

YLI is led by an influential and well-connected board with access to the president. The project steering committee headed by BAPPENAS includes three ministers and the two provincial governors.

The ICDP has dynamic, charismatic leadership and has featured continuity between the preparation and implementation phases. The strong, centralized project management team, Leuser Management Unit (LMU), has European and Indonesian codirectors. The five major ICDP program areas, each led by foreign technical assistants and senior, full-time Indonesian counterparts seconded from government agencies and universities, are (1) administration, (2) conservation (that is, park management, boundary demarcation, and law enforcement), (3) buffer-zone development (outside the park but inside its ecosystem), (4) intensive zone development (outside the ecosystem but inside *kabupatens* that include the ecosystem), and (5) research, monitoring, and evaluation.

The development components of the ICDP will be worked out with local government (*bupatis* and BAPPEDAs) as a quid pro quo for park protection. Planned investments include micro- and macro-level projects awarded to "legally accountable bodies" (principally villages and *kabupatens*) that are prepared to commit to supporting conservation and ecosystem protection obligations in return. Forest product harvesting in the buffer zones is to be carried out under license by "privilege holders." If or how such contracts and licenses can extend beyond the seven-year concession period is unclear.

The LMU will provide planning advisers to work with provincial BAPPEDAs in reviewing all regional economic development proposals for their potential impacts on the ecosystem.

The LMU expects the function of PHPA's UPT to be limited to monitoring compliance with the terms of the concession agreement inside the park (the provincial forestry office would do the same outside the park). This would give PHPA a role comparable to that of the PH as an inspectorate for logging concessions.

#### KEY ACTIVITIES TO DATE

The project has engaged high-level political support within a strong institutional framework, and has established well-qualified staff in a centralized and well-equipped headquarters. These were explicitly recognized as preconditions for effectiveness at the outset of the project. A park management plan was prepared and approved in 1995.

The former president approved the conservation concession granted by the Minister of Forestry. Reaching a consensus on the need to conserve the entire ecosystem and not just the park was a notable achievement.

Effective lobbying has already deflected a planned transmigration scheme and roads away from critical ecosystem areas. These conservation achievements have increased pressure on the ICDP to deliver development “alternatives” to these forgone activities (notably, an airstrip in compensation for cancellation of an east-west road through the park).

Biological studies during the preparation phase identified the most vulnerable and important parts of the park for biodiversity conservation.

WWF has worked in the park in partnership with PHPA for almost two decades. Since 1995, WWF has established some coherent, but very small, community development activities outside the park boundary, but lacks the funds to expand them. An opportunity exists to include WWF’s “bottom-up” approach within LMU’s “top-down” approach.

#### MAJOR CHALLENGES

The difficulties of overcoming two decades of ineffective conservation efforts at Gunung Leuser are compounded by road construction within the park and the expansion of both official and unofficial enclaves (some of which, unknown to PHPA, have been receiving credit and training for tree crops development from the Ministry of Agriculture).

Serious field work has yet to begin. A nucleus of goodwill and high expectations established at and below the *kabupaten* level during the ICDP planning phase has largely dissipated as a result of donor funding delays and the project’s consequent inability to support a succession of solicited proposals for development investments. The few pilot development projects undertaken during project preparation are small and unconvincing.

While the project has developed coherent plans for law enforcement to reduce the high levels of illegal activities, these have yet to be put into practice and tested. Overcoming implicit local government support for illegal activities within the ecosystem will be a major challenge.

The ICDP preparation phase deliberately included relatively little detailed planning, instead emphasizing recruitment of capable staff and establishment of a framework for flexible, adaptive management. Some indications existed that more recent donor requirements were forcing project staff to commit to unrealistic goals and objectives in what was beginning to resemble a blueprint planning approach, although the ICDP management is satisfied that this will not prevent the project from adjusting its targets and plans on an annual basis in response to the results of field activities.

Many operational aspects of the conservation concession agreement have yet to be worked out. PHPA, the provincial forestry offices (Kanwils), and LMU each have their own different interpretations of this agreement. The criteria for extending or renewing the concession beyond the initial seven-year term have not been discussed.

PHPA is opposed to the ICDP, despite its own inability to limit the scale or rate of degradation. At the field level, its main concern seems to be retaining some control over potentially lucrative ecotourism operations.

WWF field staff were initially critical of LMU for working principally with government agencies and for failing to develop a coherent process for villagers to participate directly in the project.

The financial resources available to support development investments in buffer zones and outside the ecosystem boundaries are comparatively modest. Funding for up to 18 microprojects is anticipated annually, each in the range of Rp 30–40 million (mainly for small-scale agriculture and other income-generating activities).

Environmental awareness or concern among the local population and public officials is significantly lacking, although some understanding of the park's role in regulating the rivers exists. However, several communities have requested that their neighboring forests be included within the ecosystem boundaries to try to stop illegal logging by outsiders.

The ICDP has been widely misunderstood. Some BAPPEDA staff expect, incorrectly, that the ICDP will support a large proportion of their development budgets. Encouraging this misperception, some central government APBN support for regional development projects has been reduced on the assumption that the ICDP will provide substitute funds.

No provisions have been made for financial sustainability after the project funds have been used, although some revenues are expected to be generated through tourism and the controlled exploitation of natural resources in the buffer zone. LMU's ability to regulate—or even visit and monitor—those forest concessions continuing in the buffer zones has yet to be tested. About half of the buffer-zone forests are currently under commercial concessions, although high slopes and stream proximity mean that very little is legally loggable. Although a substantial budget allocation for monitoring and evaluation exists, few baseline surveys have been carried out because the necessary funds have yet to be released to LMU.

#### ASSESSMENT OF ICDP PROSPECTS

This ICDP has barely begun implementation, many operational issues have yet to be resolved, and little tangible action “on the ground” has taken place, so its prospects cannot reasonably be assessed yet. But the project is important because it breaks new ground in conservation in Indonesia (and elsewhere). Its radical and unique aspects include (a) paying substantial attention to establishing powerful political support, a sound legal basis, and functional institutional arrangements at a high level (in Jakarta as well as at the provincial level); (b) a strong, centralized, and well-supported project management unit operating from a provincial capital under effective leadership; (c) strong continuity between the preparation and imple-

mentation phases (somewhat constrained by new donor information requirements); (d) a realistic understanding of the importance of balancing positive incentives with law enforcement; (e) flexible funding to facilitate adaptive management; (f) plans to reach contractual agreements specifying the conservation obligations of beneficiaries of project development investments; and (g) adoption of a landscape-scale approach.

This appears to be one of the few projects attempting to respond effectively to the lessons of earlier ICDP experiences. But the challenges in overcoming decades of ineffective conservation efforts are enormous, the project has many critics, and it depends heavily on a few key individuals. The project's success over its seven-year life span should be measured in terms not of conservation "successes" but of whether or not it helps to establish a set of conditions that will facilitate effective conservation in the future.

### *Kerinci-Seblat National Park*

#### DESCRIPTION

Kerinci-Seblat National Park is one of the largest protected areas in Southeast Asia, with an area of 1.4 million hectares. It straddles nine *kabupatens* and four provinces (Jambi, Bengkulu, South Sumatra, and West Sumatra) that are home to 3.6 million people. Timber concessions are a major economic force in the provinces and contribute nearly US\$2 million per year in royalties and taxes to local governments. The park protects economically important rivers draining into Jambi province. About 450 villages are outside its boundary. The ethnic groups in and around the park are the Minang, Kerinci, Rejang, Javanese, and Batak, as well as Kubu nomadic hunter-gatherers who move in and out of the park.

The World Bank has supported an ICDP preparation since 1991. This project took four years to prepare, partly because of its size and complexity and partly because of differences of opinion on project design between the Bank, GOI, and the provincial governments. The project design eventually agreed to in 1996 was a six-year, \$46 million ICDP, financed 75 percent by the World Bank-GEF and 25 percent by GOI. The 1997 park budget was about US\$350,000.

#### BIODIVERSITY VALUE AND THREATS

Kerinci-Seblat contains a variety of habitats corresponding to its range of elevation. Lowland evergreen forests are the most important (from a conservation perspective), as well the most threatened. Important mammals include the Sumatran tiger, elephant, siamang, gibbon, tapir, and Sumatran rabbit. A rich bird fauna of some 300 species includes the only recent records of endemic Schneider's and Sumatran Cochoa. Most of these mammals

and birds are found in the closed-canopy forests below 1,000 meters, where encroachment has been most severe.

PHPA's capacity to manage the park is very limited, and local governments have not shown any serious commitment to supporting law enforcement in and around the park. Major threats to the park's biodiversity include (a) large-scale economic development projects, especially a 1,500-kilometer road network that has made new forest areas accessible to farmers, both local villagers and Javanese migrants (about 15,000 households illegally farm 50,000 hectares of agricultural land within the park); (b) poaching of endangered species (especially rhinoceros and tigers), often by Kubus selling to middlemen supplying Chinese medicinal product markets; (c) destructive logging practices in the 10 timber concessions in neighboring forests; (d) the conversion of diverse lowland forests to oil palm and rubber plantations; (e) illegal gold mining inside the park's southern boundary, which has contaminated key rhinoceros watering holes; and (f) the development of 100,000 hectares of tea, oil palm, and rubber plantations next to the park, some of which has cut across important elephant migration routes.

#### KEY ACTIVITIES TO DATE

The Minister of Forestry proposed Kerinci-Seblat as a 1.48 million-hectare national park in 1981, based on its size, representative habitats, and important species (including rhinoceros that may have become extinct during preparation of the ICDP). But the Agreed Forest Land Use Classification (TGHK) excised 232,000 hectares of lowland forest in 1985, substantially reducing the park's biodiversity value.

WWF-IP started assisting park management in 1989 with boundary demarcation and socioeconomic surveys in three villages. Because of WWF's limited staff capacity, subsequent community development activities were limited to one *kabupaten*. These are to be dramatically scaled up within the ICDP.

The national park project budget was increased from Rp 147 million to Rp 1.14 billion in 1991, to carry out biological inventories, boundary demarcation of 2,700 kilometers, and preparation of a plan to resettle 12,000 households. The Minister of Forestry later decided to legalize farming inside the park by reclassifying encroached areas as "traditional land-use zones."

BAPPENAS provided Rp 60 billion for regional development activities in the Kerinci-Seblat buffer zone during 1990-93, including infrastructure, surveys, reforestation, agricultural activities, and coordination among the four provinces. But few links existed among these diverse activities, and no indicators were available to assess their biodiversity impacts. The agricultural encroachment problems continued.

The World Bank provided US\$2 million for ICDP preparation in 1993. DHV consultants, WWF, and WARSI (a local NGO) were contracted to

complete background reports, surveys, and preparation activities in buffer-zone villages and design development initiatives that could reduce encroachment and conserve biodiversity. The focus was almost exclusively on village interactions with the park.

The World Bank separately initiated the preparation of three regional development projects totaling US\$100 million in Bengkulu, Jambi, and West Sumatra in 1996. Possible linkages between these projects and the ICDPs were not clearly spelled out to the provincial governments, and the opportunity to link conservation with a significant economic development investment was lost.

#### KEY FEATURES OF THE ICDP

ICDP program areas will include (a) park management, including legal establishment of the park boundary, mobilization of staff, preparation of a management plan, zonation, and training; (b) area-village development to improve land-use planning, land rights, and community resource management in 134 villages adjoining the park boundary; (c) concession management to support the identification, monitoring, and protection of sites of conservation value within the 10 forest concessions adjacent to the park; and (d) monitoring and evaluation of biodiversity indicators in the park and buffer zone, the well-being of local communities, and forest management practices in the concessions.

The technical assistance division will help develop an interprovincial spatial plan, intended to reduce the impact of large-scale economic development activities in the park buffer zone, that will be linked to the provincial and *kabupaten* development plans (RTRP and RTRK) and enforced by local laws (*peraturan daerah*). Local governments have agreed to place a moratorium on new roads through the park before completion of the interprovincial spatial plan and the park management plan. An interprovincial committee will meet quarterly to coordinate activities between the provinces and the park.

About 200 "community partners" are to be recruited from local villages to assist PHPA with enforcement. A further 270 local NGO and community facilitators are to be hired and trained by WWF to assist with buffer-zone development and conservation awareness activities, building on WWF's existing community development activities.

Villages will receive development grants of US\$50,000 over six years only if they develop an acceptable land-use plan and formally agree to stop encroachment and poaching. This will be the first Indonesian example of a contractual agreement specifically linking development investments with conservation obligations, although the form of the agreements has yet to be determined. They will commit the *bupati*, village council (LKMD), and park manager. The funds are intended for village groups owning land

within the park, as well as for small-scale infrastructure projects requested by the communities. Grant disbursement will be contingent on the cessation of encroachment and poaching activities and on stabilization of the park–village boundary. These conditions are to be monitored by village facilitators recruited by WWF.

For the timber concessions, rapid assessment methodologies and guidelines for conservation within logging areas will be developed for application both in Kerinci-Seblat and throughout Indonesia. The Directorate-General of Forest Production has suspended logging within 3 kilometers of the park boundary while the rapid assessments are conducted.

#### MAJOR CHALLENGES

The park's large size and its encompassing four provinces and nine *kabupatens* have considerably complicated this project. The West Sumatra and Bengkulu provinces want to expand tree-crop and estate development around it, and to build more roads through it. The road moratorium agreement was broken in West Sumatra in 1996 but restored as a result of swift action by the central government. In contrast, Jambi province depends on the park for watershed protection and has demonstrated support for the project by canceling several roads proposed through it.

The small team of 75 PHPA park staff led by 3 senior professionals are unable to manage the park or play an effective role in ICDP-related activities. The national park project office in Sungai Penuh is 7 to 10 hours from the provincial capitals and has little effective contact with the four provincial governments.

The forest concessionaires not only lack incentives to practice sustainable forestry but also receive subsidized loans to convert their concessions to oil palm or timber plantations. This considerably reduces the prospects for conserving biodiversity within Kerinci-Seblat's lowland forests.

