

# **Decentralized Multi-stakeholder Natural Resources Management:**

**Lessons Learned from the Natural  
Resources Management Project in  
Indonesia**

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**Technical Paper**

Decentralized Multi-stakeholder Natural Resources  
Management: Lessons Learned from the  
Natural Resources Management  
Project in Indonesia

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# Executive Summary

## ***NRMP Overview***

The Natural Resources Management Project (NRMP) represented the first major USAID environmental initiative in Indonesia. The program was initiated in 1990 as a broad form of assistance to the GOI's efforts to improve policy-making related to natural resources management. The seven-year project, which ended in early 1997, involved a donor investment of US\$27 million to support one of USAID/Indonesia's strategic objectives; namely, the "adoption of improved policies and practices in natural resources management". The lead consulting firm providing technical assistance to NRMP was Associates in Rural Development (ARD) based in Burlington, Vermont, USA.

Within Indonesia, NRMP aimed to strengthen the:

- Capacity of institutions with the responsibility for analysis and formulation of national policies related to management of natural resources
- Capacity of the Government to manage natural production forests for sustained yields through assistance to a private forest concessionaire
- Ability of the Government to prepare and implement management plans for protected areas Capacity for analysis and management through graduate training.

In seeking to achieve these objectives, NRMP supported policy analyses for sustainable economic development, and field-based pilot management implementation strategies for natural forests and protected areas. The policy analyses operated through a Policy Secretariat, designed to conduct policy analyses and studies of importance to the GOI's sixth Five-Year Development Plan (*Repelita VI*). The NRMP also focused on two project sites (Bunaken National Park near Manado, North Sulawesi, and Bukit Baka-Bukit Raya National Park in West and Central Kalimantan) to test and apply improved approaches for forest and protected area management. Project design expected field activities to complement the policy studies component with provision of valuable field information and opportunities to demonstrate new approaches.

Program design was for institutional strengthening intervention, linking policy development, human capacity development and field experience. In completing this task, NRMP quickly became associated with such concepts as "economic and environmental linkages", "industrialization and decentralization", "sustainable development", and "community participatory management". These concepts became central themes in all NRMP interventions, but were sometimes not well understood, implemented, or translated into practice at the local level where needs are the greatest.

Institutionally, NRMP reported to an Inter-ministerial Environmental and Natural Resources Policy Working Group (PWG). The PWG was intended to serve as a Project Steering Committee providing guidelines and a policy agenda to enable NRMP to organize evaluations

and sponsor policy seminars and research. Membership included Bappenas, and the Ministries of Forestry (MoFr, now the Ministry of Forestry and Estate Crops), Finance, and Environment. A smaller group, the Project Coordinating Committee (PCC), was established from within the PWG to oversee Project implementation issues (e.g., review of workplans and assess progress). In hindsight, NRMP was perhaps overly complex in design and overly optimistic in terms of the degree of impact independent policy analysis would have upon national policy agendas. The usefulness of NRMP support and intervention was unquestionable in some cases, and the chapters of this book serve to clarify that conclusion.

## ***Lessons Learned***

A great many "lessons learned" for natural resources management are available from within and outside Indonesia. These lessons have been learned from projects dealing with community or social forestry, integrated conservation and development projects or ICDP's, integrated coastal management, conservation area management planning and implementation, rural community organizing, village development facilitation, enabling policy development, sustainable timber forest management, and institutional strengthening.

It is the intention of this book not to add to the confusion and repetition of intuitive "lessons learned", but rather to highlight particular experiences from the seven years of NRMP implementation in Indonesia that may be instructive to future planners and managers of natural resources in Indonesia. It must be stressed, however, that some lessons are site-specific and may not be applicable to other sites or conditions. The reader should be careful not to assume that these lessons are general "truths" or that they are of relevance to all future projects. The lessons learned comprise more a body of observations from NRMP project planning and implementation experiences at a particular time and place and under particular conditions. Much like hypotheses, these lessons cannot be proven correct, they can only be shown to be consistent with observations until shown to be invalid under a similar set of conditions. Nevertheless, these "lessons learned" or "results observed" through the NRMP experience have relevance, and should be considered for planning and implementing other natural resources management projects in Indonesia and elsewhere.

That said, it can be concluded that a key lesson learned from NRMP implementation, underpinning all others, is ***the need to involve multiple key stakeholders at both local and national levels in policy dialogue***. Using a ***multi-stakeholder and decentralized policy process*** should be the most fundamental requirement to achieve wise and appropriate policy decisions. Sound policy decisions may then be translated into sound natural resources management practices and sustainability. Subsequent decisions made at the appropriate scale and jurisdictional level ensure that relevant information on natural resources management problems and policy consequences could encourage appropriate behaviors to overcome the problems. Multi-stakeholder processes also enable other considerations (e.g., distribution of policy costs and benefits) to be better utilized for decision-making at local and national levels.

During the seven-year implementation of NRMP, a number of lessons were learned concerning development and implementation of a participatory policy process. However, poor understanding existed as to what constitutes effective public involvement and participation. Participation to many only meant some form of consultation; however, real benefits of

participation only come from power-sharing or local empowerment. A real participatory process includes local authority to make decisions and take responsibility for consequences of those decisions. If direct local stakeholders do not have adequate decision-making authority, participation remains illusory and based on mutual mistrust, and participants only minimally appreciate the implications of policy change.

The work of NRMP to improve national park management and develop broader enabling policy processes in the forestry sector reaffirm the importance of identifying and involving the real stakeholders in any policy process. Community meetings on alternative, innovative park management strategies, for example, created a consultative mechanism with only those who came prepared to listen. Unfortunately, poachers or illegal harvesters of forest products whose behavior required changing did not participate. This was a lost opportunity. The real stakeholders, i.e. those most affected by or affecting policy outcomes, must become involved in the consultative or participatory process. Depending on the institutional arrangements at a particular project site, an entire village community may not be equivalent to a stakeholder group; rather, subsets of the community have disproportionate importance as stakeholders. Policing, entrapment, and other strict law enforcement measures, established at the national level and outside the local context, are not working.

In natural resources policy processes, the sectoral nature of government administration and planning is counterproductive to multi-stakeholder decision making. The full range of stakeholders must be identified and engaged. To be effective, natural resources management policies must consider the range of incentives created across public and private sectors and agencies. Without strong intersectoral, cross-organizational dialogues and consensus-building, policy outcomes will remain unpredictable at best and dysfunctional or counterproductive at worst.

Beginning with a top-down, weak forestry and park management policy analysis and dialogue process, NRMP modified its approach by formulating small ***policy working groups within the Ministry of Forestry*** to address a variety of often sensitive issues largely related to decentralization of planning, decision-making and implementation. Greater attention to the interests of this key sectoral agency resulted in a far greater sense of ownership. Some innovative policy measures were consequently approved and, to a certain degree, implemented.

NRMP was also instrumental in facilitating the development of the ***Indonesia Regional Science Association (IRSA)***, with the intention of putting aside various institutional interests and thus deliberating more objectively new and existing policy options and their consequences for natural resources management in the country. As a professional association, IRSA enabled new collaborative intersectoral policy dialogue on many issues pertaining to decentralization of authority for natural resources management. Such enabling bodies are increasingly needed, and their importance must be stressed, in the climate of current trends that aim to decentralize authority to the provincial level and, perhaps more radically but effectively, to the district and local community levels. To avoid risks associated with errors of national policy being inappropriately applied at lower governance levels, ***policy dialogue must transfer those lessons learned from the national experience to all relevant key stakeholders at the local level and vice versa.***

It is recommended that the MoFr and donors pursue an integrated approach to natural resources management policy revision that accommodates the following issues or lessons learned. Lessons learned from the NRMP experience may be summarized and grouped into the following four general categories appropriate to natural resources management in

Indonesia, particularly aimed at improved forestry management and *in situ* biodiversity conservation; namely:

- *Enabling Policies for Sustainable Resources Management*
- *Sustainable Natural Forest Management*
- *Conservation Area Management*
- *Institutional Strengthening and Innovation.*

### ***Enabling Policies for Sustainable Resources Management***

- Current policy settings in Indonesia favor economic growth at the cost of sustainable natural resources management and ecological functions. Economic policy settings need to provide less incentive for exporting raw material or semi-finished goods. The removal of cascading levels of nominal and effective protection would alleviate these distortions.
- Deregulation enables internationally competitive prices to provide incentives for innovation and value-adding, which are important components of sustainable development. To improve competitiveness, sectoral and economy-wide policies need to be integrated with planning objectives.
- Markets can provide efficient resource allocation, but will fail to achieve many resource management objectives. Provisioning for the less fortunate and future generations will require decentralized decision-making, often without consideration of market prices.
- Policy interventions by both the GOI and donors fail to recognize the determinants of success sought by each of the players in a policy process. NRMP's emphasis on adopting the role of analyst in the policy process, with the Project Coordinating Committee (PCC) as client, could not provide the success determinants required by the donor.
- Multi-stakeholder policy processes provide an opportunity for linking the various players within the policy-making process. Within this process, NRMP's movement away from the role of analyst to that of educator or facilitator was considered to be more closely linked to donor objectives.