Local NGOs have very limited capacity to help communities develop village plans and then negotiate agreements with park authorities and local governments. Having so far been limited to 10 villages, NGO activities are now to be scaled up to 134 villages over six years. In addition, local governments lack the capacity to manage or monitor these activities.

The project depends on effective and coordinated action by three separate directorates-general (BANGDA, PH, and PHPA) as well as by the four provinces. Central leadership is presently being provided by BAPPENAS, which has little field presence and limited staff capacity.

#### ASSESSMENT OF ICDP PROSPECTS

Preparation of the ICDP has involved local stakeholders and the project design includes several innovative features, including conservation agreements, buffer-zone spatial plans, participatory village development plan-

ning with NGO facilitators, and concession management for biodiversity conservation. But the project's chances of success appear to be seriously limited by a number of critical factors:

- The design is extremely complicated and depends on effective coordination among three agencies and four provinces with often-competing interests.
- The "development" aspects of the ICDP are heavily focused on the threats to biodiversity posed by the 134 boundary villages. In practice, the large-scale estate development, conversion of buffer-zone lowland forests, and poorly designed roads represent a much more serious threat.
- The institutional capacity needed to implement the ICDP has yet to be developed within the key government agencies—PHPA, BANGDA, and local BAPPEDAs. PHPA has yet to provide a strong leadership role in either the park or the ICDP, and the agency's weak commitment to the project was reflected by the insufficient allocation of counterpart resources for the first year of project implementation. Finally, local NGOs are stretched and not yet able to prepare the village plans needed to feed into the government's rigid development-planning cycle.
- Commitment to conservation within the park from local governments—as opposed to opening up the area for agricultural development—is weak and, with the possible exception of Jambi, likely to remain so.
- Most project activities appear unsustainable from financial and institutional perspectives. About 25 percent of ICDP resources have been allocated for consultants to compensate for the absence of local institutional capacity. GOI has given no indication of being prepared to continue such funding once project moneys have all been used.

### *Siberut National Park*

#### DESCRIPTION

This 190,000-hectare park on Siberut Island in West Sumatra province is one of two sites targeted by the Biodiversity Conservation Project in Flores and Siberut. The area was designated a UNESCO Biosphere Reserve in 1981. No PHPA management unit has been established because the park has not been gazetted. The 400,000-hectare Siberut Island is celebrated for its Mentawaiian culture and has a total population of about 25,000. The overall ICDP budget is US\$40 million for 1993–99, financed by ADB (60 percent) and GOI (40 percent). Slightly less than half of this amount is to

be allocated to Siberut. The objective of the project was to prepare and implement an integrated conservation management plan based on the ICDP concept. PHPA is the executive agency.

#### BIODIVERSITY VALUE AND THREATS

Siberut has five principal forest types. Lowland dipterocarp forest is the most important, followed by mangroves and *barringtonia*-dominated beach forest. The park is home to 33 mammal species. Most notable are the four endemic primates: the Kloss' gibbon, Mentawai leaf monkey, Mentawai macaque, and pig-tailed langur. Apart from the bats, virtually all of the native mammal species are endemic.

Major threats to Siberut's biodiversity arise from a rapidly increasing human population, pollution, hunting, logging, and forest conversion. Various proposals for plantations and transmigration projects are so far no more than possibilities.

#### KEY ACTIVITIES TO DATE

Extensive background studies and a comprehensive management plan were largely completed in 1995. Project offices, a guest house, and staff quarters have been constructed.

On the ground, the ICDP's Community Awareness, Mobilization and Awareness Program (CAMEP) has undertaken work in several communities through YASUMI, a local NGO, with training support from the Indonesia Rainforest Action Group (SKEPHI), a national NGO. Activities include community mapping, greening, placement of field coordinators and community motivators, conservation education and awareness, mapping and legitimization of boundaries, and enterprise development (in agriculture, rattan cultivation, and fisheries).

Indonesian staff have been provided with opportunities for graduate study overseas.

#### MAJOR CHALLENGES

Two principal risks were identified in ADB's staff appraisal report: (1) institutional weaknesses of PHPA and the involvement of a number of sectoral ministries, and (2) continued encroachment on the protected area.

Like its sister project in Ruteng, this ICDP was launched with unrealistic institutional arrangements, inadequate staffing, and no realistic plan to confront the threats to the park. PHPA provides a full-time director and staff, although the relationship with the Kanwil and SBKSDA is still not fully clear. Project staffing is inadequate, compounded by the reluctance of staff to be resident on, or even to visit, Siberut Island.

A high-powered international consulting team, largely operating without local counterparts, prepared in an extraordinarily short time a blue-

print plan that the project staff lack the capacity to satisfactorily complete or implement. Many of the background studies paralleled management planning, and their results were not available to the planners. This was compounded by several consultants leaving the project within a short time. Lack of involvement by senior PHPA officials has partly contributed to the project not being taken seriously by either the district or provincial government. Law enforcement has been ineffective.

A project coordination committee (PCC) was formed but so far has not functioned effectively. Other agencies are reluctant to carry out activities to support the project without additional financing for their recurrent costs, which the ICDP has only a very limited capacity to provide. The significance of cultural differences and the potential for conflict between forest guards and the local Mentawai people were underestimated.

The project appears unsustainable from a financial or economic perspective, with extraordinarily high costs of almost US\$20 million for a 190,000-hectare park over six years. Even if the project were to be successful, it would be too expensive to replicate.

### *Bukit Tiga Puluh National Park*

#### DESCRIPTION

The 129,000-hectare, lowland rainforest park was gazetted in 1995 after lengthy and strong opposition from logging interests that managed to reduce the size of the park (it was originally expected to cover 197,000 hectares). Yet this is the first time in Indonesia that production forests under active logging concession have been given up to conservation (in this case, 50,000 hectares) and the first time that a national park has been created directly without prior existence of a conservation area of lower priority. This is the only large lowland forest with any likelihood of long-term preservation in eastern Sumatra, although it lacks a UPT. Talang Mamaq people live inside the park, and the local SBKSDA has assigned two guards to the park. The park falls within two *kapupatens* each of the Riau and Jambi provinces; the combined population of the four *kabupatens* is about 1.6 million. About 24,000 people live in 27 villages bordering the park. Risky, low-yielding swidden cultivation is the dominant subsistence activity. Rice is the main crop, supplemented by rubber.

After considerable delay, an ICDP was recently launched with a five-year budget of US\$1.2 million. WWF-IP is responsible for implementation, with funding from the Norwegian government through WWF-Norway. Another participant is WARSI, a consortium of local Sumatran NGOs involved in the Kerinci-Seblat ICDP. An ICDP approach was selected as a response to a new Eastern Trans-Sumatra Highway, which was expected to increase land-use pressures and marginalize the indigenous

population by pushing their cultivation activities into the hills; these pressures are now very much in evidence.

#### BIODIVERSITY VALUE AND THREATS

Bukit Tiga Puluh is one of the few remaining large areas of primary rainforest on Sumatra. The forest contains some one-third of the Sumatran bird list; a broad range of Sumatran mammals including tiger, simanag, and tapir; and nearly 660 species of economically useful plants.

The main threat is the increasing demand for agricultural land by firms, absentee landlords, and relatively resourceful migrants, due to the greatly improved road infrastructure. As elsewhere, local populations tend to be marginalized in the competition for land and pushed toward and into the park, a process accelerated by the increasing presence of plantations pushing into villages. Habitat destruction then becomes coupled with illegal resource extraction, including poaching, because of physical proximity and socioeconomic marginality.

The limited-production forests that surround much of the park were anticipated to become part of the conservation area, or, failing this, to provide a buffer. But the forestry authorities, under heavy pressure from politically well-connected actors, appear willing to let these areas be logged out and converted to plantations, with the added element of transmigration. The opportunity to sell timber from clear-felling to new pulp mills in the area adds considerable attraction to this option. Declassifying and converting these forests would make the park a relatively small habitat island and also make the ICDP inappropriate if directed mainly toward smallholders.

The two districts in Riau have received funds from BANGDA to carry out detailed "corridor" planning along the new Sumatran Highway where it passes by the national park, apparently because of the latter's very close proximity. Both BAPPEDA and the consultant have been open to inputs from the ICDP, but they tend to accommodate the interests of the major sectoral and private interests involved in the area, even where these tend to violate land suitability regulations. Compounding this problem, detailed and reliable land-suitability information is unavailable.

#### KEY FEATURES OF THE ICDP

The ICDP is targeting the village communities along the park boundaries and inside enclaves. Activities include (a) promoting common perceptions and cooperation among the various actors involved in park and buffer-zone management—that is, major government agencies, representatives of local communities, private firms with interests in the area, and local leaders; (b) village institutional strengthening; (c) participatory land-use surveys and land-use planning; (d) intensification and diversification of

agriculture; (e) development of crafts-based and conservation-related small-scale industry; (f) development of tourism and educational field trips; and (g) information dissemination about the park and ICDP to target groups and the wider public.

Project facilitators are to be permanently resident at the village level, each with responsibility for three to four villages. Specialist staff (for agricultural intensification and diversification, craft and small industry, and tourism development) will carry out surveys and establish working groups with the facilitators. The ICDP aims to help set up a local NGO for conservation and development, with chapters in buffer-zone villages, to facilitate decisionmaking, management participation, and sharing some of the revenues from tourism and small-scale industry. The prospects of ecocultural tourism are greatly enhanced by the site's regular speedboat connection to Singapore and hotels available within a one- to two-hour drive.

The ICDP was preceded by the Norwegian-funded NORINDRA research study, which provided an unusually rich body of anthropological, biological, and economic information for planning.

#### MAJOR CHALLENGES

Since regulation enforcement has not begun, the full implications of the park's existence have yet to become clear to local communities. However, *considerable uncertainty and apprehension exist about potential restrictions on resource extraction and, in the enclaves, about future access to agricultural land.*

WWF-IP has full administrative and technical responsibility for project implementation. Yet the project director and all the other project staff were recruited from outside the organization, with virtually none having had any ICDP experience. Poor hiring decisions have severely constrained the project.

The postponement of field activities at Bukit Tiga Puluh has meant lost momentum and opportunities to influence important developments.

#### ASSESSMENT OF ICDP PROSPECTS

At the grassroots level, the quality of village institutions and their leadership, the leadership's commitment to conservation and rational resource use, and the capacity and propensity of these institutions and their leaders to promote such commitment, coupled with genuine participation on the part of villagers, are of key importance, as are similar commitments and backup from the subdistrict and district administrations.

But it is increasingly evident that the future of the park depends on management of forests outside the park and the impacts associated with new road construction. Since the park, which the ICDP actually helped realize, was made much smaller than recommended, much of the Bukit

Tiga Puluh's limited-production forest was left outside park boundaries rather than included. The park's future may therefore depend more on production-forest management than on smallholders' future actions—a possibility now recognized by the project, which is in the process of restructuring.

## Java

### *Ujung Kulon National Park*

#### DESCRIPTION

This 120,000-hectare park (44,000 hectares are marine and 18,000 hectares comprise islands) was first protected as a strict nature reserve in 1921 and finally became a national park in 1980. The park has 114 employees and lies in Kabupaten Pandeglang, West Java province, within a few hours' drive of Jakarta.

There is no ICDP in the sense of an integrated project. Some isolated community development programs have been established in villages outside the park by NGOs as well as by PHPA. These activities, which are attempting to reduce pressure on the park's resources, are concentrated in the Gunung Honje area, where 13 villages border the park.

Land speculation along the coastline outside the park suggests the area may become a major weekend attraction for Jakarta residents.

#### BIODIVERSITY VALUE AND THREATS

The forest ecosystem is highly diverse, with 39 different vegetation types recognized. The park has been subject to major disturbances, most notably the 1883 Krakatau eruption and ash fall, the subsequent abandonment of dry rice agriculture, and the management of savannas for game hunting until 1940.

The park is best known for providing a final refuge to the last 50 or so Javan rhinoceros. It also supports one of the two largest banteng populations (about 700). Other notable mammals include leopard, wild dog, and fishing cat, plus all three endemic Javan primates. The park has a rich lowland-forest avifauna, with more than 270 species recorded. Offshore, the reefs are dominated by a relatively small number of coral species but support some of Indonesia's richest fish fauna.

Poaching is the most serious threat to rhinoceros, having nearly led to their extinction in the late 1960s. Antipoaching operations sponsored by the Minnesota Zoo have limited losses to only two animals since 1982. But evidence exists that rhinos are sensitive to human disturbance and have moved away from the expanding tourist facilities around the park boundaries, which thus indirectly has reduced the rhinoceros habitat's

size. Rhinoceros have also disappeared from the Gunung Honje area in the eastern region of the park, probably as a result of disturbance from livestock grazing, minor encroachment, and small-scale timber extraction for house construction.

The army has recently bought 1,000 hectares of land outside the park for training, and displaced villagers seem likely to start farming inside the park.

#### KEY FEATURES OF THE ICDP

Park authorities have initiated a clean-water and sanitation program in three villages, aimed at generating community support for forest conservation. Local support for watershed protection has increased as a result.

WWF-IP has been active in Ujung Kulon since 1964. Its activities were expanded in 1991 to include a community participation component and a conservation education and awareness program for all users of the park. WWF-IP has recently launched a program to stabilize land use and improve living conditions in four villages by developing conservation-based alternative income sources such as village homestays, marketing of wood carvings, and improved agroforestry methods.

Lembaga Alam Tropis Indonesia (LATIN) conducted a detailed social assessment of communities along the eastern boundaries of the park in 1994–95. A detailed problem analysis identified a high level of dependence on park resources, a lack of enforcement, and very little conservation awareness. A program of community-based activities was then designed and funds committed from the Ministry of Environment and Bank Internasional Indonesia (BII). A *kecamatan*-level working group was formed to manage the program under a cooperative agreement between LATIN and the park. The program has not yet been launched, because human resources still have to be committed by local government and the park.

A poorly managed and incomplete forcible resettlement program was attempted in the village of Lekon Pakis. The villagers convert areas of the forest for rice cultivation and to hunt wildlife, mainly for subsistence. Attempts by the park authorities to work constructively with this community have so far been unsuccessful.

Local government perceptions of the park are often inconsistent with conservation. The park director has built relationships with local government agencies and periodically organizes a regional coordination meeting, although this has not led to any identifiable actions to support the park. In an attempt to harmonize projects from other development sectors with park management, the head of the regional forestry office has recently ordered his units to conduct an annual Forestry Development Meeting (*Musyawarah Pembangunan Kehutanan*) where each sector presents its project proposals.

#### MAJOR CHALLENGES

Community-based activities have been launched by NGOs in a sporadic, ad hoc manner. The park has welcomed outside assistance but no overall ICDP strategy exists.

Land tenure in the Gunung Honje area and increasing encroachment are critical unresolved issues for the future of the park.

The community-based activities are being conducted without a clear position on land tenure. The communities seem likely to interpret these activities as an indication that their claims to permanent settlement on state-owned land are being accepted, and that the early “resettlement” policy has been changed. This important decision is apparently being made by default, without peer conservation review and through the implementation of an ad hoc group of community-based pilot projects.

LATIN’s planning is intellectually rigorous and clearly addresses root causes. One weakness is that plans lack predictions on the extent to which villagers’ forest use needs to be reduced to make the area attractive again to rhinoceros. But Gunung Honje, as one of the most botanically rich parts of the park, has very significant conservation value and any reduction in human impact is likely to bring valuable conservation benefits.

The park’s clean-water and sanitation initiative, while not directly addressing a specific threat, could generate some local support for park management and some understanding of the park’s watershed protection role. The WWF-IP Homestay Program may compound disturbance to rhinoceros habitats. Other WWF-IP activities address some of the root causes identified by LATIN. WWF-IP acknowledges a lack of focus on conservation of the park’s resources, and project staff have only recently appreciated the linkage.

#### ASSESSMENT OF ICDP PROSPECTS

The park’s success is usually discussed in terms of its most notable species, the Javan rhinoceros, whose population appears fairly stable—a success that appears solely attributable to effective law enforcement financed by foreign donors. Linkages between the various community development initiatives and the park appear vague, and an integrated approach is lacking thus far.

### *Gunung Gede Pangrango and Gunung Halimun National Parks*

#### DESCRIPTION

The 15,000-hectare Gunung Gede Pangrango National Park (GGPNP) was declared in 1980, when several existing reserves were combined (two of these had been established in 1889 and 1919). The park extends

into three *kabupatens* in West Java province and is surrounded by 61 densely packed villages that rely on subsistence agriculture. About 30 million people (most of these in Jakarta) live within a two-hour drive. About 50,000 urban visitors are attracted to the park each year by the mild climate and spectacular views (but apparently not by the biodiversity), and the area has been intensively developed for recreation. In addition to their industrial uses, the more than 60 rivers flowing from the park are estimated to provide water worth US\$1.5 billion for domestic and agricultural uses. The park has not been gazetted but a 1984 Ministerial Decree authorized management by a special PHPA unit. The park forms the core zone of a UNESCO World Biosphere Reserve (Cibodas Biosphere Reserve), established in 1977, although this has no legal standing in Indonesia.

The nearby 40,000-hectare Gunung Halimun National Park (GHNP) was designated in 1992, after having been established as a protection forest in 1924 and converted to a strict nature reserve in 1979. GHNP is being considered for inclusion in the Cibodas Biosphere Reserve. GHNP has been the responsibility of the Gunung Gede Pangrango management unit since 1992, hence the combined case study. This park also plays an important watershed protection role and lies in West Java within two hours' drive of Jakarta (although it receives few visitors). Fifty scattered villages border GHNP and seven village enclaves with a combined population of about 160,000 lie within the park, although the population density is low. Despite their proximity to Jakarta, some of these traditional communities are difficult to access, have strong informal leaders, and are tightly integrated. Subsistence agriculture and occasional plantation work are the most important livelihoods.

The number of GGPNP staff fell from 139, in 1992, to 89 in early 1997, but the park budget increased substantially, from Rp 220 million in 1990–91 to Rp 1.6 billion in 1996–97. The budget has specifically included community-development and conservation-education activities since 1994. GHNP staff numbers have grown from 3 in 1992 to 45 in 1997. The park budget for the four years up to 1996–97 was Rp 1.2 million; in 1996–97, donors contributed another Rp 3.4 million to various projects.

No ICDP exists at GGPNP or GHNP. But the PHPA management unit has launched an innovative IPAM program, with these features: (a) performance incentives for all levels of PHPA staff; (b) pilot agricultural development activities in villages, with local government and NGO support; (c) law-enforcement actions against people farming in the park, which were preceded by consultations and negotiations with the farmers; (d) coordination meetings to integrate national park and regional development planning with BAPPENAS and local government; and (e) a consortium of 14 domestic and international organizations supporting the park.

#### BIODIVERSITY VALUE AND THREATS

Submontane and montane tropical rainforests predominate in GGPNP, which includes one of the best remaining Javan montane forests. The park's value has been significantly enhanced by more than 100 years of continued scientific research. Notable mammals include two endemic primates (the Javan gibbon and Javan leaf monkey), leopard, Javan stink badger, yellow-throated marten, and leopard cat. Some 245 species of birds have been recorded in the park, including 24 of Java's 29 endemics.

GHNP is dominated by evergreen tropical rainforest at a variety of altitudes. It supports the same two endemic primates as GGPNP, leopard, and Javan wild dog, as well as more than 130 bird species, including the largest population of Indonesia's national bird, the Javan hawk eagle. This eagle and the two endemic primates are globally the most threatened representatives of their respective families. GHNP is considered large enough to provide a viable habitat for these wide-ranging species.

Threats to GGPNP are minor in comparison with threats to most other parks in Indonesia. Illegal logging, fuelwood collection, and poaching are reported only occasionally. The total area affected by agricultural encroachment fell from 33.5 hectares in 1992 to 13.5 hectares in 1994 after steps taken by park management. Litter and vandalism linked to tourism have become more serious, however.

Local villagers carry out some subsistence agricultural encroachment and poaching in GHNP. Small quantities of timber and rattan are also collected illegally and sold to urban traders. Gold mining has become a more serious threat. A state-owned mine has operated just outside GHNP since 1936 and another was opened in 1990. Some individual miners, both local and from the Outer Islands, began exploring within the park, causing some damage, but they have now been removed.

#### KEY FEATURES OF THE ICDP

Illegal agricultural encroachers in GGPNP were surveyed in 1993 and divided into three categories according to the land they owned outside the park (that is, landless, owners of less than one hectare, or owners of more than one hectare). The first group, farming 13.5 hectares in the park, has been permitted to continue subject to agreement with GGPNP. The second and the third groups were encouraged to move out from the park under threat of future law enforcement.

To combat the illegal gold mining in GHNP, park management built up a detailed profile of the miners in 1993 and introduced extension programs for some, working with local communities, local governments, and NGOs. Coordinated law enforcement actions in 1994 removed about 4,000 people with 250 generators and other equipment from the park. With support from one of the state-owned mines, about 350 tunnels and other facilities

abandoned by the gold miners were destroyed with dynamite in 1995. Sporadic illegal mining attempts since then have been strongly resisted.

The park management unit has undertaken several community initiatives since 1992 to promote income-generating activities in villages surrounding the park and to improve people's appreciation and awareness of the protected area. These activities have all been included in the parks 5- and 25-year management plans. Since 1994, these activities have been supported by a partnership program, the Gunung Gede Pangrango–Halimun Consortium, involving 14 domestic and foreign organizations: universities, research agencies, NGOs, and government agencies. Eighteen individual programs in research, education, ecotourism, and development have been supported by various combinations of consortium members in accordance with their specific interests. The consortium now acts as a steering committee or consultative body for park management.

Park management has undertaken a unique and unprecedented program of human resource development for PHPA staff at all levels. New training programs have been established. Opportunities to attend external training, some overseas, have been offered as performance incentives. Reward and punishment approaches to improving staff attitudes and spirit have been used successfully. GGPNP also applies the law very strictly against its own staff.

Other IPAM initiatives have strengthened information management, improved basic facilities for park personnel and other infrastructure, rationalized the organization of park management, and introduced more effective biodiversity monitoring and evaluation.

#### KEY ACTIVITIES TO DATE

A 1991 UNESCO–MAB workshop attended by a variety of stakeholders agreed on the location of the Cibodas Biosphere Reserve boundary. Adjacent production and protection forests, as well as tea plantations, were designated as buffer zones, surrounded by a transition zone extending to a road that encircles the park. These zones have no legal basis but were informally agreed to by local government. This was followed up by an analysis of surrounding land use, which revealed a rapid shift from agriculture to second houses for city dwellers.

Annual interagency coordination meetings have helped integrate PHPA with local government agencies. Specific themes have included strengthening park management, increasing the welfare of communities surrounding the parks, and enhancing local awareness and appreciation of the park. As a result, local government and other agency perceptions of the park have become more positive, the West Java provincial spatial plan now shows GGPNP and GHNP as Special Areas (*Kawasan Khusus*), and district agencies such as Forestry and Land Rehabilitation Services have started

to integrate their programs to support buffer-zone and transition-zone management in at least three *kabupatens*.

Together with local governments and NGOs, GGPNP management has started pilot income-generation programs in selected villages (*Usaha Pedesaan* or Small-Scale Village Enterprises). Illegal encroachment, timber felling, and poaching have all decreased.

Park staff members at each guard post are now responsible for meeting with local government representatives, NGOs, and informal village leaders to develop lists of proposed activities. The results of these village meetings are brought to higher-level meetings and then eventually to the *kabupaten* and provincial coordination meetings, although with limited success in terms of inducing action from the other agencies. Some programs have been implemented in both parks as pilot activities by PHPA or by local government agencies. GGPNP staff members used PRA methods in 16 local villages in 1996 and plan to expand this program.

Several initiatives focus on environmental appreciation and education, including conservation camps, conservation cadres, interpretation, and information programs. The target groups include local people, school children, students, visitors, and decisionmakers in both the private sector and government. GGPNP constructed a conservation and environmental education center in 1996 in collaboration with a consortium of national and international NGOs and donors. This center is to be used mainly for schools but will also offer fee-based conservation and environmental programs for individuals, private companies, and private schools.

Based on the results of a visitor survey, GGPNP developed several programs to improve visitor perceptions of the park and biodiversity. These include training nature guides and providing interpretation materials.

The park buffer zones are managed by a variety of authorities: the protection and production forests by the State Forestry Corporation (Perum Perhutani), tea estates by concessionaires, and the villages by their own administrations. In these areas, PHPA has begun providing planning inputs and budgets to support community welfare programs, as well as extension and environmental education programs. By mid-1997, 13 villages with about 400 people had been targeted by these programs, with mixed results.

Since 1995, a consortium of donors and NGOs has worked with GHNP to develop local people's capacity to participate in ecotourism.

#### MAJOR CHALLENGES

The major problems encountered by PHPA's IPAM initiative have involved cooperation and coordination with other agencies, which are often unwilling to integrate their programs with the parks, have difficulty agreeing on site selection priorities, and lack budgets for integrated activities.

Involving PHPA staff effectively in community development activities has not been easy. This is partly due to PHPA's traditional policing role, as well as to the staff's lack of expertise or training in either community liaison or agriculture.

#### SIGNIFICANCE

The IPAM activities, while modest in some respects, are pioneering for PHPA, and show that genuine improvements in basic park management are within the agency's capabilities. The most important lesson from GGPNP is that an externally funded project is not necessary for more effective park management, which can be significantly improved on several fronts by an imaginative and competent management. The willingness of the park management unit to explore new approaches, build coalitions, and take well-judged bureaucratic risks can be contrasted with the more common approach of waiting for specific direction or permission from higher levels of PHPA—which often fails to materialize or comes too late to be useful. Particularly notable innovations have been effective in motivating PHPA staff, building PHPA's relationships with local communities, and building partnerships with conservation organizations.

Necessary law enforcement actions were carefully prepared in conjunction with local government, and were based on a thorough understanding of the social and economic situation of the people concerned. Considerable attention was given to avoiding the imposition of unnecessary hardship on encroachers who lacked other options outside the park.

Interagency cooperation proved easy to establish in formal terms but difficult to apply in practice because of contrasting institutional agendas. Reasonable links have been established with the regional planning process.

Although many positive aspects of this case should be applauded and tested elsewhere, it is important to remember that GGPNP is a very small park, containing few valuable resources and receiving plenty of attention because of its proximity to Jakarta and Bogor. It also has a large staff (89), a relatively high budget (Rp 1.6 billion, or US\$700,000, in 1996), and very clear boundaries that were established several decades ago.

## Kalimantan

### *Bukit Baka–Bukit Raya National Park*

#### DESCRIPTION

The 181,000-hectare park was established in 1992 by combining two existing nature reserves. It covers parts of two *kabupatens* in two different provinces. The two SBKSDA officers in Pontianak (West Kalimantan) and Palangka Raya (Central Kalimantan) are responsible for the park, usually

making three visits a year. About 12,000 people live in 21 settlements around the southern border of the park.

The USAID-financed Natural Resources Management Project (NRMP) included the park as one of its two field sites and supported the preparation of a park management plan by an international consulting team (with Indonesian counterparts) between 1992 and 1996, at a cost of about US\$800,000. External funding discontinued in 1996. While not explicitly conceived as an ICDP, the NRMP activities at Bukit Baka–Bukit Raya did attempt to address a number of ICDP issues and included some small agriculture, water, and sanitation programs in eight villages.

#### BIODIVERSITY VALUE AND THREATS

The park's diverse vegetation ranges from lowland tropical rain forest to montane forest and includes several rare or recently discovered plants. Notable mammals include orangutan, agile gibbon, pig-tailed macaque, maroon leaf monkey, western tarsier, and slow loris. Birds include the endangered Bornean peacock pheasant and black-breasted triller.

There are few immediate threats to the park's biodiversity. Seven active logging concessions border the park and have sometimes extended their operations into the park. There is a small amount of gold mining, and local people have cleared some small agricultural plots on lowland areas within the park. No law enforcement has been carried out, and the project did not consider any to be necessary.