### ***Sustainable Natural Forest Management***

- Unless the real long-term values of forests are quantified and revealed, there will continue to be over-exploitation of forest products. Current policies in Indonesia undervalue forests and their products and provide no incentive for efficient or sustainable use.
- The current excessive uncertainty over access to benefit streams from resource allocation rights has resulted in right-holders adopting a short-term perspective over resource exploitation to maximize the value of their right. Moreover, right-holders face even less incentive to invest in reforestation and replanting. As a direct result, historic management of forest products and services has been disrupted through a combination of market forces, conversion of lands, and opening new access to resources.

- The excessive use of centralized command and control policies that specify inputs and reporting requirements and increase the cost of operating reduce the incentive and value of improving management. These policies have excluded community ownership and reduced or stifled innovative management approaches. The lower returns from forestry also result in reduced ability to compete with alternative land uses, such as large-scale conversion to pulp wood and oil palm plantations.
- If the quality of residual stand management is to be improved, pre-harvest treatments and improved harvest techniques need greater attention, rather than the current set of post-harvest planning and damage control activities. Improvements include longer-term management and planning beyond annual work plans, improved infrastructure, 100% cruising identification of trees, and lower impact logging. There is also a greater need for more creative development of rapid assessment of key ecological, economic and social indicators of good management, and for devising a reporting and evaluation procedure that rewards outcomes rather than only compliance with prescriptions.

### ***Conservation Area Management***

- Effective management of national parks and other conservation areas must be adaptive to on-going ecological and socio-economic change. Indonesia has experienced rapid economic development and, more recently, dramatic economic, social and political upheavals, with serious consequences for natural resources utilization. There is no blueprint for long-term natural resources management that can be applied to all conservation areas. Management planning should focus less on writing plans that adhere to strict central government mandated guidelines. Rather, the emphasis should be on local-level human resources development for decentralized planning and management.
- Managing national parks is about managing and empowering people. The NRMP experience demonstrates the need to recognize the many stakeholders associated with a national park and to develop a multi-stakeholder planning process that actively and equitably involves them in decision-making. The stakeholders represent a park's community, comprised of diverse groups often with competing interests.
- Participation in national park management is an important but vague concept. The NRMP experience achieved a consultative level of participation, which proved acceptable only for basic information gathering. For effective resources management, a much greater degree of participation, based on the reciprocity of rights and responsibilities, is required.
- Current national park management in Indonesia is weak. The stakeholder role of PHPA as participant in park planning was not as significant as it should have been. This is not entirely due to inadequate funding but rather to inadequate allocation of existing resources constrained by current organizational and institutional structures. These central allocations and mandates restrict innovative and appropriate local-level planning and implementation.

## ***Institutional Strengthening and Innovation***

- Institutional strengthening requires wide support to fill institutional capacity gaps, including redefinition of existing institutions and processes to support multi-stakeholder involvement. There is little theoretical or experiential evidence to demonstrate that current institutions, which were designed to support economic growth based on natural resources exploitation, will support sustainable development. Sustainable development requires new skills, innovative approaches, and support for institutional restructuring.
- If counterparts and project stakeholders are to be provided with the skills necessary to implement project innovations, access to training must be more flexible. Increasing the provision of informal training, such as applied research programs and study tours, was a successful NRMP activity.
- Competitive resource allocation processes, using transparent decision-making criteria, provide a cost-effective means to encourage wider participation in applied research.

## ***Structure of this Book***

The readers targeted by this book include policy makers at all levels, potential bilateral, multilateral and private donors for natural resources management projects, and academics. Many readers will look to the detailed technical analysis of policy reforms and the associated recommendations intended to improve resources management outcomes. NRMP produced many of these analyses, which may be found in a large collection of project documentation known as the "blue cover reports". **Annex A** describes the NRMP database and how to access it, and **Annex B** presents a list of the NRMP reports. In this book, the major lessons learned are developed with supporting details from field experience. The focus of the book is on processes; how to go about fixing problems associated with inadequate resources management input. How to design improved project interventions and identify critical aspects to achieve better outcomes forms the basis of the major lessons learned from the NRMP experience. This book is organized into five chapters:

*Chapter One: Enabling Policies for Sustainable Resources Management.* Chapter One provides an overview of macro-economic policy experiences, highlighting the need for project designers to better understand policy processes in the Indonesian context, and the roles and opportunities that donors create for policy interventions. The chapter presents NRMP's experience in addressing economy-wide policy issues. In particular, the incentives for industrialization and deregulation priorities are discussed in terms of how incentives can support sustainable resources management. Lessons learned from identifying and encouraging natural resources management policy reforms pertain to i) policies for sustainable development and ii) policy development players and their roles.

*Chapter Two: Sustainable Natural Forest Management.* Chapter Two reviews the forestry sector experience and the lessons learned from a wide range of often diverse NRMP interventions. The economic importance of Indonesia's natural forests and institutional and ecosystem management issues are reviewed. Lessons learned are considered, primarily through field experience from West Kalimantan, by reviewing three fundamental and inter-linked recommended policy reform themes: i) simplifying institutional requirements, ii) reducing natural forest undervaluation, and iii) reducing uncertainties of resource allocation rights.

*Chapter Three: Conservation Area Management:* Chapter Three focuses on NRMP field site experiences at Bunaken National Park in North Sulawesi and Bukit Baka-Bukit Raya National Park within West and Central Kalimantan. With regard to undertaking national park management planning, emphasis in this chapter is on the need for more accurate identification of stakeholders, more effective local community consultative processes for planning and implementation, and enabling more positive impacts on biodiversity conservation goals. Lessons learned for conservation area management focus on i) national park management planning constraints, ii) park management and regional development planning, iii) financing effective conservation management, and iv) institutional reform for conservation management.

*Chapter Four: Institutional Strengthening and Innovation:* Chapter Four reviews institutional strengthening and the importance of linking institutional capacity to management objectives. One of the consistent constraints identified in many projects in Indonesia is that of inadequate human resources capacities and weaknesses of the institutions within which they operate. Institutional and human resources development for sustainable resources management initiatives are discussed as lessons learned. In particular, lessons learned during the provision of alternative international training options contributed significantly to increasing the ability of counterparts to implement management innovations. New institutional initiatives to support policy innovations and the professional development of young policy analysts are described.

*Chapter Five: Conclusions and Recommendations:* Chapter Five summarizes the main lessons learned from the previous four chapters, and reviews the unfinished tasks and conclusions for natural resources management in Indonesia. The chapter draws together the critical issues raised throughout this volume into a set of recommendations. Most importantly, these refer to process-oriented changes and not to direct interventions at the field level. One issue is the need to link industrialization with natural resources management, in terms of increasing the value of resources within the country's economy rather than continually increasing extraction and export of raw, unprocessed resources. Mechanisms that encourage multi-stakeholder processes are essential as a means to provide more effective local involvement in natural resources management. Such processes will require greater decentralization of authority and increased power sharing. The chapter concludes that fundamental economic reforms for deregulation and decentralization could provide a "win-win scenario" for sustainable natural resources management in Indonesia.



## List of Acronyms and Abbreviations

AAC	:	Annual Allowable Cut ( <i>Jatah Tebang Tahunan</i> )
APBN	:	Planned/Actual National Budget ( <i>Anggaran Pendapatan dan Belanja Negara</i> )
APKINDO	:	Indonesian Wood Panel Association ( <i>Asosiasi Panel Kayu Indonesia</i> )
ARD	:	Associates in Rural Development
BAPPEDA	:	Agency for Regional Development ( <i>Badan Perencana Pembangunan Daerah</i> )
BAPPENAS	:	National Planning Agency ( <i>Badan Perencana Pembangunan Nasional</i> )
BKSDA	:	Regional Office of Natural Resources Conservation ( <i>Balai Konservasi Sumber Daya Alam</i> )
CAS	:	Competitive Awards Scheme
CGIF	:	Consultative Group for Indonesian Forestry
Dana Reboisasi (DR)	:	Reforestation Fee
Dinas Kehutanan	:	Provincial Forestry Office
DJPH	:	Directorate General of Forest Utilization, MoFr ( <i>Direktorat Jendral Pengusahaan Hutan, Departemen Kehutanan</i> )
GBHN	:	Broad Outlines of State Policy (updated every five years) ( <i>Garis Besar Haluan Negara</i> )
GDP	:	Gross Domestic Products
GNP	:	Gross National Products
GOI	:	Government of Indonesia
GPA	:	Grade Point Average ( <i>Indeks Prestasi</i> )
HPH	:	Forest Concession ( <i>Hak Pengusahaan Hutan</i> )
HTI	:	Industrial Timber Estate ( <i>Hutan Tanaman Industri</i> )
IBF	:	Indonesian Biodiversity Foundation ( <i>Yayasan Keanekaragaman Hayati / KEHATI</i> )
IEF	:	International Education Foundation
IHH	:	Forest Products Contribution Fee ( <i>Iuran Hasil Hutan</i> )
IRSA	:	Indonesian Regional Science Association
IUCN	:	International Union for Conservation of Nature
KALBAR	:	West Kalimantan ( <i>Kalimantan Barat</i> )
Kanwil	:	Regional Office ( <i>Kantor Wilayah</i> )
KEHATI	:	Yayasan Keanekaragaman Hayati
KELOLA	:	Natural Resources Management Group ( <i>Kelompok Pengelolaan Sumber Daya Alam</i> )
Keppres	:	Presidential Decrees ( <i>Keputusan Presiden</i> )
KPHP	:	Production Forest Utilization Unit ( <i>Kesatuan Pengusahaan Hutan Produksi</i> )
LHP	:	Production Yield Summary Report ( <i>Laporan Hasil Produksi</i> )
Litbang	:	Research and Development Agency ( <i>Badan Penelitian dan Pengembangan</i> )
LSM	:	Lembaga Swadaya Masyarakat (Indonesian NGO)