#### KEY ACTIVITIES TO DATE

Extensive background studies on a wide variety of topics and a management plan were completed in 1995. A buffer zone proposed in the plan has not been established, and its legal status remains unclear.

Improved water and sanitation were supported in six villages, and new agricultural practices encouraged in a further two villages during 1995–96.

#### MAJOR CHALLENGES

A UPT has not been established, and no project or PHPA resources have been allocated to implement the management plan.

SBKSDA (or a future UPT) is not linked to regional economic planning and seems unlikely to be consulted if, for example, a road were to be planned through or near the park.

### *Kutai National Park*

#### DESCRIPTION

Officially gazetted in 1995, the 198,000-hectare Kutai National Park in East Kalimantan is one of the most threatened and vulnerable parks in Indone-

sia. The park lies within Indonesia's fastest-growing *kabupaten* and is only a two-hour drive from the provincial capital. Large-scale mining, oil drilling, and other industrial activities dominate the landscape outside the park boundaries. The park was halved in size during the 1970s, when large areas were excised for oil exploitation, logging, and coal mining, and suffered further damage from a large forest fire in 1983.

In 1985, a park management plan proposed creating a committee of local government and industry representatives to help conserve Kutai. This concept was developed further through a development plan financed by KPC, which proposed financial support for conservation from several of the large private companies leasing land next to the park. A council to oversee these activities, "The Friends of Kutai National Park," was officially established by a PHPA decree. UNDP and UNESCO provided technical support to help PHPA and the Friends implement the management plan. This partnership provided US\$300,000 for activities in 1997 supplementing the park's US\$150,000 budget. The companies represented in the Friends are estimated to have combined annual revenues greater than US\$2 million.

#### BIODIVERSITY VALUES AND THREATS

Kutai contains a broad spectrum of lowland habitats, including alluvial forests, mangroves, ironwood, and dipterocarps. The park contains half of all Bornean mammals, including 11 primate species, and is Indonesia's largest gazetted orangutan reserve. The park is also the source of domestic and industrial water in the booming industrial towns of Bontang and Sanggata. Bontang's natural gas industry uses 30,000 to 40,000 cubic meters per day of water from Kutai.

Threats to Kutai's biodiversity come from (a) expanding coal-mining and oil-exploration activities—the park already has 174 wells, and a 100,000-hectare exploration permit was issued by the Ministry of Mines to a privately owned company in 1997 but revoked because of public outcry; (b) agricultural encroachment, wildlife poaching, and illegal logging on a large scale (timber worth US\$157 million was confiscated during 1996)—all associated with a rapid influx of migrants into Bontang and Sanggata, who have easy access to the park from the trans-Kalimantan highway that crosses the park to connect these two towns; (c) 8 villages in the park containing 6,000 people and a further 32 villages just outside; and (d) commercial forestry, including the conversion of dipterocarps to plantations in the park buffer zone.

To say that the PHPA complement of 85 rangers is hard pressed to contain these threats would be a considerable understatement.

#### KEY FEATURES OF THE ICDP

The National Park Development Plan for 1992–96 identified investment activities that private industry could finance to support park management

and buffer-zone development. These included remote sensing to measure encroachment, socioeconomic surveys, boundary rationalization, training, equipment for guards, reforestation, and setting up a secretariat.

The PHPA Director-General then signed a memorandum of understanding (MOU) to protect and develop Kutai National Park together with the Friends of Kutai: Pertamina; PT Badak (LNG Gas); PT Paradise, PT Kiani Lestari, PT Surya Hutani Jaya (all forest concessionaires); PT Pupuk Kalimantan Timur (a urea plant); and PT Indominco Mandiri and KPC (coal mines). A 1995 PHPA decree formalized the MOU and established two organizing committees. A steering committee is jointly chaired by the governor and the military commander, and includes the *bupati*, the Sanggata and Bontang mayors, and senior management staff from the companies. An operating committee is chaired by the park director and includes operational staff from the companies.

The Friends of Kutai secretariat, led by the park manager, meets regularly with representatives of the eight companies. Informal working groups oversee various project activities. The park director drafts an annual list of projects for the partnership to consider; these are reviewed by the operating committee, then considered for funding by the steering committee that authorizes the annual work plans.

The partners pledged US\$175,000 for eight projects for 1996–97. Projects can be executed either by a corporate member or by park staff directly, using an account managed jointly by the park manager and the treasurer of the operating committee. Half of the 1996–97 funds will come from KPC for satellite imagery, boundary rationalization, and secretariat support. A further US\$113,000 is being provided by UNESCO for technical assistance to help establish a sound institutional base for the partnership program.

#### MAJOR CHALLENGES

The Friends' partnership provides an important precedent for private-sector support for national parks. However, the amounts involved so far are very modest, and some of the Friends' commercial activities continue to have large negative impacts on the park. For example, the access roads built by the mining companies through protection forests bordering the park provide easy access for illegal logging, and further mineral and oil exploration activities within the park are likely to be highly damaging. Furthermore, the Friends are, understandably, reluctant to support projects that could attract criticism or negative publicity, such as stronger enforcement or resettlement of encroachers. They are also very interested in seeing tangible, quick results from their contributions.

Other fundamental concerns include the lack of effective patrolling and enforcement to contain encroachment, poaching, and illegal logging; lack of local awareness and appreciation for Kutai as a national park; and be-

cause the Friends of Kutai is not yet a legal entity under Indonesian law, its coordination with local government is limited.

#### ASSESSMENT OF ICDP PROSPECTS

Kutai provides an important precedent for private-sector support of conservation in Indonesia. The example set by KPC in financing the development plan and acting as a catalyst to bring in additional private-sector support could be tried in other parks with large corporate neighbors. But the threats to Kutai remain huge and immediate, and endanger the viability of the park.

#### *Kayan Mentarang National Park*

##### DESCRIPTION

Kayan Mentarang Nature Reserve in Kabupaten Bolongan, East Kalimantan, was established in 1980 along the border with Sabah and Sarawak, East Malaysia, and became a national park in 1996. The exclusion of some settlements and agricultural lands when the area was declared a national park reduced the protected area from 1.60 million to 1.36 million hectares—still the largest protected area in Borneo. The area is sparsely populated, with few roads or settlements. About 20,000 indigenous Dayak and Punan people live in and around the park, harvesting nontimber forest products such as *gaharu* (aloes wood), rattan, and cinnamon.

No PHPA staff or budget have yet been allocated to the park, which is the responsibility of the understaffed SBKSDA office in Samarinda (several days' journey away by boat, or several hours by small plane). WWF-IP and the Indonesian Institute for Sciences (LIPI) launched the initial, research-oriented phase of an ICDP in 1991, with strong emphasis on understanding people-forest interactions and links between culture and conservation. This led to a program of participatory mapping of locally important natural resources and territorial claims. Later research built on a cooperative agreement with the Centre for International Forestry Research (CIFOR), which established its own research forest next to the park in 1996. A variety of donors have supported the project. Financing is currently provided by Danida, WWF-Germany, and WWF-Netherlands, with a US\$2 million budget over two and a half years and the objective of producing an integrated park and buffer-zone management plan, together with basic social and physical infrastructure.

##### BIODIVERSITY VALUE AND THREATS

The rather limited studies done so far suggest the park contains a wealth of species, with notable diversity in flowering plants and birds (nearly 300 species). Elevations ranging from 200 to 2,500 meters include a range of

forest habitats, from lowland mixed dipterocarp through submontane to upper montane, as well as distinct edaphic types such as *kerangas* (heath) forest. Significant mammals include the leaf monkey, gibbon, clouded leopard, and banteng.

Major threats to the reserve include the organization of *gaharu* collection by traders in Samarinda, illegal logging, and overlapping forest concessions that could lead to logging inside the park. Local people hunt and carry out swidden cultivation inside the reserve.

#### KEY ACTIVITIES TO DATE

Interdisciplinary biological and anthropological research is being conducted on human ecology, forest resource use and tenure, oral history and traditions, archaeology, ethnobotany, and biological inventories.

Participatory mapping of natural resources used or identified by local communities and development of a GIS are under way, including mapping of forest and other vegetation inside the park based on remote-sensing data. Local people are being trained and employed.

Policy workshops, lobbying, and field trips for decisionmakers were aimed at increasing local support for the park, achieving national park status, better enforcement of conservation laws and regulations, and encouraging more local participation in park management.

Joint investigation with PHPA and local government of the condition, status, and potential of the protected area resulted in halting a proposed logging road through the park, changing its status from a nature reserve to a national park, and gaining the endorsement of the Ministry of Forestry of a management role for local people.

Investigation of illegal *gaharu* collection and trading resulted in instructions from the Ministry of Forestry and local government to halt such activities by outsiders.

Future project plans include the park management plan, development of facilities, and training. Traditional-use zones and buffer zones will be identified and largely managed by local communities. Participatory mapping and a participatory forest inventory will also be used to encourage local involvement, and a long-term park research and monitoring program will be established.

#### MAJOR CHALLENGES

The park has weak political support from local government, and not enough is being done to address the threats posed by road building and forest concessions. However, a 1995 proposal to build a "security" road and transmigration corridor that would have opened up access to the western side of the park was rejected after strong opposition from the Ministry of Forestry and others.

The area is extremely difficult to administer, given its remoteness and size, and WWF-IP is essentially trying to fill the gap caused by an absence of PHPA staff in the area.

#### ASSESSMENT OF ICDP PROSPECTS

An emphasis on research and training, rather than on development, distinguishes this project from most ICDPs. WWF-IP staff have played a useful role in promoting the park and alerting policymakers to the potential negative impact of roads and illegal logging. The next phase could provide a model of community participation in park management planning, but it seems doubtful whether PHPA could implement such a plan, especially without a UPT present. Regardless of any research benefits, the lack of viable institutional arrangements to manage the area suggests that any conservation gains are unlikely to be sustained beyond the life of the project.

### *Danau Sentarum Wildlife Reserve*

#### DESCRIPTION

The reserve lies in the Kapuas Hulu district of West Kalimantan. It was gazetted in 1982 at 80,000 hectares, then expanded to 130,000 hectares in 1994, with a further extension proposed in 1996. The number of people in the reserve has increased from 3,000 to 5,000 over the last decade. These are mostly Melayu fisherfolk plus some Dayak hunters and shifting cultivators.

The ICDP is a component of the United Kingdom-Indonesia Tropical Forest Management Programme (ITFP) financed by the U.K. Department for International Development. Field activities started in 1992, building on studies initiated in 1987, and ended in June 1997. The principal objectives were to develop a management plan in cooperation with PHPA-SBKSDA, local government, and local communities, and to prepare and implement "general strategies and specific tactics for the long-term maintenance of the ecology of the area."

#### BIODIVERSITY VALUE AND THREATS

Nine forest types, five of which are subject to flooding, are represented. A species-rich *kerangas* occurs in some drier areas, with primary hill forest occurring on higher slopes. Notable mammals include the Oriental small-clawed otter, black-eared pygmy squirrel, proboscis monkey, sun bear, Bornean gibbon, and a large and important orangutan population. The reserve and its surrounds support about 200 bird and 220 fish species.

The principal threats arise from overexploitation by local residents and local land uses that are incompatible with conservation. The growing human population has pushed fish, mammal, bird, and forest product harvesting well beyond sustainable limits. Some high-value species such as

arawana and crocodile have been almost eliminated, and fish-dependent species such as otters and birds are dwindling. These impacts are likely to intensify as nearby forest lands are cleared for other uses. Surrounding land uses include recently logged forest concessions, rubber and oil palm plantations, and shifting cultivation. Illegal logging has been limited by lack of access, but the recent completion of several new roads may alter this.

#### KEY ACTIVITIES TO DATE

A monthly community newsletter begun in 1992 was widely read by local people. This helped clarify the purpose of the project and establish the idea that the project wished to work with local communities.

Extensive scientific and socioeconomic studies of the reserve and its residents have been conducted, generating more than 100 reports.

A province-wide conservation steering committee was established by the governor of West Kalimantan.

Community-related activities have included income-generation projects aiming to reduce resource use while maintaining incomes (honey production, rattan baskets, and so on), resource enhancement projects (rattan enrichment and timber management), and development of institutional arrangements to improve the participation of local communities in decisionmaking about resource use and more general reserve management.

Income-generation activities met with reasonable success, generating a total of Rp 22 million in revenues for several villages.

Villagers were to be represented by their leaders on formally recognized committees, to provide the basis for reserve management while building on existing village organizations. These committees met several times but were then suspended while local project staff and SBKSDA personnel received training in participatory methods. The early meetings did facilitate official contact with villagers and the discussion of village-level fishing rules.

The link between the village committees and conservation goals is sometimes unclear because the committees are naturally more interested in resource extraction than biodiversity conservation. But the committees made a promising start in attempting to define, standardize, and expand the role of traditional village-level regulation of fisheries.

Virtually all Indonesian project personnel have been hired from villages in or near the reserve.

#### MAJOR CHALLENGES

The protected area category of wildlife reserve (Suaka Margasatwa) allows some nonconsumptive activities such as low-impact tourism and habitat manipulation for the benefit of wildlife. It does not allow human settlements or use of resources. Having people within the reserve has been

a constant source of confusion for government conservation agencies as well as project staff, as government regulations state that people cannot live within a wildlife reserve.

The controversial issue of the future size and activities of the human population within the reserve was avoided, although the human population already has a significant negative impact on the reserve's ecological resources.

Law enforcement relies almost entirely on local law and sanctions. For example, fines are levied for violation of fishing regulations or, in some cases, fishing gear is confiscated. The police become involved in serious cases. Many wildlife reserve regulations relate to what are long-established local practices and are not enforced. Village regulations mainly apply to natural resource use rather than conservation.

Project studies have emphasized the extractive uses of resources because this was the primary economic activity of the villagers. To some extent this led project personnel to place a greater value on the reserve's resource extraction potential than on biodiversity conservation values.

PHPA-SBKSDA does not have full control of the area within the reserve due to overlapping jurisdictions. For example, the local fisheries service office gives permits for a type of fishing gear that is banned in many villages. Because fishermen pay for these permits, the fisheries office has little incentive to cooperate with these villages. Also, local branches of government agencies such as the health service can erect buildings in villages within the reserve.

The reserve has been included on regional planning maps, but so have incompatible development proposals. For example, plans exist to build a dam at the mouth of the main river draining the reserve. This would flood the entire reserve, destroying its unique ecosystems. More serious are efforts to reclassify large areas of production forest bordering the reserve as conversion forest or oil palm plantations.

#### ASSESSMENT OF ICDP PROSPECTS

Project activities have tended to emphasize community development without explicitly addressing conservation goals. A project participant has described this as "the hope that community development will automatically result in conservation because the communities will need fewer PA resources to make a living." This expectation has little basis.

Development activities launched inside the reserve may attract more people and encourage those already there to stay. It might have been better to concentrate village development activities outside the reserve while emphasizing better management and reduced harvest of resources within it.

Several key issues remain unresolved: How will "management" actually take place? What management activities will be implemented to reach

conservation goals? How will community-based activities support conservation goals? How suitable is community-based conservation in this particular situation?

## Sulawesi

### *Bunaken–Manado Tua Marine National Park*

#### DESCRIPTION

The 80,000-hectare Bunaken Marine National Park was formally established in 1991 near Manado, the capital of North Sulawesi, which has a population of 300,000. This park includes five islands (one of which is called Bunaken) and two separate coastal areas on the mainland. About 10,000 people live in 20 long-established and relatively poor settlements in and around the park. The park's coral reefs attract about 13,000 foreign visitors each year for diving and snorkeling through a handful of Manado-based dive operators, as well as growing numbers of local visitors. Declaration of the national park by PHPA was, and continues to be, strongly resisted by the provincial government, which is primarily interested in further developing the area for marine tourism.

The USAID-financed NRMP included the park as one of two field sites and supported the preparation of a park management plan by an international consulting team (with Indonesian counterparts) between 1990 and 1995, at a cost of about US\$800,000 (a very small component of the overall NRMP). External funding discontinued in 1996.

While not explicitly conceived as an ICDP, the NRMP activities at Bunaken did attempt to address a number of ICDP issues—especially to balance the divergent interests of PHPA, local residents, private-sector tourism operators, and the provincial government. PHPA approved the park management plan in late 1996, after a two-year wait, but has not established a UPT. Meanwhile the park remains under the token authority of the SBKSDA suboffice in Manado, effectively leaving a management vacuum, and local government awaits guidance on the type and extent of tourism development that will be permitted on the islands. The park budget for 1996–97 was set at about US\$200,000.

#### BIODIVERSITY VALUE AND THREATS

Bunaken has an excellent diversity of marine habitats, including a barrier reef, fringing reefs, lagoons, seagrass meadows, oceanic waters, and deep ocean trenches. Notable species include 70 coral genera, 7 of the world's 8 giant clam species, a remarkable variety of fish (including 33 butterfly fish species), and turtles. Mangroves predominate along several of the island shores.

Major threats to the park include (a) uncontrolled overfishing and the use of destructive fishing techniques (poison, bombs, and so on) by residents and nonresidents; (b) heavy and potentially ruinous use of the reefs by unregulated tourism operators and their clients, who lack sound use practices; (c) inadequate waste-disposal practices in nearby urban Manado, although a recently established solid-waste management program is attempting to address this problem; and (d) explosive growth since 1993 of a seaweed industry on Nain Island, which is under the control of an entrepreneur with a monopoly license from the provincial government. The annual value of seaweed harvesting to Nain Island residents has been estimated at US\$550,000. This economic bonanza has caused islanders to abandon fishing and encouraged a substantial inflow of migrants, some financed by mainland investors, with such negative environmental impacts as serious mangrove depletion.

#### KEY ACTIVITIES TO DATE

The first draft management plan was produced in 1992 and immediately recognized as lacking adequate local inputs. A community development adviser was hired in 1993, and a reasonably coherent plan for soliciting village-level inputs was then developed and implemented.

Extensive background studies on a wide variety of topics and a voluminous final management plan (including many community recommendations on zoning and boundaries) were then completed in 1995.

A 1994 workshop presented an in-process management plan to a variety of stakeholders. This workshop enabled an articulate, well-argued, and widely reported presentation from a village leader on the economic costs to the government of any attempt to resettle the communities in the park. The workshop was followed by instructions to stop land speculation on Bunaken Island and reject any proposals for hotel development—a step welcomed by local communities.

A few government officials have become somewhat better informed on marine environmental issues, and the press regularly covers the environmental and community issues related to Bunaken.

NRMP was unable to contract directly with NGOs, but hired several NGO staff as field assistants and provided them with valuable training and experience, besides giving them opportunities to work with communities in the park. The original entry point for the NGOs was an advocacy role, after a media report that park residents would be resettled.

A variety of government agencies and NGOs were brought into the planning process. The project's main organizational focus was on SBKSDA and Kelola, a local NGO. Later planning-process stages made some progress in facilitating better communication and coordination between

higher levels of PHPA and the provincial government. The project enabled Kelola to play a constructive role in eliciting local participation and giving communities a voice in planning, albeit for a very short period, but no provision was made for the NGO's continuing involvement.

Speculators have dramatically increased local land prices in expectation of tourism development. The environment minister sent a strongly worded letter to the governor of North Sulawesi in 1996, specifying the removal of tourist cottages and prohibiting tourism development on Bunaken Island.

#### MAJOR CHALLENGES

Little or no local benefit from the national park has been demonstrated, and those most directly affected (the principal users: communities and private-sector tour operators) were not included in the process of establishing the park. The most significant future development activities are likely to be in tourism, but with little prospect of any linkage between them and the acute need to provide local residents with incentives to support conservation.

Only a minute fraction of the substantial tourism value of the area's reefs are captured by the park, and virtually none by the park residents who have little or no economic interaction with the visitors. The future park management will have the authority to collect a park entry fee (a nominal Rp 2,000), but SBKSDA currently does not do so. The substantial economic benefits generated by the park are therefore captured by airlines, hotels, restaurants, dive operators, and so on. A small fraction of these benefits would be sufficient to support park management and provide adequate conservation incentives for the park residents.

Unresolved conflicts of interest between local people, PHPA, and the provincial government continue, although local people's interests appear to have been largely ignored by anyone except the NRMP project staff (during part of the project) and the local media.

PHPA has an acute lack of marine conservation expertise and has demonstrated no capacity to manage the park and address the major threats. Sporadic PHPA enforcement efforts are generally directed at local people carrying out activities they have pursued for five generations. These people are generally poorer and receive far fewer services than the population of Manado on the adjacent mainland. There has been little attempt to regulate dive operators or outsiders entering the area for illegal fishing. People arrested by the police at PHPA's request for mangrove cutting, fish bombing or poisoning, coral dredging, and so on have invariably been released (although this is partly because of certain technical difficulties in establishing culpability). There has not been any attempt to include local people in the law enforcement effort.

Local environmental awareness among communities and government officials is generally low.

The status of the area changed several times in quick succession before being declared a national park, confusing local communities as well as users (for example, the provincial governor declared the area the "Manado Marine Tourism Development Area" in 1980). Compounding this problem, PHPA's jurisdiction in the park extends only as far as the high-water mark, thus excluding the park's terrestrial areas and inhabitants. Any commercial activities on land are therefore under the control of the provincial government.

The background studies produced important new information on the relative importance of the different threats facing the park (for example, revealing a less-than-expected dependency on fishing vs. agriculture) but also showed how dynamic and variable these threats were, implying the need for a flexible management approach rather than a planning blueprint. For instance, the emergence of the seaweed industry and its associated environmental damage should have become a major management issue, but management has not responded. The strong political commitment from the provincial government to develop tourism (to help replace jobs and income lost to the province from the collapse of the clove and coconut markets) is not matched by any overall consensus or strategy for effective action.

#### ASSESSMENT OF ICDP PROSPECTS

The project did not include any provision for institutional sustainability, or even a transition phase to introduce new management. It is unclear how the park management plan can ever be implemented or by whom. The momentum gained during the planning process—with increasing engagement of communities, local government, the private sector, and PHPA in reasonably productive discussions—is now being lost. The participatory aspects of the project may prove to have been so brief as to barely merit being labeled a process. No evidence has been found that PHPA is committed to continuing consultation with local communities or effective collaboration with local government on tourism development and regulation. The prospects for effective law enforcement and biodiversity conservation in the park are therefore very low. Ironically, a subsequent USAID-financed NRMP project, which is also targeting the North Sulawesi coast, specifically excludes Bunaken National Park.

Project staff point out that they were simply providing technical assistance to help produce a management plan according to PHPA's own guidelines, and actually went beyond these guidelines by using a participatory approach. But, in retrospect, a simpler park management plan with a greater focus on strategic management options might have provided more sus-

tainable benefits, especially if produced in partnership with PHPA and local government staff, while gradually developing and launching an effective management structure and working out effective and acceptable conservation roles for local communities and the private sector.

### *Taka Bone Rate Marine National Park*

#### DESCRIPTION

The 530,000-hectare Taka Bone Rate Marine National Park was designated in 1992. Lying in South Sulawesi province, Taka is the largest atoll in Indonesia and the third largest in the world. The park includes 20 islands, six of which are inhabited. The impoverished population of 4,700 comprises three main ethnic groups (Bajau, Buginese, and Butonese), who mainly depend on subsistence fishing.

#### BIODIVERSITY VALUE AND THREATS

The area is noted for its diverse coral reefs, sea turtles, dugong, giant clams, and fish. The major threats are destructive fishing practices, including dynamite fishing, cyanide use, and the use of live coral to weight down fish traps, and overexploitation of fish, sea cucumber, pearl oyster, top shell, dugong, horned helmet shells, giant clams, and sea turtles by residents and outside commercial fishermen.

The park is the responsibility of SBKSDA in Ujung Pandang, a 16-hour boat ride away. PHPA carried out several enforcement operations during 1994–96, arresting and prosecuting 12 fishermen and confiscating equipment, but each operation cost Rp 10 million. The 1996–97 park budget allocated Rp 81 million, 25 percent of the total, to law enforcement. But the size of the park and lack of patrol boats makes PHPA's enforcement operations ineffective.

#### KEY ACTIVITIES TO DATE

PHPA initiated a series of extension activities with the local communities and general public (through television programs) during 1991–95, provided income-generation support to local communities, and trained 30 local fishermen as local conservation cadres. PHPA also actively elicited support from local NGOs (Lembaga Pengenbanagan, Pendidikan Masyarakat [LP3M] and WWF-IP) to support the community awareness and income-generation activities, and from local universities (UNHAS), LIPI, and the Environmental Management Development in Indonesia (EMDI) project to carry out research to help define the park zonation and develop a management plan. Though PHPA has invested quite considerably in the area (US\$480,000 during 1991–96), much of this has been for infrastructure and equipment (radios, guard posts, park headquarters,

diving equipment, and a boat), followed by enforcement and then by extension activities with the local fishermen.

WWF-IP and EMDI surveyed the marine resources during 1992-94 for a management plan and to prepare community-awareness activities.

LP3M, a local NGO from Ujung Pandang, initiated a community development project for fisherfolk living on the atoll, working through village motivators. The objective was to reduce pressure on the marine resources by providing alternative income through mariculture.

A WWF-LP3M evaluation workshop in 1994 involved 120 fishermen in evaluating community participation in marine conservation and management.

LIPI conducted a survey of local biology, geology, and socioeconomic conditions in 1995.

A mariculture program was established in 1995, by LP3M, WWF-IP, and the Hasanuddin University marine science laboratory, to support clam culture by communities as an alternative income-generating activity.

#### MAJOR CHALLENGES

The Marine Protected Area (MPA) currently falls under the jurisdiction of PHPA and the SBKSDA, although it lacks a UPT, a park manager, and any marine national park management guidelines. Few of the 17 staff have skills in marine resources management. PHPA thus needs support from the local government, police, and navy in patrolling and arresting offenders. Unless an effective enforcement strategy is developed against these external threats, community-based interventions on their own will have little impact.

Though a good start has been made by WWF, LP3M, and EMDI in collecting baseline information and getting the communities and local government interested in marine resources management, considerable limitations hinder this approach: (a) The major threats appear to be from external fishermen, who are under the jurisdiction of the Department of Fisheries; (b) the planned community activities such as mariculture are experimental and risky; and (c) there is no direct link between conservation and income-generation support through signed agreements or independent monitoring.

#### *Bogani Nani Wartabone National Park (formerly Dumoga-Bone National Park)*

#### DESCRIPTION

The 1984 establishment and subsequent management of this 300,000-hectare national park have been closely linked with the development of the Kosinggolan and Toraut irrigation schemes, funded through a World Bank loan (Irrigation XV). The eastern part of the park protects the upper

watershed of the Dumoga river, which is now used to irrigate 11,000 hectares of rice fields cultivated by 8,500 farmers, mainly transmigrants from Java and Bali. The transmigration schemes in the Dumoga valley are regarded as among the most successful in Indonesia. In engineering terms, the Toraut scheme is similarly regarded as a model irrigation project, while Kosinggolan has been less successful, for reasons which remain unclear. Dramatically increased rice production from the Dumoga valley has helped convert North Sulawesi from a net rice importer to a net exporter. Strict law enforcement has largely protected the park's forests, contributing to the provision of a constant water supply. As a result, the early joint funding (now discontinued) and coordinated implementation of the national park and the irrigation project have been widely upheld as a model of integrated conservation and development.

#### BIODIVERSITY VALUE AND THREATS

The park is the single most important site for conserving Sulawesi's unique and rich fauna. The lowland rain forest covering 60 percent of the park is floristically the richest habitat in Sulawesi. Most of the island's endemic mammals are present, including the southern subspecies of the crested macaque, babirus, and the two species of anoa. The park may contain the largest babirusa population on Sulawesi, as well as the two anoa species. Dumoga's avifauna population is extremely rich, with 170 species recorded, including most of the 97 Sulawesi endemics. Ten of the 40 or so known maleo bird nesting sites are in the park.