MoFr	:	Minsitry of Forestry ( <i>Departemen Kehutanan</i> )
NGO	:	Non-Government Organization ( <i>Lembaga Swadaya Masyarakat</i> )
NRM	:	Natural Resources Management Program
NRMP	:	Natural Resources Management Project ( <i>Proyek Pengelolaan Sumber Daya Alam</i> )
PCC	:	Project Coordinating Committee
PHPA	:	Directorate General of Forest Protection and Nature Conservation, MoFr ( <i>Direktorat Jenderal Perlindungan Hutan dan Pelestarian Alam</i> )
PMDH	:	Forest Community Development Program ( <i>Pembinaan Masyarakat Desa Hutan</i> )
PRA	:	Participatory Rural Appraisal
PWG	:	Policy Working Group
RDPU	:	Regional Development Planning Unit
RKL	:	Five Year Planning Guidelines ( <i>Rencana Pengusahaan Hutan Lima Tahun</i> )
RKPH	:	Long-term Planning Guidelines ( <i>Rencana Karya Pengusahaan Hutan</i> )
RKT	:	One-year Planning Guideline ( <i>Rencana Pengusahaan Hutan Tahunan</i> )
SALT	:	Sloping Agricultural Land Techniques ( <i>Teknik Pertanian Lahan Miring</i> )
SBKSDA	:	Provincial Sub-Office of Natural Resource Conservation ( <i>Sub-Balai Konservasi Sumber Daya Alam</i> )
SFM	:	Sustainable Forest Management ( <i>Pengelolaan Hutan yang Berkelanjutan</i> )
TPI	:	Independent Evaluation Team (Tim Penilai Independen)
TPP	:	Selection and Implementation Team (Tim Pelaksana dan Penyeleksi)
TPTI	:	Indonesian Selective Cutting and Planting System ( <i>Tebang Pilih Tanam Indonesia, or Tebang dan Penanaman Terbatas Indonesia</i> )
Tim Kajian/Tim Kecil	:	Task Force
UPT	:	Technical Implementation Unit ( <i>Unit Pelaksanaan Teknis</i> )
USAID	:	United States Agency for International Development

# 1. Enabling Policies for Sustainable Resources Management

## 1.1 Overview

Chapter One provides an overview of macro-economic policy experiences, highlighting the need for project designers to better understand policy processes in the Indonesian context, and the roles and opportunities that donors create for policy interventions. The chapter presents NRMP's experience in addressing economy-wide policy issues. Incentives for industrialization and deregulation priorities are discussed in terms of how incentives can support sustainable resources management. Lessons learned from identifying and encouraging natural resources management policy reforms pertain to i) policies for sustainable development and ii) policy development players and their roles.

Policy development is identified as the underlying cause for many of the outcomes donors seek to address in environmental and natural resources management projects. This chapter describes NRMP experiences assisting the Government of Indonesia (GOI) with natural resources policy development. Lessons learned from these experiences suggest that focusing on roles of participants in the policy process and their expected outcomes would result in stronger project design. As Indonesia moves from a singular focus on economic growth to more balanced sustainable development objectives, a wider range of policy tools will be required by the policy process participants.

NRMP policy initiatives focused on developing more appropriate links between economy and environment to ensure greater attention is paid to the range of natural resources and ecological services utilized by society. First, the role of policy in sustainable natural resources management is discussed; why existing policies need to be modified toward sustainable development objectives. NRMP policy studies are used to highlight some required changes and to indicate how policy interventions contributed to pursuit of the project's goals.

NRMP experience illustrated the need for greater recognition of both the policy process and the roles of participants within the process, both of which need to be properly perceived during project design. Failure to do so limits the extent to which donor objectives will be achieved. An explanation of why certain NRMP outcomes occurred provides insight into how certain pitfalls may be addressed in future project interventions. A fundamental conclusion is that wider involvement in policy is a prerequisite to successful long-term natural resources management.

## 1.2 Sustainable Development Policy Issues

This section aims to set the scene by providing the theoretical underpinning of critical concepts developed later in the book. These concepts hinge largely upon the notion of participation in natural resources management and the need to see beyond the consultation mechanism

currently employed to more empowered multi-stakeholder processes. Such a broadening of how participation is viewed is the challenge for natural resources management in Indonesia.

Several critical concepts which NRMP found to underpin the process of achieving sustainable development pertained to linkages between regional economic development and the environment, including the concepts of industrialization and capital appropriation, and linkages between sustainable resources management and development. These concepts are raised in the context of a society that needs to make decisions on resource allocation. Mechanisms to do so are discussed, including concepts of participation, multi-stakeholder processes, community or local control of resources management, and the use of policy in a behavior change framework.

Specific issues pertaining to sustainable development are:

- Sustainable development requires the application of technology to increase the value of each unit of resources, while growth requires the application of technology to increase the utilization rate of the resource itself. Industrialization is therefore an important contributor to achieving sustainable development.
- Sustainable development needs sustainable resources management. Sustainable resources management requires resources be linked to technology in a manner that increases the per unit value of resources and not simply the per unit utilization rate or extraction of resources.
- Resource allocation decisions are increasingly determined by market processes. However, determination of how much consumption to reduce now for the sake of future generations needs greater involvement than by a narrow set of market participants. Devolution and decentralization of decision-making responsibilities and multi-stakeholder participation are critical developments to achieve better policy outcomes,
- Community or local control and management of resources are poorly conceived by many proponents of such approaches. The science on these issues identifies a narrow set of circumstances where local control will apply, while increased access to technology and markets will improve the acceptability of these approaches.

### **1.2.1 The Role of Policy**

Policy is a fundamental part of everyday life. It influences the way people organize themselves and behave by guiding and directing socially acceptable behaviors. Policy also influences decisions people make that affect their use of and impact on natural resources. In effect, policy determines who benefits from resources and who does not. Policies are created and implemented to influence human behaviors. A number of alternative means to change behavior exist (e.g., economic incentives and disincentives, social pressures, education, information). Successful policies use the whole spectrum of behavioral change techniques.

The Government of Indonesia's policy objective of high economic growth and equity within a sustainable development pathway requires both efficient and equitable behavioral outcomes. In Indonesia, emerging markets and economics play a large role in current policy development

from their ability to derive efficient outcomes. However, sustainable resources management requires more than simply efficient outcomes, it requires equitable outcomes within and between generations.

The role of policy is to deliver efficient and equitable outcomes by changing inappropriate behaviors to more supportive responses. Policy analysts will need to acquire an understanding of human behavior if they are to influence the direction of future behavior change. Even the continuation of market-based policy initiatives will ultimately require an increased understanding of the underlying determinants of existing and alternative behaviors.

While market-based approaches involve less specification of what economic actors should or should not do, they do require knowledge of behavioral determinants. In this sense, market approaches, or economic instruments, require far greater levels of information than do regulatory approaches. An understanding of social norms, incentives and disincentives that influence behaviors are fundamental inputs to successful and equitable policy.

Regulatory approaches specify their objectives and effectively force economic actors to deliver a specified outcome. These approaches require decision-makers to select not only appropriate outcomes but also appropriate means for achieving those outcomes. In this sense, command and control techniques can provide greater regional flexibility than market-based approaches. Effective market-based techniques are applied universally; they apply across the board to all economic sectors in all regions. However, markets provide a lower cost policy management option and reduce the need for monitoring and enforcement. Markets also reduce reliance on bureaucrats to select interventions on behalf of the rest of society by specifying who and what should occur.

Within the Indonesian economy, natural resource sectors contributed as much as eighty percent of export growth earnings during the mid-1980's. Economic growth continued at internationally high levels (e.g., in excess of seven percent in 1996), with about two-thirds of export growth derived from natural resource sectors. Labor intensive sectors contributed the least to export growth during the 1990's (James 1996). While economic benefits have flowed to Indonesia, there remain persistent inequities between those who benefit from growth and those who do not. The Article 34 constitutional requirement that the resources of Indonesia be used for the benefit of all Indonesians has to a limited extent occurred. However, the limited growth in labor intensive sectors and the likelihood of natural resources scarcity raises questions about future sustainability of past economic performance.

An economy is effectively a transformation process. Using different combinations of labor with resources, the economy produces a range of goods and services. Countries produce goods and services using available ingredients, technology, and management skills. Producing these goods and services in an internationally competitive manner is what underpins the notion of comparative advantage.

Due to the complex nature of the problems confronting society, policy development and reform is not a simple or straightforward task. While the product of policy development takes the form of clear and concise statements of what should occur and how this should be implemented, the policy development process itself is often confusing and poorly understood. In the next sections, the role of policy in economic development and sustainable natural resources management is discussed.

## 1.2.2 Human and Natural Resources

Not all resources are the same. For example, the economy involves a combination of human capital or labor with natural capital and man-made capital for production of goods and services. Here, natural capital refers not only to resources but also the processes and functions linked to ecosystems that provide essential life support systems. Man-made capital is the technology and manufactured input for economic transformations. For example, more sophisticated, industrialized economies combine increased proportions of technology, infrastructure and natural resources to increase labor efficiency.