The threats have changed substantially over the life of the project. The population of the Dumoga valley had increased from about 8,000 in 1960 to 50,000 in 1980, attracted by fertile soils and a newly built road. This rapid expansion and the completion of several large development projects has increased pressure on the region's natural resources. The Kosinggolan scheme was only partly functional in 1980 because of interruptions in the water supply attributed to deforestation in the catchment area. The World Bank loan to complete Kosinggolan and develop Toraut was made conditional upon GOI halting deforestation to stabilize the water supply. Stepped-up law enforcement efforts brought deforestation under control. After lengthy preparation, more than 400 farmers were evicted from the park in 1983, eliminating the (newly) illegal encroachment and cultivation from the irrigation scheme catchment areas. In 1984, 134 of these farmers were provided with 2 hectares and a house, at a cost of Rp. 1.1 million per family. The irrigation schemes were completed in 1984. Average incomes and rice productivity in the Dumoga valley then doubled or tripled during the 1980s.

The effectiveness of park protection in the 1980s can largely be attributed to the serious, sustained engagement of the provincial- and district-level government authorities. The key steps taken at the time the park was

established include: (a) setting up a special task force to end illegal encroachment, with representatives from PHPA, the police, military and the judiciary; (b) helping settle land tenure issues at the park boundary, and actively supporting park boundary marking in areas previously claimed by farmers; and (c) improving land registration procedures so that people applying for land certificates near the park borders were first required to obtain approval from PHPA.

Specific park protection measures included the following:

- PHPA began intensively monitoring the critical catchment areas within the park.
- Forest concessions at the park borders were canceled.
- The loan funds included substantial budgets for patrolling by park guards.
- Court cases led to imprisonment of persistent offenders.

Illegal cultivations within the park were destroyed and the areas replanted with trees. What is perhaps most interesting about these basic park protection steps is how unusual they are in Indonesia. It is less clear how effectively they are operating at present.

More recently, the major threat to the park has been the illegal activities of several hundred small-scale gold miners, some independent and others organized. *Illegal gold mining yields only modest rewards, is arduous and dangerous (involving unprotected use of mercury), and carries a penalty of three years in prison if the miner is caught.* But its continuing popularity strongly suggests a lack of economic alternatives for the unemployed and landless in North Sulawesi, where considerable hardship has been caused by the collapse of the clove and coconut industries. With financial support from PHPA (in Jakarta), a provincial-level combined police and army operation evicted about 300 gold miners from the park and confiscated their equipment in 1994 (growing numbers have apparently returned since then). According to BAPPEDA I, this "gold rush" originally started after release of a Ministry of Mines report on a minerals survey carried out after the national park was gazetted. The biodiversity impact of gold mining is unknown.

Agricultural encroachment and illegal logging in the area have also increased, although they are apparently still minor. Illegal logging is most obvious in the protection forests bordering the park. Since there is no suggestion that any of the transmigrants are involved in illegal mining, agricultural encroachment, or logging, these are presumably being carried out by the area's original population or by other local migrant groups. Illegal hunting and rattan collection from the park are reported to continue at high levels, feeding into thriving local markets. The park is the only source

of commercially viable rattan in northern Sulawesi but no attempts have been made to limit the local rattan trade.

#### ASSESSMENT OF ICDP PROSPECTS

Dumoga–Bone is one of the few ICDPs with a lengthy history, although it differs from most ICDPs in that biodiversity conservation was certainly not the original objective of the development activities, which were coordinated rather than integrated with the conservation activities. Although the biological significance of the park was clearly understood, economic development was the principal objective, with watershed protection through strict law enforcement in the upland forest seen as an efficient means to achieving that goal. This park seems to have been reasonably protected by applying strict law enforcement measures, apparently because local government perceived substantial economic benefits from doing so.

An alternative view is that the project essentially failed in social terms while delivering substantial economic gains. Negative impacts clearly resulted from a failure to fully appreciate the effects of the complex interactions between the indigenous population and the recently arrived migrants and transmigrants. The original, or at least pre-1980, Dumoga valley inhabitants, being accustomed to rain-fed agriculture and shifting cultivation, did not adapt rapidly to the more intensive and profitable irrigated rice cultivation. While some were forced to sell their land for transmigration projects, others sold their land for very low prices to speculators, absentee landlords, and others. These people then moved into the forest within the new national park, attempted to carry on with a traditional way of life that had suddenly become illegal, and were thrown out. The beneficiaries of the project (the transmigrant rice farmers) did not represent a biodiversity threat to the park.

The park has received substantial external funds for infrastructure, but at least some of these expenditures appear to have been poorly planned. An elaborate headquarters situated inside the park has now been abandoned in favor of a new building in Kotamobagu, a town between the park and Manado. Project Wallace brought more than 100 Indonesian and international researchers to the park in 1985, making it one of the best-researched reserves in the country. But an elaborate and extensive research facility subsequently failed to attract significant numbers of researchers and has now been turned over to the Wallacea Foundation, which is attempting to attract ecotourists, so far with very limited success. Other buildings appear not to have been well maintained.

A key question is why the provincial and district governments felt motivated to launch and subsequently maintain an effective law enforcement action that has so far conserved the park more or less intact, in sharp con-

trast to most other large parks in heavily populated parts of Indonesia, several of which also perform an important hydrological regulation function. It would be interesting to quantify the costs and benefits of the project to the provincial government, although this has not been attempted.

It may be simplistic to ask why, if the economic development benefits from the irrigation project were in fact the principal motivating force, the prospects of sustained economic benefits from tourism do not encourage an equally effective partnership between PHPA and the same provincial government to protect the natural environment of Bunaken National Park (even though, in this case, resettlement of the indigenous population appears to have been effectively resisted).

### *Lore Lindu National Park*

#### DESCRIPTION

Lore Lindu National Park is one of the largest remaining natural areas in Sulawesi. The 231,000-hectare park was established in 1982 in Central Sulawesi province. The park is a UNESCO Man and Biosphere Reserve and was nominated as a World Heritage Site. The park is the source of three rivers that supply Palu, the provincial capital, and several large irrigation schemes. About 33,000 people live in 34 villages in 2 large valleys next to the and within the park. The park is managed by the SBKSDA in Palu, two to three hours away.

TNC, an international NGO, has collaborated with PHPA in designing and implementing an ICDP. Since 1992, TNC has mobilized more than US\$1 million, provided resources and training for PHPA staff, brought in several NGOs and universities with a variety of skills, used participatory techniques to carefully analyze the problems facing the poor rural communities living in and around the park, and started working in 12 villages to develop butterfly farming, bee husbandry, and tourism as alternative, environmentally-friendly income sources aimed at reducing pressure on the park. ADB is currently preparing a larger-scale ICDP to address regional development and conservation concerns in the area.

#### BIODIVERSITY VALUES AND THREATS

The park is one of the largest remaining natural forest areas in Sulawesi, and provides an important habitat for Sulawesi's endemic flora and fauna, including the anoa, babirusa, macaque, tarsier, and maleo bird.

Biodiversity is seriously threatened by plans for a variety of infrastructure projects, including construction of a road network within the park as well as new transmigration sites and a massive hydropower project just outside. Illegal cacao farming and rattan harvesting are increasing problems inside the park.

#### KEY FEATURES OF THE ICDP

TNC supported a land use and socioeconomic surveys as well as PRA exercises during 1992. These helped identify the basic threats and facilitated the design of ICDP interventions.

During 1996–98, TNC will have invested nearly US\$1 million in enterprise development, conservation awareness, and strengthening of park management activities around Lore Lindu. The annual Park budgets through government sources are approximately US\$150,000. TNC has supported constituency building through community leadership workshops in 7 villages, presentations to local government, and formation of conservation groups in 12 villages;

TNC brought in CARE International (a development NGO) to assist with upland agricultural programs, the University of Montana to study feasibility of rattan plantations, Hasanuddin and Guelph Universities for honey bee husbandry, and Sobek to develop whitewater rafting. TNC is also raising funds to support traditional bark-cloth manufacture and marketing.

A grant from the Biodiversity Conservation Network has helped develop whitewater rafting as well as training local villagers in butterfly farming and wild honey husbandry.

#### MAJOR CHALLENGES

The scale of the planned activities (12 villages) seem inadequate to seriously address the level of threats, including the potential impact of the roads and other infrastructure.

Marketing of the products from these enterprises requires sophisticated intermediary networks and is dependent on long-term project support. For example, whitewater rafting needs to be internationally promoted because the local tourism market is limited (only 559 visitors in the past five years).

There is little support from PHPA for these activities as yet because the park does not have a UPT, an approved management plan, or sufficient skilled staff who could manage such activities, and local NGO support in the area is also limited. Without sufficient counterpart support from PHPA and local NGO partners, TNC's activities may not be sustainable. Recently, the Minister of Forestry approved UPT status for the park, which should help increase staff and resources to the Park.

#### ASSESSMENT OF ICDP PROSPECTS

The community-based ICDP activities around Lore Lindu show some promise, as they support community conservation awareness and income enhancement from the sustainable harvesting and husbandry of park products. Only a handful of people have benefited from these tiny development programs, which simply do not confront the type and magnitude of problems facing the park. There is little evidence to suggest that limited interven-

tions with a few local communities will restrict their encroachment or illegal harvesting of rattan, as long as PHPA enforcement is limited.

Two recent initiatives may change this picture. First, PHPA has been authorized to establish a UPT. Second, ADB plans to finance a large regional development program on ICDP principles that will include the park.

## **Nusa Tenggara Timur**

### *Komodo National Park*

#### DESCRIPTION

Komodo National Park (KNP) in western Flores covers 132,000 hectares of ocean and 41,000 hectares of island and coastline. The site first received protection in 1926 as the home of the Komodo dragon, now the park's best-known species. The national park was established in 1980, then declared a Man and Biosphere Reserve and a World Heritage Site in 1986. There is a PHPA management unit (UPT) and 88 PHPA staff. About 2,300 people from five ethnic groups live in three settlements inside the park, relying on squid and other marine products.

TNC has supported marine ICDP activities in collaboration with PHPA since 1996, including development of a management framework, promotion of alternative livelihood programs, and capacity building for local communities. TNC has provided US\$250,000 annually and expects to provide US\$5 million during the next five years. The 1996–97 park budget was US\$360,000.

#### BIODIVERSITY VALUES AND THREATS

KNP is considered one of Indonesia's most diverse coral areas and contains one of the world's richest fish fauna, with up to 1,000 species. Marine and coastal habitats include reef flat, mangroves, and sea grass beds. There are 2,600 Komodo dragons on land as well as fruit bats, snakes, and endemic giant land snails.

Destructive fishing practices threaten KNP's marine resources (for example, dynamite fishing, coral removal, cyanide fishing and overexploitation of sea cucumber and abalone). KNP's terrestrial ecosystems are threatened by illegal timber felling, deliberate fires, and fuelwood collection. Increasing tourism may pose a threat in the future.

#### KEY FEATURES OF THE ICDP

The project is working with provincial- and *kabupaten*-level governments to develop planning guidelines for coastal and island development around Labuhan Bajo.

PHPA enforcement efforts have been supported with funds and equipment (mainly boats and radios), and park rangers have been trained with

assistance from the local police. This has led to a substantial decrease in reef bombing incidents, from 300 per year in 1993 to fewer than 100 per year in 1996. Fishermen previously involved in reef bombing have now switched to pelagic fisheries. Based on this experience, PHPA has increased the park budget for marine enforcement.

Awareness materials have been developed for local communities, especially school children, on the impact of dynamite fishing on the reefs.

A Komodo diving club has been established to promote training and awareness through dive ecotourism (29,000 tourists visited the park in 1995–96).

TNC will establish a privately financed dive lodge that will act as an ecotourism training center for people from the communities currently involved in destructive fishing. This training center could play a regional role in eastern Indonesia in the future.

TNC has facilitated agreements on the use of park tourism revenues between tourism developers, PHPA, dive operators, and local communities. Mooring buoys have been installed in cooperation with private dive operators to reduce reef damage from dive boats.

Other enterprises include small-scale mariculture and pelagic fisheries run with local and national business partners and in cooperation with the Indonesian Fisheries Association.

Planning activities included rapid rural and ecological assessment of the reef areas and communities using the reefs. Monitoring of coral reef communities and fish populations will be used to assess the impact of management interventions and to adjust preliminary zonation plans.

#### MAJOR CHALLENGES

It is proving very difficult to elicit cooperation and support from the vast number of government agencies with coastal jurisdiction related to law enforcement, fisheries, and ecotourism. Follow-up and support from the local technical agencies remains limited.

There is an acute lack of local organizations with the capacity for effective action, including professional management of the ICDP activities. As a result, TNC has had to place expatriate and Jakarta-based staff in Labuhan Bajú.

The enterprises being promoted will need to produce sufficient revenue to cover the costs of management.

The park's legal authority to exclude fishermen with official Fisheries Department permits from community fishing zones remains unclear.

#### ASSESSMENT OF ICDP PROSPECTS

This promising ICDP is benefiting from a strong on-site management presence, a vigorous law enforcement effort, realistic income-generation pros-

pects, and effective coordination with the park management authorities, as well as being a genuine tourist attraction with a small resident population. But financial sustainability will require some real successes in revenue generation, there is an acute lack of local capacity for effective action, and it is proving very difficult to elicit cooperation and support from the vast number of government agencies with coastal jurisdiction. Future success will also depend on local government's control of development outside the park.

### *Ruteng Nature Recreation Park*

#### DESCRIPTION

The 32,000-hectare Ruteng Park is one of two sites targeted by the Biodiversity Conservation Project in Flores and Siberut. The park was established in 1993 within the Manggarai district of Flores Island, part of Nusa Tenggara Timur (NTT), when parts of a former production forest and a limited production forest were combined. Fifty villages and the town of Ruteng border the park, with a total population of 100,000. The total project budget was US\$40 million for six years, beginning in 1993, financed by ADB (60 percent) and GOI (40 percent). Slightly less than half of this amount was to be allocated to Ruteng. The objective of the project was to prepare and implement an integrated conservation management plan based on the ICDP concept. PHPA is the executing agency.

#### BIODIVERSITY VALUE AND THREATS

The park includes ever-wet and semideciduous tropical forests, including montane forests, and has three endemic rodent species. The park's importance for biodiversity conservation is questionable.

About 40 percent of this small park has already been degraded by small-scale logging, which continues. Agricultural encroachment is also evident along many of the park roads. Roads through the park have recently been widened and improved without appropriate authority. Both logging and crop cultivation often take place on steep slopes within the park, leading to landslides, erosion, and river damage.

The Governor of NTT banned commercial logging in the province in 1989, thereby requiring all construction timber to be imported from other parts of Indonesia. This appears to have had no impact on small-scale logging in Ruteng, which is estimated to involve more than 2,000 people. Logs are taken from the park for domestic use, but also to supply the few contractors and traders who carry out virtually all construction on Flores for the public and private sector. The lack of alternative timber sources on Flores suggests that most construction in the region of the park (and probably elsewhere) uses illegal timber from the park. Local construction costs are

only a small fraction of what they would be if timber had to be imported from other islands (as the regulation from the Governor requires). Enforcement efforts are sporadic and minute in relation to the scale of the problem. In economic terms, the park's timber is being used as an uncontrolled, free resource by local communities, the private sector, and local government.

#### KEY ACTIVITIES TO DATE

Extensive background studies and an integrated conservation management plan were largely completed in 1995 by a team of international consultants, providing an extensive library of written material. During preparation of the plan, seven junior PHPA staff were assigned to manage the park.

A project headquarters, park visitor center, and other infrastructure have been constructed.

A PCC was formed, chaired by the *Bupati* and including sectoral agencies operating at district level and NGOs. Several meetings have been held. The provincial capital Kupang is on West Timor, with difficult communications hindering provincial-level coordination.

On the ground, the ICDP is trying to provide income and timber substitutes to reduce local dependency on the park. Through a CAMEP, the project contracted with six local NGOs to establish demonstration tree nurseries in each of the 50 villages around the park, mainly starting in 1996, with the aim of giving seedlings to villagers for them to cultivate on their own land. The NGOs hire and train village staff to look after the nurseries. Other CAMEP components include animal husbandry, use of bamboo in construction, agricultural extension for coffee and cashew, and soil conservation techniques.

Some small degraded areas within the park have been replanted with tree seedlings, and the project plans to establish a few small plantations of fast-growing trees.

The project convened a local workshop in early 1997 to discuss illegal logging, with the "full support" of various government agencies.

Indonesian staff have been provided with opportunities for graduate study overseas.

#### MAJOR CHALLENGES

Two principal risks were appropriately identified in ADB's Staff Appraisal Report (SAR): institutional weaknesses of PHPA and the involvement of a number of sectoral ministries, and continued encroachment on the protected area. Unfortunately, no effective steps have been taken to mitigate these risks, which eventually rendered the project inviable.

PHPA provided a full-time director and staff, although the relationship with the Kanwil and SBKSDA was not clarified (unlike national parks,

recreation parks do not have separate management units or UPTs). Project staffing was inadequate in terms of numbers and levels of experience, and only a small fraction of the activities specified in the management plan and background studies were undertaken seriously. Neither the plan nor the studies were used by project staff.

The project had no authority to carry out law enforcement activities, and local government is not interested in doing so. As the *bupati* said, "If we arrested people for taking timber from the park, then everyone would be in jail." Social unrest would seem likely to follow any sudden, direct crackdown on illegal logging. Regulation of the timber traders and construction contractors who buy illegally from local loggers was not attempted.

Although the CAMEP activities are being implemented with enthusiasm and dedication, they are spread so thinly over all of the 50 villages surrounding the park that the impact in individual villages was very small. There was no linkage to increased enforcement, and there is no effective incentive for local people to seek resources away from the park until its timber supply is close to being fully depleted.

Despite the relatively large project budget, few if any local benefits were generated. Few government services reach these villages (although only four are Presidential Institution Fund for Poor Villages [IDT] communities). Health care, education, water access, and agricultural extension services are poor. This means that villagers had a variety of acute needs to present to the ICDP, which had relatively little to offer them. The project documents include extensive discussion of ecotourism, but the project lacked any practical plan for getting this started.

Environmental awareness and information on the project are very low among local communities and public officials. The project did not include an awareness campaign or other systematic attempt to make people understand what the ICDP was to attempt to do. From a project planning perspective, there was a lack of information on biodiversity in the park, which might have allowed development activities to have targeted communities adjoining particularly important or sensitive areas.

#### ASSESSMENT OF ICDP PROSPECTS

This project was launched with unrealistic institutional arrangements, inadequate staffing, and no realistic plan to confront the major and immediate threats to the park. As a result, the risks recognized in advance showed no sign of being mitigated. As long as timber from the park continues to be available illegally at close to zero cost, there will be no incentive for loggers to switch to trees cultivated in the villages — even if these do successfully reach maturity in several years' time (unemployment is so high that labor has no opportunity cost). There is no commitment from either local

government or communities to support law enforcement or other conservation activities in exchange for the project's investments in development.

Efforts to coordinate between different sectoral agencies resulted in many meetings but little tangible action. Lack of involvement by senior PHPA officials partly contributed to the project not being taken seriously by either the district or provincial government. Although the project seems to have been well administered by its director, and some promising community initiatives were launched through NGOs, the project's design and preparation were fundamentally flawed. A high-powered international consulting team, largely operating without local counterparts, prepared an incomplete blueprint that the few dedicated and promising young Indonesian project staff lacked the capacity to satisfactorily complete or implement.

The project was unsustainable from financial or economic perspectives, with extraordinarily high costs of about US\$20 million for a 30,000-hectare park over six years — \$111 per hectare per year. Even if the project had been successful it would be too expensive to replicate.

The economic analysis in the SAR supporting a projected 12 percent economic rate of return seems neither credible nor relevant to the project's stated conservation objectives. Basically, the park cannot hope to succeed by offering sustainable local benefits at a level far lower than the unsustainable benefits currently enjoyed freely by local communities, the private sector, and government.

## Irian Jaya

### *Wasur National Park*

#### DESCRIPTION

Wasur National Park lies in the southern lowlands of Irian Jaya. The 413,000-hectare park was declared in 1990 and is the major source of water for Merauke, the *kabupaten* capital. Some 2,500 people live in 13 villages inside the park, most of whom are traditional people from four separate clan groups. A further 70,000 people live next to the park boundary, mainly in 10 large transmigration sites.

The park does not have a UPT and is managed by the local SBKSDA office. WWF-IP has been implementing ICDP activities in the park since 1991.

#### BIODIVERSITY VALUE AND THREATS

The park includes coastal flood plains, riverine mangrove forest, and savanna vegetation. The open terrain is dominated by eucalyptus and melaleuca trees and requires periodic burning to maintain the structure of savanna grassland. The park has some 80 marsupial species, a large migratory bird population, and many reptiles, including crocodiles.

Immediate threats to the park include (a) illegal hunting by local police and army personnel, (b) agricultural encroachment facilitated by existing and planned roads (the trans-Irian highway bisects the Park), (c) hunting by transmigrants and their indiscriminate pesticide and fertilizer use, (d) increased hunting pressure by traditional groups, and (e) cashew plantations proposed inside the park by the Department of Tree Crops. Most of these threats are the result of poor spatial planning and increased development of infrastructure around the park.

#### KEY FEATURES OF THE ICDP

The ICDP has focused on research and monitoring of social and ecological aspects of the park, community development activities with the 13 villages, and planning, zonation, and policy development with SBKSDA. WWF-IP facilitated community participation in the preparation of a park management plan (1993-94), as well as zonation for the 13 villages within the park. This management plan is to be implemented through a strengthened PHPA presence and by the establishment of village park councils with the local residents. Support to finalize the management plan was provided through a World Bank loan in 1994, but the plan is still awaiting approval.

Wasur is unique among Indonesian national parks in that the traditional rights and practices of the tribal residents are recognized in the park management plan. As a result, the residents are allowed to hunt and gather natural products. The villagers are allowed to hunt (using spear and bow and arrow), cultivate small plots, gather sago, and collect various forest products. Some endangered species, such as crocodiles, are exempt from this provision. Residents are allowed to hunt deer for commercial purposes as an income source. Nonresidents are not allowed to collect products from any zone within the park.

WWF-IP has developed a database on the park's flora and fauna and is using this to monitor the introduction of exotic species into the park. This NGO also has developed a GIS to monitor large-scale development in the park buffer zone.

WWF-IP has carried out a range of community development activities, including (a) institutional development among the tribal groups to support park management activities; (b) support for local cooperatives to develop essential oils (with annual revenues of Rp 30-40 million), produce and sell deer and wild boar meat, and carry out guiding and other tourism activities; and (c) involvement of local villagers in park patrolling activities as community rangers.

#### MAJOR CHALLENGES AND ASSESSMENT OF ICDP PROSPECTS

Like many parks in eastern Indonesia, Wasur has to deal with the issue of traditional hunting and gathering of products from the reserve. With in-

creased road development, transmigration and inward migration are likely to displace traditional hunting with larger-scale commercial activities that represent serious threats to conservation. PHPA has very limited capacity for enforcement, and the local government sees the park primarily as a potential source of commercial development for tourism. Competing interests will need to be managed carefully to prevent over-exploitation of the park's resources.

The Wasur ICDP is innovative in the sense that residents of the park are officially allowed to harvest products and assist in park management. Official decrees from the *bupati* and PHPA allow this. The development of the Wasur management plan further supports a basis for ICDP activities. The local communities, government agencies, and private sector were consulted and have agreed in principle to implement the plan. However implementation continues to be constrained by political instability, a lack of government institutional capacity, and uncoordinated regional planning.

WWF-IP has played a critical role in lobbying for the park and ensuring that traditional clan organizations are involved in management, as well as piloting community-based development activities. But unless a viable means can be found to hand over such responsibilities to effective local groups, these activities may not be sustainable.

### *Lorentz Nature Reserve*

#### DESCRIPTION

The 2.15 million-hectare Lorentz Nature Reserve in southwest Irian Jaya is Indonesia's largest protected area. Attempts are being made to upgrade the reserve's status to a national park and a World Heritage Site. About 6,000 indigenous people live in the reserve, including Amungme, Nduga, Asmat, Kamaro, and Dani groups. Most practice subsistence sago and sweet potato cultivation.

PHPA has very few staff in the province, and the reserve is managed by three SBKSDA staff based in Wamena. WWF-IP has been conducting planning and research activities to support the preparation of an ICDP management plan since 1995, to which USAID, UNESCO, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) and WWF-Netherlands have contributed US\$554,000. In 1997, WWF-IP started participatory mapping activities with local clan groups to help build consensus on the Reserve's boundary and land-use zonation.

#### BIODIVERSITY VALUE AND THREATS

The park covers a unique set of ecosystems, including equatorial glaciers, alpine and montane systems, lowland rainforests, and coastal swamps. The reserve scores highly on floral and faunal endemism and is

regarded as the most important region for mammal diversity in Melanesia.

Lorentz faces an array of formidable threats. The reserve is near the Freeport McMoran gold and copper mine, one of the world's largest. Two other mining companies, Montague and Nabire, have exploration concessions of questionable legality that overlap part of the reserve. Mine tailings from mining operations have adversely affected the reserve, and urbanization linked to mining activities represents a further serious threat. The development of a new town, Kuala Rencana, will lead to an influx of migrants and associated development projects. In addition, one of two logging concessionaires on the reserve's eastern boundary has logged illegally inside the protected area.

The trans-Irian highway, currently under construction, is expected to cut through the northern part of the park, damaging a fragile alpine ecosystem. A second proposed road through the reserve, between Timika and Merauke, is likely to open up new lowland forest areas to spontaneous migration, hunting, and logging. Compared with these macroregional development threats, the activities of traditional groups within the reserve pose relatively little threat. Some of these clan groups are involved in land tenure disputes with the mining companies.

#### KEY FEATURES AND ASSESSMENT OF ICDP PROSPECTS

Formalizing links with regional development planning seems an essential step toward countering the large-scale forces threatening the reserve. WWF-IP has taken an important first step by establishing a formal partnership with BAPPEDA I and has begun helping to build provisions for biodiversity protection into the Timika Area Development Plan and provincial spatial plan. This is one of the very few cases where an NGO project has made tangible progress toward serious involvement in regional planning. Interestingly, this development partly came about because foreign NGO staff were prevented from doing field work by the presence of armed guerrilla groups and instead turned their attention to the provincial capital.

Lorentz presents a substantial protected-area management challenge because of the reserve's size and remoteness, the scale of regional economic activity, land tenure problems, and the presence of armed guerrilla. Efforts to develop an ICDP approach have really just begun.

#### *Arfak Nature Reserve*

##### DESCRIPTION

The 68,325-hectare Arfak Mountains Nature Reserve was declared in 1982 in the Bird's Head region of Irian Jaya, 25 kilometers from the city of Manokwari. No PHPA staff are assigned to work at the reserve. WWF-IP

has carried out surveys and research since 1987, as well as developing a management plan (1987) and an action plan (1990).

The project has developed butterfly farming as an income source. WWF-IP and Yayasan Bina Lestari Bumi Cendrawasih (YBLBC), a local NGO, have been certified to sell and monitor populations of birdwing butterflies, for which there is consistent international demand. The NGOs expect this enterprise to become a significant source of income while providing an incentive to conserve the butterflies' habitat. About 1,400 of the 14,700 people living near the park (perhaps half of all households) are engaged in butterfly farming, which is rapidly expanding. About US\$100,000 worth of pupae were exported in 1996, with WWF-IP and a local NGO organizing marketing, sales, and shipments.

In April 1995, the USAID-funded Biodiversity Conservation Network (BCN) provided a three-year, US\$180,000 grant to WWF-IP and YBLBC to continue developing the community-based butterfly farming enterprise while monitoring the socioeconomic and biological impacts of the enterprise on the reserve and the communities around it.