There is an almost limitless range of choices for the economy in terms of applying relative quantities and types of resources and labor. It is from these choices that policy makers must choose if they are to meet both constitutional requirements and the GOI objectives on how to use natural resources in a sustainable manner, while generating high levels of economic growth. Simply having a large set of choices creates a number of public policy issues. These include the extent to which a natural resources dependent economy can continue to support a population that has grown from 60 million to more than 200 million since 1930, and to do so without destroying the ecological processes and functions associated with these resources. How the value of each unit of resource-use can be optimized to provide the greatest benefit to current and future generations are two readily apparent issues to be addressed. Other issues include the nature of trade-offs that occur between economic growth objectives and allocation of different proportions of renewable and non-renewable resources, or between natural resources and man-made resources, as inputs to the economy.

The nature of these trade-offs illustrates the dynamic nature of labor supply in the context of the existing Indonesian economy. The workforce, or stock of human capital, to be employed by the economy increases with population growth. The size of the Indonesian workforce was estimated to be 80 million in 1990, and has been predicted to increase to 128 million by the year 2020. Faced with a rapid increase in the workforce and a fixed supply of natural resources, Indonesia's natural resources-based economy will eventually become constrained as the amount of available natural resources becomes scarce. This constraint derives from the decreasing availability of natural resources per capita from which to generate an increasingly higher level of welfare and income.

Sustainable development in the context of increasing population requires efficient use of resources to capture maximum value of each unit of resource consumed. Given the non-renewable nature of many resources and inadequate renewal of renewable resources (e.g., from forestry), continued development based primarily on natural resources may not be feasible for improving the welfare of Indonesia's society. Increased welfare gains may not be available to policy-makers. Under a scenario of rapid exploitation, exhaustion of many natural resources will occur, perhaps even during the lifetime of the current generation of policy-makers.

To mitigate potential resources scarcity, increased substitution of man-made capital for natural resources will be necessary. Under these conditions, instead of exporting logs, oil, and minerals, the economy should aim to add value by combining these raw materials with labor and man-made capital. From this scenario, each unit of output contains a lower level of natural resources input. The increased application of labor and man-made capital to natural resources is the process of industrialization. Movement to an industrialized economy brings with it new

challenges. These include new impacts on ecological functions from creation of non-natural wastes and pollutants. These new environmental impacts will be associated with rapidly increasing population densities that threaten the assimilative capacities of the environment.

### **1.2.3 Industrialization**

Human economies transform natural resources into food and materials using labor and man-made or manufactured capital (e.g., machines, tools, factories, transportation infrastructure). Developing countries, such as Indonesia, rely heavily on natural resources exploitation to increase general standards of living, more so than the developed nations with greater stocks of man-made capital. However, developing countries rely heavily on the natural resources exploitation and raw imports from less developed, resources-rich countries. Higher availability of man-made capital enables increased levels of substitution between natural and manufactured capital leading towards industrialization. Industrialization thus provides a different pathway for an economy to absorb labor and produce economic growth that is less dependent on exports of raw natural resources. In effect, industrialization provides a means to increase the benefits of growth and to improve equity and sustainability. The degree of efficiency determines the scale of benefits industrial programs can achieve.

The incentive to industrialize an economy occurs when society faces scarcity of natural resources. The scarcity of exploitable resources limits growth potential and places associated development targets at risk. The combination of a fixed supply of natural resources with a rapidly growing workforce requires an economy, previously dominated by agricultural production, to diversify and thus provide more employment opportunities. Without diversification, economic growth and improvements to income distribution will not occur. A sustainable growth pathway in an economy with a rapidly expanding population and a fixed supply of natural resources necessitates a smaller unit of natural resources per unit of output to maintain economic growth. With increasing resources scarcity, productive activities need to combine labor resources with capital and technology rather than with land and natural resources to achieve these growth targets.

The reproducible nature of man-made capital enables an almost limitless supply of man-made capital. Therefore, while economies dependent on natural resources can run out of investment capital, industrial-based economies are less constrained and allow development to continue. Additional benefits arise from the use of man-made capital, providing a far more flexible mix of input combinations of labor and capital. Within an industrial economy, levels of productivity per unit of labor can be increased more than within a natural resources-dependent economy. The addition of too many units of land and natural resources to a unit of labor will result in declining labor productivity and incomes.

Economic development and growth are still dependent on utilization of the natural resources capital base for development of manufactured capital, goods and services. Whereas land is fixed and natural resources are costly to transport, machines and technology are often highly portable. The portability of technology makes them a highly tradable commodity, enabling them to be imported in early stages of development. This would be followed by a period of local production once skills and capacity are developed. Within a developing economy, man-made capital is movable to new frontiers when and if comparative advantages exist in such locations.

It is these two attributes of manufactured capital, reproducibility and trade-ability, which provide policy-makers with an alternative, more sustainable economic development pathway.

Indonesia, after more than thirty years under the New Order government, still retains a natural resources intensive economy. The ability to maintain high economic performance for such a long period is partly due to the scale of natural resources endowment. This abundance of natural resources has enabled Indonesia to delay industrialization decisions longer than most countries (NRMP Report No. 54). Concerns about Indonesia's future economic performance derive from its reliance on the oil and gas, and forestry (e.g., plywood) sectors. These sectors will contribute significantly less to export growth within the existing long-term planning period. Based on present estimates, Indonesia's production and consumption of oil will equate 1200 million barrels a day by the year 2007 (MacKenzie 1997). Such forecasts need to be considered within the current set of technology or man-made capital, as Caltex, for example, has noted further investment in new extraction technology would maintain supply above demand until the year 2015 by exploiting 50 percent of known reserves, compared with an estimated 25 percent using existing technology. This is, however, no reason to delay industrialization as the respite is only temporary at best. However, signs of pressure already exist in the non-oil and gas sectors, with export growth falling from 15 percent in 1995 to 4.3 percent in the second half of 1996.

Two strategies exist for industrializing the economy: i) import-substitution, whereby industrial growth creates an expansion of domestically produced goods to replace imports of similar items; and ii) export-oriented industrial growth that creates an expansion of goods destined for export markets. Although similar objectives exist for both strategies, the policy instruments applied are markedly different under the two strategies.

The industrialization strategy of import-substitution employs policies and devices that artificially raise the level of profitability of industries targeted for rapid expansion. Most of these policy devices are instruments of trade policy. Typical examples include tariffs, import bans on certain commodities, quotas, import licensing, and export bans on raw materials. All these interventions widen profit margins for domestic producers, protecting them from price-competitive foreign producers. The artificially induced high levels of profitability in the target industries cause investable resources to flow from non-protected productive activities into protected industries. Part of the cost to society for protecting target industries is the output that is foregone when non-protected productive activities shrink as a result of these resource flows. Thus, an import-substitution industrialization policy regime distorts the pattern of resource allocation in such a way that resources may, in fact, flow into activities in which the country does not naturally have a competitive edge.

In addition to distorted resource use patterns, industrial expansion based on artificially high levels of profitability has two disadvantages. First, because of the high profit margins they enjoy, producers in protected industries do not have any incentive to use society's scarce resources efficiently. This typically results in low levels of efficiency in the protected industries, which, in turn, result in the target-industry producers being unable to compete with foreign producers in international markets. Because of this, goods and services produced by these selected industries can usually only be sold in the domestic market. Import-substitution industrialization is thus often referred to as an "inward-looking" development and industrialization strategy. The second disadvantage of import-substitution industrialization is that the goods produced by protected industries are not competitive in world markets, and when the home-country market becomes saturated, economic growth will slow and may cease altogether. Thus, the growth stimulated by import-substitution industrialization is not sustainable in the long run.

In contrast, the more outward looking, export-oriented growth and industrialization strategy relies more on market forces to determine the flow of resources into and out of economic activities and sectors. While distortions of resource incentives do occur under an export-oriented development and industrialization approach, the reliance on exports implies competition with foreign producers in world markets, and hence a stronger incentive for producers to be economically efficient. Because the limits of the world market, in contrast to the domestic market, are not so restricted, a slowdown in expansion of export-oriented industries due to saturation of markets is highly unlikely.

Two conditions determine the extent to which protection represents a problem for sustainable resources management. First is the level of protection for natural resource sectors. Second is the relative or disproportionate protection among natural resource sectors, semi-finished goods sectors, and finished goods sectors incorporating higher value-added levels. Ideally, an economy supportive of sustainable resources management would provide value-added incentives, which would encourage further industrialization of the economy for the export and domestic markets.

Urban societies appropriate capital from other regions to support current consumption levels especially within urban settings. As population levels increase, predominantly in urban settings, and consumption per capita increases with economic development, can current trends in resources appropriation continue and still provide sufficient services for future generations? Who in society appropriates what resources, and what are the social equity issues of consuming resources at a non-sustainable rate? These are the real regional development and resources management challenges that remain outstanding for sustainable development and resources management. The appropriation of capital between regions occurs within Indonesia, with the natural resources-rich provinces outside Java, i.e. the "Outer Islands", supplying increasing amounts of raw materials to the more industrialized economy on Java.

One regional development challenge facing Indonesia is its ability to promote and create greater industrialization in the Outer Islands. These regions have continued to provide the natural resources to fuel Java's industrialization and ability to earn much needed export income. The level of capital appropriation is an inadequately addressed planning issue within regional development planning and policy formulation.