#### BIODIVERSITY VALUE AND THREATS

The reserve includes lowland and montane forests that support a range of rare and endemic species, including tree kangaroo, bird of paradise, bowerbird, and birdwing butterfly.

Major threats to the reserve include potentially unsustainable collection of various forest products for construction, timber, and fuel by local communities and hunting and poaching of threatened and protected species for local consumption as well as illegal export sales (for example, butterflies and snakes). Transmigration sites and road construction on the eastern and northern borders may become important threats to the area, although these are less immediate.

#### KEY ACTIVITIES TO DATE

More than 1,400 butterfly farmers from nine villages are organized into 88 farming groups registered with the butterfly enterprise. From 1995 to 1996, butterfly exports increased from US\$42,000 to US\$100,000, and domestic sales from Rp 18 million to Rp 25 million. The butterfly farmers received Rp 40 million in the second half of 1996. Butterfly product sales are estimated to contribute half of total cash income in the participating villages.

YBLBC and WWF-IP have established export agreements with European buyers and regulators. In 1996, Convention on International Trade in Endangered Species of Flora and Fauna (CITES) authorities granted the enterprise permission to sell the endangered birdwing butterfly in Indonesia as well as to export it to Australia.

Live butterfly collection in the reserve is strongly discouraged. WWF-IP and YBLBC staff help the farmers establish butterfly food-plant stations at the forest edge and near their villages. Pupae found at these stations are brought to designated collection points or kiosks, then transported to YBLBC's office in Manokwari. Few pupae are exported directly. Most are placed in mesh cages until the butterflies emerge, when they are sent to local markets or overseas buyers under a CITES certification. YBLBC hopes to establish an independent company to buy and sell the butterflies so that the NGO can concentrate more on community development.

Building on the butterfly enterprise's kiosk system, YBLBC and WWF-IP are helping the communities diversify their income sources by developing ecotourism, passion fruit cultivation, fish ponds, and vegetables for the Manokwari urban market. In the second half of 1996, vegetable sales were Rp 13 million and passion fruit sales were Rp 1.1 million.

#### MAJOR CHALLENGES

The project was temporarily set back in 1996 when PHPA banned the sale of live pupae. This ban was lifted after WWF-IP and YBLBC staff demonstrated to government authorities that live pupae sales did not represent a "sale of Indonesia's genetic material."

Inventory management and marketing remain problems for the enterprise. Unexpectedly low demand for certain species sometimes means that collected butterflies cannot be sold, and significant percentages of butterflies are sometimes damaged in transit.

While the CITES certification process legitimizes the enterprise, it can also take a long time, making it difficult for YBLBC to respond quickly to customer orders.

The enterprise's environmental impact is difficult to assess, although butterfly populations do not appear to be declining. The enterprise's success has apparently created a conservation incentive to the extent that some conversion of forest to agriculture around the food-plant stations has been deferred.

#### ASSESSMENT OF ICDP PROSPECTS

Arfak is the only ICDP to have generated economic benefits on a scale that might influence a reasonable number of the people interacting with a park—in this case, a small remote park in Irian Jaya. Continued success of this project may depend on the communities' cohesiveness and ability to protect their valuable resource as economic development programs increase contact with the outside world, as well as the international market for butterfly products.

## *Cyclops Nature Reserve*

### DESCRIPTION

The 31,600-hectare Cyclops Nature Reserve forms part of two *kabupatens* in Irian Jaya. Some 180,000 people live around this accessible reserve, which is claimed by four competing clan groups. The reserve, an important urban water source, is managed by four SBKSDA staff.

WWF-IP began the Cyclops Reserve Management Project in 1983, initially concentrating on reconciling traditional land ownership with conservation and community development. In 1986, WWF-IP and a local NGO, Yayasan Pembangunan Masyarakat Desa (YPMD), started some community development projects through forest farmer groups in neighboring villages, aiming to reduce pressure on the reserve. WWF-IP and its local partners have invested US\$250,000 in the site over the past 12 years. This project was one of the earliest and longest-running ICDPs in Indonesia, and it ended in 1997.

### BIODIVERSITY VALUE AND THREATS

The reserve includes a range of habitats, from coastal beaches to lowland and montane forests. Some 237 species of birds and 86 mammals are found here.

The major threats to the reserve are (a) agricultural encroachment in the form of shifting cultivation by highland migrants; (b) urban encroachment on the southern boundary of the reserve from four rapidly growing settlements (Abepura, Waena, Sentani, and Jayapura); (c) construction of roads in the northern coastal area, which is expected to open the area to land speculation and agricultural encroachment; (d) illegal logging and charcoal production in four villages outside the reserve; and (e) orchid collection and hunting, especially for bird of paradise and crown pigeon.

Formal law enforcement by SBKSDA staff is almost nonexistent, although traditional law enforcement still functions in some areas. Local communities are involved in conflicts with the Department of Forestry over boundary delineation.

### KEY FEATURES OF THE ICDP

Standard Department of Forestry boundaries follow a contour and do not involve consultation with the local community. At Cyclops, WWF-IP facilitated the establishment of a live boundary around the northern part of the reserve, marked by traditional boundary plants such as nutmeg trees. This boundary marks a system of buffer zones around the reserve, where communities can grow tree crops and are permitted to hunt. Though local people support this zonation, which has helped contain agricultural encroachment, it is not formally recognized by the Ministry of Forestry.

The project has strengthened customary *adat* institutions on the north coast by developing farmer groups for agroforestry activities. These *adat* institutions have helped enforce sanctions against hunting. Similar attempts in the southern part of the reserve have failed because of rapid urbanization and changing cultural values.

The project launched social forestry interventions at four sites, including village nurseries. Chicken farming (47 families) and fish raising (23 ponds) were also introduced to encourage migrant farmers to leave encroached areas.

More recently, WWF-IP worked with local government to develop a PERDA (local government decree) that gives the buffer zone legal status. This should help strengthen traditional land tenure and prevent urban land speculation. This PERDA, once formalized, would be the first of its kind in Indonesia.

WWF-IP has trained local environmental cadres and helped establish an environmental education center for conservation awareness activities.

#### MAJOR CHALLENGES AND ASSESSMENT OF ICDP PROSPECTS

The major challenge has been to resolve land tenure disputes caused by rapid urbanization, land speculation, and boundary placement. Road construction along the northern reserve boundary seems likely to increase encroachment and hunting pressure on the park. The development of the PERDA and recent establishment of an environmental awareness center could mitigate some of this impact.

The initial ICDP activity focused on social forestry but failed to address the major threats to the reserve: urbanization, hunting, and land speculation. A succession of community development activities remained disconnected from park protection, although a participatory boundary-setting activity did reduce encroachment. Sites identified initially might have been appropriate for social forestry activities but were inappropriate as ICDP sites. The evolution of the project toward an improved planning approach (through the boundary demarcation and preparation of a PERDA) and support for conservation awareness has greater promise for reducing the impact of major threats. The local BAPPEDA I and II are also proposing to promulgate a buffer-zone decree that would prevent land sales and physical construction in the buffer zone. WWF-IP is phasing out of the project, and future activities will be implemented through the customary local clan institutions.



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# Annex

## Threats to Parks

1. ICDPs are designed to enhance the conservation of biodiversity in protected areas. It is therefore important to ask whether Indonesia's ICDPs have correctly identified the most serious threats to biodiversity in protected areas, as a basis for designing and implementing measures to reduce these threats.
2. Identifying the type and extent of threats to individual protected areas is surprisingly difficult. Adequate monitoring systems are rare, leaving ICDPs with a lack of reliable data. This lack of data can sometimes be overcome by local knowledge in the case of relatively small and accessible parks, but it presents a greater challenge as size and remoteness increase. Some generalities may hold: For example, the underlying causes of the pressures on Indonesia's parks can be attributed to the demands of a growing population and a set of policies and institutions that collectively provide incentives for natural resources to be inefficiently overexploited, converted, or degraded in favor of short-term financial gain. However, this doesn't aid understanding of site-specific park threats.
3. Important methodological issues also remain. For example, if someone illegally cuts down a tree in a park, what is the nature of the threat? Is it illegal logging?, and what is this attributable to? A lack of locally available substitute materials? Scarcity of employment? A new road providing ready access to the forest? Local sawmills offering attractive prices with no questions asked? Or, looking further afield, are government timber pricing and forestry sector investment policies responsible? It is difficult to say. Compounding these problems, there is comparatively little systematic information on the type or severity of the biodiversity impacts of the various threats.
4. Putting such complications aside, a tentative effort has been made to rank the major threats confronting each of the case-study protected areas. Table A-1 shows the results, with "1" representing the most severe threat facing a park and "5" the least severe. The data in the table were compiled by the study authors on the basis of site visits; local interviews with staff and officials from the ICDPs, PHPA, local government, and NGOs; and

reports on previous field surveys in and around the protected areas. Only the ranking of threats at each separate site was assessed. No attempt was made to compare the severity of threats facing one site versus another. Although the results shown in table A-1 are necessarily incomplete and subjective, they do provide a useful overview of the threat analyses included in each of the condensed case studies.

5. Threats have been divided into two categories: (1) direct threats, including small-scale gold mining, hunting, logging, nontimber forest product collection, subsistence agriculture, and fishing; and (2) indirect threats, including road construction, large-scale commercial mining, agricultural plantations, transmigration projects, urban development, overlapping boundaries with production forests, and tourism.

6. The distinction between direct and indirect threats is critical. All of the direct threats are illegal activities while, in contrast, none of the indirect threats represent illegal activities. In fact, the indirect threats are usually linked to national or regional development programs. But the indirect threats all have the capacity to lead to an increase — often a very dramatic increase — in one or more of the direct threats. They can also lead to part of a park or its surrounding forest being declassified and converted to an alternative use that is usually incompatible with biodiversity conservation. The case study summaries document numerous examples.

7. Bearing in mind that these threat classifications and rankings are provisional, some interesting patterns do emerge:

- (a) Hunting is the most commonly-reported threat (at 15 of 21 sites), followed by subsistence agriculture (at 13 of 21 sites). Subsistence agriculture appears to be a near-universal threat because it fails to be reported only for the marine reserves and in Irian Jaya, where hunting and gathering predominate over crop cultivation. But neither hunting nor subsistence agriculture is the most important threat at any site, and in most of the reported cases (18 of 28), they are ranked fourth or fifth. Also among the direct threats, illegal logging and small-scale gold mining are ranked first or second at virtually every site where they occur (7 of 8).
- (b) Indirect threats are reported 41 times versus 45 for direct threats (the total for 21 sites is less than 105 [ $21 \times 5$ ] because some parks reported fewer than five threats). But indirect threats are ranked first or second in 32 of these 41 cases. This suggests that indirect threats represent a real danger to parks whenever they are present. Roads are the

most commonly reported indirect threat (ranked first or second in 7 of 10 occurrences), followed by urban development (7 of 8), large-scale agriculture — mainly oil palm plantations (4 of 6), transmigration (4 of 4), large-scale mining (2 of 3) and tourism (2 of 4). Urban development is ranked in the top three threats at all eight sites where it is reported. These are spread throughout the country, including lightly populated NTT and Irian Jaya, suggesting that park problems are not limited to remote, rural areas but are increasingly an urban development issue. Tourism occurs on a significant scale at the marine parks and at the most popular and accessible terrestrial parks in Java, and represents a threat at each of these sites.

- (c) Indirect threats are relatively more significant in richer and more developed western Indonesia than in poorer and less developed eastern Indonesia. If the first- and second-ranked threats are combined, then indirect threats outnumber direct threats 22 to 8 in Sumatra, Java, and Kalimantan combined, while direct threats outnumber indirect threats 11 to 10 in Sulawesi, NTT, and Irian Jaya combined, and 8 to 5 in just NTT and Irian Jaya. This could be interpreted to suggest that relatively higher levels of economic activity, population growth, and infrastructure development are, not surprisingly, linked to the presence of indirect threats. As development progresses, the obvious inference is that indirect threats will become even more important in the future as regional development programs increase.

**Table A-1. Threats to the Case Study Protected Areas**

ICDP site	Indirect threats					Direct, illegal threats						
	Roads	Large-scale mining <sup>a</sup>	Large-scale agric. <sup>b</sup>	Urban Transmig. deopt. <sup>c</sup>	Tourism (HPH) <sup>d</sup>	Boundary overlap	Gold mining	Hunting <sup>e</sup>	Logging <sup>f</sup>	NTPF	Subs. agric.	Comm. fishing <sup>g</sup>
<i>Sumatra</i>												
Gunung Leuser	2			2				4	1		5	
Kerinci-Seblat	1					2		2	5		4	
Siberut		2		1		2		4			5	
Bukit Tiga Puluh	1	4				2		5	2			
<i>Java</i>												
Ujung Kulon	2				1	3		4			5	
Gede Pangrango				1	2					3	4	
Gunung Halimun		2					1	3			3	
<i>Kalimantan</i>												
Bukit Baka-Bukit Raya		4	2			1		2				
Kutai	2	1		2				4			5	
Kayan Mentarang						1		2		2	4	
Danau Sentarum			2			1		5	2			4
<i>Sulawesi</i>												
Bunaken				1	2						4	2
Taka Bone Rate												1
Dumoga-Bone	2						1	3		3	5	
Lore Lindu	1		2					5		3	4	

<i>NTT</i>										
Komodo					2	3				1
Ruteng					3			1		2
<i>Irian Jaya</i>										
Wasur	3			1	2			4		
Lorentz	3	1						2		
Arfak	4		3					2		1
Cyclops					1			2		2

*Note:* 1 = highest threat; 5 = lowest threat. See text for further explanation.

- a. Mining = large-scale gold and coal mining.
- b. Large-scale agric. = commercial estates (oil palm, rubber, tea).
- c. Urban devpt. = threat from urban pollution.
- d. Boundary overlap (HPH) = production forests.
- e. Hunting = subsistence and commercial hunting of protected species.
- f. Logging = illegal commercial logging.
- g. Comm. fishing = use of cyanide for live fish trade, large-scale fishing.











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