#### **1.2.4 Multi-stakeholder Participation**

Involvement of the public, local communities, or "stakeholders" in decision-making is called participation. Since the 1960's, methods for involving the public in decision-making, especially in environmental and natural resource fields, have continued to evolve. Unfortunately, the concept of public participation is frequently misused and underlying processes are poorly understood. As a result, anything that involves consultation with the public has come to be referred to as public participation.

However, effective participation is rare. The following sections describe what effective participation requires and how this may be developed. A first attempt to understand public participation in decision-making was summarized by Arnstein (1969) who raised the question, "What is citizen participation and what is its relationship to the social imperatives of our time?" These two questions remain relevant to the challenges of public involvement facing Indonesia's

natural resources and conservation management sectors. Arnstein recognized that a typical response to the public participation definition is "self-help" or "citizen involvement", which is reflective of the loose manner in which the concept has often been applied. Arnstein stated that the critical problem "is simply that citizen participation is a categorical term for citizen power. It is the redistribution of power that enables the have-not citizens, presently excluded from the political and economic processes, to be deliberately included in the future. It is the strategy that the have-nots use to join in determining how information is shared, goals and policies are set, tax resources are allocated, programs are operated, and benefits, like contracts and patronage, are parcelled out. In short, it is the means by which they can induce significant social reform, which enables them to share in the benefits of the affluent society".

The implication here is that real or full participation is linked to authority and power redistribution. Other observers have subsequently presented the categorical nature of participation as a continuum ranging from limited consultation to self-empowerment (Donaldson 1994). Greater understanding of the continuum will help overcome the vagueness and ambiguity attached to the concept of public participation. There are several distinctive types of involvement, which fall under the umbrella of participation. These types are not interchangeable and they neither use, require, or generate the same data sets, power relationships, participants and decisions, nor do they require the same process or skills. Effective participation requires appropriate design, human and financial resources, and authority.

At low levels of involvement, the public does not share in responsibility or ownership of a project because the need for the project and its design were not determined by them. Ongoing project implementation may also be totally out of their control. Several stages of public involvement in project decision-making have been identified by Donaldson (1994). The first three stages are typically adversarial and require lengthy periods to reach consensus outcomes.

*Stage 1. Public Information and Education:* Decisions have already been made. The public information and education process can be considered a notification process that neither seeks nor requires feedback from the public.

*Stage 2. Public Information Feedback / Public Comment:* A decision is made and comments are requested.

*Stage 3. Public Consultation:* The public is notified of a proposal and asked for comments. The consultation process is confrontational by nature (e.g., proponents versus objectors). The public do not share responsibility or ownership of the project, and there is often little incentive for the public to seek creative or alternative solutions.

*Stage 4. Joint Planning (Multi-stakeholder):* The level of public involvement increases and is more inclusive, recognizing the rights of all interested and affected parties. The benefit of multi-stakeholder processes is increasing accessibility to information and decision-making, and promoting consensus and conflict avoidance. Multi-stakeholder process is an educational process of informed decision-making to facilitate development of long-term beneficial relationships among stakeholders. Most proponents of this approach believe they are conducting multi-stakeholder participation when they are, in fact, only carrying out Stage 2 and 3 consultative processes.

*Stage 5. Delegated Authority:* Delegation of decision-making authority and the right to implement decisions is a natural progression from multi-stakeholder processes. Ultimately, delegated authority has immense potential, but requires true and ongoing partnerships based

on trust, cooperation, and responsibility. Stage 5 is inextricably linked to the rights of participants and thus the possession of power and authority for local decision-making.

*Stage 6. Self-Determination:* In public participation terms, self-determination is the equivalent of true community-based planning and project implementation, ostensibly free from political influence or outside determination.

An important lesson to be learned from this process is that not all systems of participation are the same. Consequently, this requires proponents of participation to be very specific about what will be required of participants. The correct process for participation is situation and context specific; there is no one right or wrong way for all situations. In some circumstances, participation approaches based exclusively on information gathering will be appropriate, while in other instances, multi-stakeholder processes may be required. To date, most public participation processes have been applied in the form of Stage 2 or 3 consultative participation, which in Arnstein's (1969) terms, only serves the purpose of tokenism, merely paying lip service to the requirement of participation. Poorly conceived participation often results in unnecessary conflict and confrontation.

Multi-stakeholder processes are a "... vehicle for involving ordinary people in the stewardship of natural resources, and for promoting attitude and behavior change in all sectors" (Donaldson 1994). A multi-sectoral approach to natural resources management requires a multi-stakeholder process within which to work. Without these processes, there is no mechanism for cultivating effective involvement and ownership of the issues.

In NRMP's work at Bunaken National Park (Chapter 3), for example, the public consultation process was inadequately conceived. Consequently, a Stage 3 consultation scenario occurred. The Bunaken *Forum Koordinasi* of local stakeholders was formed but had limited or no decision-making power. As a result, it failed to develop into a sustained and functioning body. In contrast, the Partners' Consortium Forum (*Forum Kemitraan*) for Gudung Gede-Pangrango National Park near Jakarta had the authority to set goals and make real decisions, and thus appears to continue to function effectively (Wahyudi 1996).

Although most donors require participatory processes as part of their project designs, there have been no clear examples of management plans in Indonesia that were formulated to provide the necessary skills to implement these processes by conservation organizations. Some management plans have, however, addressed the importance of this issue by setting the preliminary design stage for a second-phase management plan revision to be made during implementation with local stakeholders. However, multi-stakeholder processes will require management and understanding of a wider range of issues and skills than is currently utilized by most proponents of public consultation. These skills include:

- An understanding of the process of group formation among stakeholders and group dynamics to avoid collapse of groups as they struggle to define their purpose
- An extraordinary level of communication skills, including non-verbal communication and active listening skills
- Knowledge of how to use information to alleviate frustration that can arise from dealing with complex issues

- Knowledge of how to avoid the “seven deadly sins” of “ignorance, control, fear of failure, comparison, attachment, neutrality, and rights/equality” (Donaldson 1994).

Multiple stakeholder processes require that the process be locally empowered. That is, the process must have the power to access information and resources to make decisions that will be enacted and respected by all stakeholders, including the bureaucracies at all levels. Most importantly, if multi-stakeholder processes are to positively contribute to improved outcomes, a change to underlying power relationships is required. The nature of this change is fundamental to decentralization, which requires power sharing among different levels of government agencies and between these agencies and non-government stakeholders, including the local communities of villagers who are most affected.

In this sense, multiple stakeholder processes are implicit within decentralization initiatives, which aim to place decision-making at the level where information is available and stakeholders have a direct interest in outcomes. These processes require "a willingness of the decision-makers to change their existing actions and ways of thinking. Decentralization does not only press for its own implementation, but also represents a requirement for de-bureaucratization and deregulation" (Amal and Nasikun 1989). The concept of power sharing provides the necessary rights to proceed with the process, but also carries with it the requirement of accepting responsibility for decisions.

### **1.2.5 Community-based Management**

Within nearly all resources management projects there has been a heavy emphasis on community-based management, where behavior change tools are applied through a community's existing social and organizational structures. Terms such as "traditional management", "community stewardship", and "community-based sustainability" prevail in project designs. The frequency with which these terms are used has resulted in the commonly held perception that this approach is a necessary condition for successful implementation of project initiatives. Yet, any review of projects turns up more failures than successes in community-based responses. This is partly due to i) inadequate integration of behavior change techniques to the situations encountered, and ii) a poor understanding of where and why community management responses would actually provide additional benefits.

Who is the community or group of stakeholders to which these participation processes refer? The definition of community is widely open to interpretation. The common use of the term refers to an administrative region or a geographic zone within which people co-ordinate their public administration. Communities may also be viewed as organizational arrangements that enable effective cooperation. While an administratively zoned system provides for interdependence on issues of governance, it does not represent the cooperative inter-relations that underpin most community activities (e.g., farming, fishing, hunting, religion, family structure).

Communities are the response to human survival through cooperation. Ultimately, communities are defined by the context of the discussion. One member of society will belong to many different but overlapping communities, but rarely, if ever, will these communities be equivalent to local administrative regions established for governance purposes. Communities are systems of reciprocity, such that "societies have progressed in so far as they themselves, their subgroups,

and lastly, the individuals in them, have succeeded in stabilizing relationships, giving, receiving, and finally, giving in return" (Mauss 1950).

When it comes to the "who" in community resources or protected areas management, the appropriate community is comprised of those who make decisions about resources or systems that need to be managed. They are not all the individuals who are collectively considered a community due to their residence in a village. They are those who deal with the issue at hand on a daily basis and share their experiences, difficulties and successes through co-ordinating their activities to achieve management objectives.

Thus, the "who" in participation is not defined totally by the term community, but rather by the term stakeholder. Stakeholders are those individuals, communities, and corporate entities who have a direct interest in the issues. Existing policy and legislation need to be modified to ensure a move away from "community participation" to "multi-stakeholder participation"; from planning systems involving consultation to management involving participation. When the terms "community participation" and "natural resources management" are used, one must question what is envisaged, in terms of where control will be located for decision-making and implementation.

Without public control over decision-making, public participation can only be consultation and nothing more. Movement towards decentralized decision-making and community-based management models raises the issue of focus and effectiveness. Here there is much to be learned from the public policy interventions into sustainable resources management. A common trap for policymakers is when "too much time is spent with easy, captive, young audiences instead of focusing on the individuals who are actively abusing the land" (Nowak 1992). For protected area managers, the risk of this trap is constant consultation and community-based participatory processes, while the question of "who is doing the damage and why" is not adequately addressed.

Quite often, stakeholders can be obstinate, unfriendly, and abusive to the proponents of projects. Their reluctance to participate in community meetings is understandable; community meetings often provide a social forum where inappropriate or illegal behaviors must be discussed. This environment can alienate and discourage the very participants targeted for attendance. The establishment of a less threatening setting to gain access to targeted audiences is necessary to develop local skills and tools to change behavior. Thus, managers and public policy-makers need to impartially target those people with the greatest need for behavior change, and not merely focus on those who have been cooperative in the past and regularly attended public meetings. An efficient community-based management plan is one that is targeted at different resource users who have been identified as having undesirable impacts on a resource or a park. There is no model, no blueprint, and no pilot project that can be applied universally to the range of issues that must be addressed in a site-specific natural resources or park management plan.

### **1.2.6 Changing Behaviors**

Indonesia is experiencing a rapid reduction of its natural resources base and of its biological diversity. Effective protection of biological diversity will require behavioral change. As the rate of change to the resources base increases so does the rate at which behavior modification

needs to occur. However, not only must behaviors change, but they must remain durable. Behavior change techniques are seen as fundamental tools of resources management.

The number of behavior change approaches available to resources management is vast. The important question is "what approach should be applied in a given situation and why?" Heinen (1996) listed several social attributes that determine success of community-based resources management behaviors; namely, i) societal scale, ii) social structure, iii) inter-relatedness of individuals, and iv) reciprocal relations among individuals.

Societal scale refers to population density, or simply the number of potential stakeholders interested in a particular resource. High population densities will increase the demand for short-term gains, and will require a higher degree of enforcement and negative incentives than will lower population densities. High population densities make resources scarce, effectively transforming a managed commons into an open access resources management regime. Cooperative systems, or community management regimes, are least likely to operate in these circumstances. Increasing populations lead to common resources management regimes moving closer to an open-access arrangement. For natural resources management, the process of how resources are allocated and on what scale become critical determinants of resultant behavior. Stern (1995) noted that resource-use behavior is a function of a perceived ability to control outcomes; with larger social groups, the extent to which individuals perceive that their actions can control the total impacts upon natural resources is very much reduced. Furthermore, traditional management systems, where they exist in Indonesia, are not likely to be robust enough to prevent overexploitation once market access and short-run gains are available.

Techniques for changing human behavior are numerous. Information techniques help people understand the nature of the problem they are facing, the behavior needed to resolve the problem, or the steps to carry out this behavior. The assumption is that once people know what to do and how to do it, they will simply go ahead and do it. Usually these mechanisms involve prompts, signs, detailed education programs, modeling, and visualization techniques.

Direct experience is a related type of behavioral change technique that uses stakeholder experience to develop information in a more intangible manner. The use of demonstration approaches or action projects, such as sloping agricultural land techniques, were applied at NRMP field sites (NRMP Report No. 49). Direct experience through demonstration approaches involves establishing field activities during which participants learn the impacts and results of their own decision-making. This opportunity to learn increases the knowledge upon which future decisions can be made.

However, informational approaches to behavior change have proved to be "notoriously untrustworthy" (de Young 1993), often due to declining reliability as novelty is lost. Thus, the largest problem has been the lack of durability or sustainability once initial behavior changes were achieved. Heinen (1996) concluded that education and information approaches to behavior change in and of themselves are likely to be ineffective. However, education may be a necessary precursor for all other techniques. Exceptions to this may occur when costs and benefits are very localized and all parties perceive the situation as urgent.

Material or economic incentives are typically recognized as the means by which rapid behavior change may be established. Material incentives are defined by the nature of held property rights; the rights to receive benefits and costs from resources-use are established in the property right. In practice, this is frequently adopted as an important contributing factor, yet very

little detail has been provided on the nature of rights necessary to achieve a desired behavioral response. Often in return for the right to capture the benefit stream, rights are attached to responsibilities which, if not respected, will attract material disincentives or penalties.

The concept of material incentives and disincentives may be easily understood but may not be the most appropriate solution for changing behavior in Indonesia. Two important characteristics lead to this conclusion. First, the cost of obtaining and protecting a right in Indonesia is likely to be extremely high at worst and uncertain at best. The reason for this uncertainty is due to the second characteristic, which is lack of duty or responsibility associated with many existing Indonesian rights. The concept of duty, in this case, refers to an individual's rights in which "one has the expectation that in both the law and in practice one's claim will be respected by those with a duty" (Bromley 1989). The cost of ensuring that the duty is adhered to may be very high, especially when the costs have to be borne solely by an individual right-holder and the defendant is either a large corporation, a number of other right-holders, or a politically connected individual. Rights become meaningless when the cost of enforcement exceeds the value of the right. Donors also appear to be unwilling to incorporate emphasis on enforcement in their investment project designs, even though enforcement has resulted in significant improvements in some cases (Pet and Djohanni 1996).

Material incentives have a significant weakness, primarily from their vulnerability to influences from external sources (e.g., the fluctuating market prices of fish, cloves, *ulin* - a type of hardwood used for roofing shingles, or seaweed). This vulnerability means that "resource-friendly behaviors" can easily be reversed through new incentives driven by changes in market prices. Most material incentives have not appeared to yield durable behavior change. Although there exist some examples where durable behavior change has occurred, they appear to be the exception to the rule (Wells 1997).

Social pressure and material disincentives may be just as reliable for changing human behaviors as are material incentives. Social pressure tends to be more significant for small groups or individuals than are material disincentives, which apply to a more universal target group. Material disincentives face other problems with respect to durability of change. Lack of durability is due to the dynamic nature of prices that can rapidly change. Material disincentives are often defined within slow legal processes such that many sanctions become irrelevant. As a result, large disincentives are often established to avoid the need to constantly revise them within the same legal processes. Large disincentives have been shown to create the opposite effect of increasing the desire for a forbidden alternative (Brehm and Brehm 1981).

## **1.3 Lessons Learned: Policies for Sustainable Development**

### **1.3.1 National Economic Development**

Economic policies have played a central role in Indonesia's institutional development. The New Order government pursued the main objective of economic growth in an attempt to alleviate poverty and secure Indonesia's economic future for development. Consequently, the existing institutional structure, of which policy is a part, was built around creating incentives for economic growth. The GOI's institutional development philosophy was based upon policies of maximizing export earnings from an abundant natural resources base, while providing incentives for import substitution to domestic producers. The protection provided to domestic producers, along with

stable but conservative macro-economic settings, enabled economic growth throughout the late 1970's and 1980's. Growth in export earnings relied on low value-added or raw materials because of low or negative levels of protection applied to the natural resource intensive sectors.

In spite of a rapidly declining natural resources base, economic development continues to rely heavily on the natural resources intensive sectors to provide the necessary export earnings for foreign exchange. Approximately sixty to seventy percent of Indonesia's economic growth has been derived from the oil and gas and forestry-based sectors. This raises questions about the long-term sustainability of current economic growth scenarios, while natural resources are expected to be severely depleted within the next fifteen to twenty years.

Given the finite nature of most natural resources, sustainable development will require greater application of man-made capital. In this way, current consumption of natural resources would be minimized and could allow future generations with consumption choices. Without higher proportions of man-made capital, the rate of natural resources utilization will exceed the rate of renewal, leading to exhaustion of the resources base. If resources are to be sustained for the needs of future generations, the Indonesian economy needs to change the focus of industrialization policy away from import substitution towards export growth (NRMP Report No. 26).

Past trade protection policies resulted in domestic prices deviating from international prices due to manipulation of profit margins and reduction in domestic competition by protection of selected domestic producers. In addition to loss of international price competitiveness, protection removed incentives to improve efficiency levels through innovation. Companies were able to capture higher profit margins simply due to their level of protection. Impacts of reduced competitiveness and innovation have resulted in less incentives to industrialize the economy for export markets. The incentive to industrialize has been limited to providing goods and services to the domestic market.

Following the introduction of protection, initial employment gains were made as companies grew to meet local demand. However, further growth in labor intensive manufacturing sectors was constrained by inability to compete on export markets with finished and, to a lesser extent, semi-finished goods. Current industrialization policy will need to move quickly towards promoting export growth if labor absorption goals are to be achieved in the face of a rapidly growing labor force (NRMP Report No.55). Sustainable development requires policies to shift away from import substitution towards export growth led by industrialization. Such a change in focus could provide adequate labor opportunities for the growing work force and ensure that economic growth is less constrained by the availability of natural resources.

### **1.3.2 Sustainable Natural Resources Management**

Sustainability of natural resources will require better integration of both economic and sectoral policies to ensure economic policies support the wider requirement of sustainable resources management as mandated by Indonesia's Constitution and the National Planning Guidelines (*Garis Besar Haluan Negara*, GBHN). Determining the appropriate economic policy setting will contribute in large part to the sustainable development portfolio required by Indonesia in the 21<sup>st</sup> century. The right setting will assist removal of many distortions associated with resource allocation and growth performance parameters. By removing existing distortions, increased

man-made capital would be combined with labor and natural resources, thus increasing the value of natural resources to the economy.

Expanding macro-economic policies to include sustainable resources management conditions is not a new concept (Young 1992). The prime macro-economic concern is creating an alignment between the optimum scale for both the economy and the natural resources capital base. For a developing country, the appropriate scale is difficult to achieve when the design of existing institutional arrangements aims to support economic growth. The rapidly increasing population and work force means there is also a strong political constituency supportive of unconstrained economic growth to improve living standards.

A major concern is the ability of institutions, created for the purpose of economic growth, to serve the needs of natural resources management and the environment. The option of using markets is not trusted because of increasing population levels and the number of unexpected ecological events resulting from human activity, some of which are irreversible. Markets serve self-interests and, as such, may not necessarily serve wider community interests. Markets are unlikely to provide for future generations or ensure equitable distribution of benefits and costs. Alternative processes and tools will be necessary to avoid the continuance of an economy exceeding the capacity of underlying ecological support systems.

New tools are needed to assist policy-makers and other citizens identify the impacts from increasing the scale of the economy while decreasing the scale of the natural environment. Central to these tools is the establishment of appropriate indicators or targets. For economic scale indicators, the United Nations, for example, have recommended the use of adjusted GDP data. The potential importance of using such adjustments can be seen with GDP declining from 7.1 percent in an unadjusted form to approximately 4.0 percent when adjusted for environmental impacts such as soil erosion, forest clearance and petroleum stock depletion.

The difficulty is knowing where to start and in what order to proceed for establishing a policy portfolio that aims to facilitate a sustainable development pathway. The development of economic and resources management targets has often been viewed as the important first step (NRMP Report No. 55, Young 1992). Long-term targets need to be established as part of the twenty-five year planning process and then broken down into five-year and annual targets for each province. Establishing targets requires identification of safe minimum standards for relevant indicators. Within a safe minimum standards approach, the market influence is constrained to ensure adequate consideration of uncertainty, irreversibility, and the needs of future generations. Safe minimum standards are regulatory, such as the current forest utilization system based on the "Indonesian Selective Cutting and Planting System" (*Tebang dan Penanaman Terbatas Indonesia*, TPTI). In effect, TPTI provides a safe minimum standard to protect an uncertain ecological threshold. Regulatory approaches have the added advantage of being simpler to introduce, especially when high levels of uncertainty exist.

Through establishing an independent Policy Secretariat, NRMP designers envisaged a group of policy analysts working on key resources management issues, providing independent policy advice through completion of third party contracts and project-funded initiatives. The expectation was that the Secretariat would be staffed by Indonesian analysts from NRMP's local counterpart institutions, supported with technical assistance funded by NRMP.

To institutionalize the Secretariat, NRMP proposed to develop and execute macro-economic and sectoral policy studies on behalf of project counterpart agencies, thereby promoting policy reform. Funding for the Secretariat's establishment was provided by NRMP, with additional

funds allocated for human resources development and dissemination of study results. The Secretariat was to work under the guidance of the Project Coordinating Committee (PCC) and the Project Working Group (PWG). Through a consultation process with the GOI, twelve topics were selected for policy studies, and an additional five topics arising from counterpart needs, otherwise known as “demand driven policy input”.

During NRMP's mid-term review, the issue of the policy studies' inadequate impact on policy change was apparent. Suggestions for improvement involved reducing the number of studies and hiring recent university graduates to work as assistant policy analysts on a project by project basis and to replace the official counterparts, who were never provided. In addition to their input for the study analyses, these graduates would also develop a policy network.

Following this recommendation, a range of policy studies were completed within broad subject areas, which provided input to the GOI counterparts and clients of NRMP policy work for improving policy outcomes. The expectation was that NRMP would undertake the analyses and dissemination of policy study results to clients and other stakeholders. These stakeholders would then champion the policy study findings and over time enact new policies. The following sections discuss some of the studies that were undertaken and some of the lessons learned from the experience.

### **1.3.3 Trade Policy and Deregulation**

During establishment of NRMP's policy agenda on macro-economic issues, the two major research themes requested and championed by the GOI were deregulation and labor absorption. These were subsequently expanded to include a long-term planning study to investigate linkages between the economy and environment. This section outlines NRMP's research findings on these three topics and includes a discussion of why these enabling policy studies failed to impact subsequent GOI policy orientation and formulation.

Trade policies comprise perhaps one of the most important determinants of incentives within economic development. Since the late 1980's, Indonesia has continued to deregulate as it attempts to unwind the impacts of import substitution policies and meet increasing free-trade requirements. Although Woo *et al.* (1994) reported progress in reductions to overall levels of protection, relative levels of protection between sectors determines which sectors will attract resources in response to artificially high profit margins. The relativity of protection is what determines whether deregulation will positively contribute to the GOI's sustainable development portfolio. Relative levels of protection determine attractiveness of goods from each sector within the international market. For sectors with low or negative levels of protection, the level of international competitiveness is higher; therefore, investment funds flow to these sectors to generate required export earnings. Within a sustainable resources management context, the ideal arrangement is a high degree of neutrality between sectors. An arrangement would result in investment funds flowing into the finished goods sectors such that smaller volumes of natural resources would be required for the same output value level.

Deregulation has occurred through selective reductions in nominal tariff rates. Non-tariff trade deregulation has been less prominent in changes to trade and economic policy. The extent that deregulation was intended to contribute towards sustainable development was, however, still unknown. Therefore, NRMP counterparts recommended research to determine if cascading

protection levels were still providing incentives for export of raw materials and if increased incentives to industrialize the economy were still being provided.

Indonesia's trade policy deregulation became a series of NRMP studies, where each subsequent study attempted to build on the findings of the previous studies. One study focused on changes to nominal rates of protection to determine how changes in Indonesia's system of tariff protection impacted the natural resources base over the past twenty years (NRMP Report No. 26). This study also predicted the natural resources management implications of alternative tariff protection scenarios over the period of the second long-term development plan. The study findings showed what direction of change is required within the deregulation process to better link policy with planning objectives.

Indonesian research graduates assisted with this study by estimating both nominal and effective levels of protection within the Indonesian economy. Levels of nominal tariff rates and effective rates of protection from 1981 to 1993 indicated significant change to the levels of provided incentives. The tradable sectors experienced declines in the level of nominal protection from an average of 22% to 13%, with effective protection reductions from 29% to 15%. Most importantly, the effective rate of protection for manufacturing declined from 101% in 1981 to 44% in 1993. This compares with 41% and 19% for the primary sectors and 7% and 8% for the mining sectors over the same time period.

While these declines are significant, it is the relativity of protection that is most important. During the period of deregulation, dispersion within nominal tariff rates was "cascaded", in the sense that goods derived from the finished tradable goods sector received higher levels of protection than goods derived from the semi-finished and raw material tradable goods sectors. For example, textiles and footwear had tariff rates of approximately 24% in 1991, mining 0.92% and petroleum negative 45%. By 1993, levels of offered protection still retained strong incentives to export raw materials rather than value-added manufactured goods.

Effective protection levels also reflected a high cascading effect with a definite bias against the export of manufactured goods. The cascading nature of protection indicated that Indonesia's trade protection policy in 1993 was still inconsistent with the GOI's stated goals of economic development, its objectives for economic development planning, and the constitutional requirements for sustainable development.

Effective protection levels influence the incentive structure, which drives resource flows into and out of sectors, and thereby have an impact on the use and management of natural resources, including forests. Both the nominal and effective rates of protection for sectors in the Indonesian economy in 1991 showed a bias towards higher protection for manufactured *versus* agricultural sectors, and for import-competing *versus* export-competing sectors.

The NRMP study found that protection was still highly cascaded from the finished to raw material sectors. For example, within the forestry and wood-based sectors, there was a bias towards higher protection of more processed goods. Wood and other forest products received negative effective protection, whereas the manufactured wood products received significantly high levels of effective protection, in some cases nearly 100%. Among the manufactured wood products, the source of high effective protection differs. For plywood, which was not protected by nominal tariffs (1.1%), the source was the subsidy received on wood inputs that arose from the export ban on logs and restrictions that necessitated concessionaires to have access to downstream log processors. For other manufactured wood products, the high level of effective protection arose from the high tariff on their outputs.

The different sources of high protection have resulted in an inordinate amount of wood resources channeled into plywood manufacturing, with no accounting for the different values of various wood species. Surprisingly, even the high-quality woods (e.g., teak, ebony, mahogany) were being used to manufacture plywood. At the same time, other wood-using sectors must compete in the "open" market for which the price of wood is believed to be much higher than that paid by the plywood manufacturers. Because of the protection on their output (as well as the higher prices paid for logs as compared to plywood), producers in these markets have no incentive to produce for the export market. They receive a higher price due to protection in the domestic market, and thus face no incentive to be as efficient as possible. In the long-term, this will make them uncompetitive in international markets.

### *Lesson One: Aiming for Protection Neutrality*

Trade policy needs to aim for neutrality assurance with regard to levels of protection provided both within and between individual natural resource sectors. This requires not only neutrality in the structure of nominal tariffs but also in non-tariff barriers. What is needed is a reduction in the price distortions resulting from protection. This is true for the entire economy, not just the forestry sector. A good starting point would be existing policy reformation, such that use and management of wood resources become responsive to the differing values of the wood species. This would begin the process of achieving more efficient resources allocation. It is also important that the distortions across the different wood-using sectors be reduced. That is, plywood manufacturers, furniture makers, and builders of wooden structural materials should be allowed to compete for different types of wood. In this way, a more efficient allocation of resources would arise, with high-quality wood being put to its highest valued uses (e.g., mahogany used for furniture), and low-quality woods being used for production of commodity-grade plywood.

### **1.3.4 Foreign Direct Investment and Marketing Associations**

This section briefly highlights two subsequent NRMP studies, which followed from questions raised from the study previously described. These studies analyzed impacts of protection levels on distribution of foreign direct investment and the effects of export marketing arrangements on levels of effective protection.

Foreign direct investment provides a good means to quantify the impact of trade policy on investable resources. The extent, distribution, and use of foreign direct investment was estimated from Bank Indonesia data sources. The impact of sectoral protection was apparent in the distribution of foreign direct investment throughout the economy. Although Indonesia has separate policies to manage foreign direct investment, NRMP found that these policies only impact the volume of investment (NRMP Report No. 57). The level of effective protection provided to various sectors determined the sectoral composition and the country of origin. Foreign investors have targeted either the most protected sectors or extractive activities that supply raw materials for further processing outside Indonesia.

Overall, foreign direct investment has been concentrated in the manufacturing sector, where effective rates of protection remain higher relative to agriculture and mining sectors from which raw materials are sourced. Within the manufacturing sector, investment was concentrated in

sub-sectors in which non-renewable natural resources were processed because these sectors remain highly protected. The case study provided a very good example of the interaction of policies and how an understanding of the underlying causes of policy issues is required or else ineffective policy initiatives may result. In the case of distribution of foreign direct investment in the Indonesian economy, actual foreign investment policy has had a limited impact. Instead, the relative level of protection offered among sectors provided incentives that guided foreign investors. The negative aspect of foreign investment originates from being concentrated in two areas, i.e. manufactured goods for the domestic market and export of semi-finished goods or raw natural resource materials.

Effective protection has a major impact on the relative attractiveness of different sectors in the economy. One option is for the GOI to reform monopoly marketing arrangements as an appropriate mechanism to reduce effective protection instead of reducing nominal tariff rates. NRMP undertook a number of case studies of marketing boards to determine their impact on natural resources. In these studies, NRMP assessed the impacts of voluntary and mandatory boards on four separate dimensions; namely, *growth performance*, *allocation efficiency*, *social equity*, and *sustainability*. Each of these dimensions had impacts on both voluntary and mandatory boards.

Export marketing boards comprise one component of domestic trade policy and, in Indonesia, are generally of two types, i.e. those where participation and compliance is compulsory and those where they are voluntary. Mandatory boards are primarily an interventionist policy, shifting decision-making rights from producers and processors to the marketing association. Along with shifting rights, compulsory boards also create incentives for boards to maximize their own interest as opposed to their members.

For voluntary boards, the system of incentives encourages maximizing volume and quality of information that the board can provide its membership. By having access to the best information on a timely basis, members are able to make better informed decisions, which is likely to increase profit margins. It is the probability of capturing these benefits that encourages firms to accept the costs of board membership.

Mandatory boards, however, face different incentives due to the nature of powers granted them. These boards alter market signals related to export prices, export quantities, destinations of particular consignments, and specifications of the nature and quality of exported goods. Mandatory marketing boards have no need to provide direct benefits to their membership to obtain their fee revenues. Thus, it is often in their interest to maximize the variable upon which fees are established. In plywood marketing boards, for example, establishment of fees based on volume of exports provides incentives to the boards to adopt policies that maximize volume as opposed to value of plywood exports. There is no reason to believe that the board would aim to maximize the value-added component of products. In contrast, incentives faced by voluntary export marketing boards are either benign or positive. For benign incentives, companies are able to direct their resources to the most highly valued use of resources.

Growth performance of the two types of marketing boards differed. Voluntary boards provide additional information to member firms, enabling improved decision-making and productive efficiency. Mandatory boards have been found to maximize their own rent-seeking, which reduced productive efficiency and slowed growth of exports and per capita GNP. Marketing associations reduce allocation efficiency and subsequent growth performance. The major difference between the two types of associations is the negative impact of mandatory boards, which alters market prices and distorts allocation efficiency.

Social equity of voluntary boards is favorable due to the lack of discrimination between small and large board members. Mandatory boards were found to negatively impact within a social context by transferring risk of changing market prices to those groups traditionally disadvantaged in society; that is, the low income and resources-poor communities, which may or may not be in rural areas. Mandatory boards have negatively impacted sustainability of natural resources management by moving natural resources and the Indonesian economy further away from sustainable development. For example, the incentives provided to plywood producers under The Indonesian Plywood Marketing Association's (APKINDO) coercive marketing arrangements clearly encouraged maximization of the volume of timber processed into commodity grade plywood. "By no stretch of the imagination could such a forestry resources development trajectory be called sustainable" (NRMP Report No. 55).

### *Lesson Two: Impacts of Policy Recommendations and Identifying Appropriate Policy Clients*

While results of NRMP's trade policy studies provided clear directions for future policy development, little response was achieved in creating alternative policy settings. Increased government focus was placed on some of the marketing associations, but the need for further deregulation retained its economic policy dominance. The lesson learned from these studies pertains to the critical importance of identifying an appropriate policy client, who holds the power and responsibility for the policy issue at hand. As with all economy-wide policies, the power within the policy process does not lie solely within planning agencies or agencies responsible for natural resources management. As such, policy recommendations from these agencies are often rejected by those who hold power within economic trade policy decision-making as one means of limiting the agencies' power and influence within the policy process. The rapid movement and loss of project champions within a given GOI agency also limits the usefulness of policy analyses.

### **1.3.5 Economic and Environmental Interactions**

NRMP developed a predictive capacity for *Bappenas* to assess impacts of alternative economic growth strategies on important environmental parameters. The purpose of the forecasts was to provide planners with input into the second twenty-five year long-term development plan. NRMP sought to identify an appropriate balance between modernizing traditional sectors and establishing new industries. Identifying industries worthy of encouragement was a secondary goal of the project.

NRMP used data from twelve sectors on expected technological change and current and expected input-output relationships to develop a dynamic input-output model. The model was used to identify impacts of economic growth and technical change on employment, natural resources use, and environmental degradation in Indonesia. The period covered was from 1985 to 2020. Two economic growth scenarios (5% and 7% GDP growth per annum) with two technological change strategies were modeled: i) continuation of existing trends and policies, and ii) an alternative strategy with emphasis on environmental protection. Technological change was quantified as changes in intermediate, capital, and labor inputs per units of output as well as measures of natural resources use. For comparative purposes, the base scenario combined a moderate economic growth rate, with a continuation of current policies towards the environment. For the electricity sector, a third scenario involving cleaner production of power was included in the model.

Results of the modeling exercise showed that labor absorption for the moderate growth path will approximately equal the supply of labor. For the high growth scenario, labor shortages are predicted. Inadequate testing of model assumptions about gains in labor productivity probably accounted for an overly optimistic employment scenario. For example, gains in labor productivity for the wet-rice sector would amount to 45% before the year 2010. For the livestock sector, the same figure is a massive 66%, while for most manufacturing sectors 40-50% gains were predicted. The likely shift in skills, demanded from the changing structure of the economy, is of great concern; growth in the service sector will increasingly demand a higher proportion of the labor force (NRMP Report No. 31). More importantly, the structure of the economy, although not implicitly included in the prescribed objectives, does change. The analysis highlights the potential changes to the economy. Natural resources intensive sectors will continue to grow faster than manufacturing and service sectors. Specifically the electricity, energy, and water utility sectors have high growth rates. The lower growth rate in manufacturing and high value-adding sectors confirms the need for further deregulation to enable an export-led industrialization growth path.

Environmental indicators for forestry land requirements and natural forest cover indicated a growth in needs ranging from 1.66 to 5.86 times the level in 1985. Using the more conservative scenario of moderate growth with technological improvement resulted in a predicted increase in land requirements for plantations and an increase in area required for natural forests. This was the only scenario where demand for land was less than land availability. Any of the high economic growth rate scenarios created land demands in excess of supply.

The input-output model also suggests that Indonesia will be able to maintain rice self-sufficiency provided substantial investment towards improving irrigation efficiency occurs. For example, a 100% increase in water delivery efficiency is required to ensure water is not a constraint. However, a strategic issue arises. While rice self-sufficiency is achievable, it will require land conversion away from other food products, such that the cost of self-sufficiency will include the cost of importing other food products. In particular, importation of increasing quantities of feed grains to support the rapid growth in intensive livestock production will be needed.

Planning mitigation strategies for expected economic growth pathways can target the most important variables by sector. Evaluating mitigation strategies in terms of their cost-benefit or cost-effectiveness will provide input to public policy initiatives during the same planning period. Planning policy, whether it be regulatory (e.g., clean air requirements), market-based (e.g., "polluter pays" principle), or public intervention (e.g., investments in infrastructure and education) can avoid environmental costs. Establishing appropriate planning policy is considered to be more cost-effective than reparation and mitigation at a later date.

### ***Future Directions for Trade Policy and Environment Links***

The NRMP modeling exercise (NRMP Report No. 31) provided a useful representation of how economic development and the environment interact over a 25-year period. While trade policies can be used to encourage industrialization, the process of industrialization causes a number of potential negative impacts on the environment. The ability to link policy with planning requires understanding the trade-off's involved and identifying appropriate indicators for the scale of the economy, based on the magnitude of impacts on the environment.

Planning and policy development can forecast these trade-offs and proactively develop responses. Given the increasing reliance on market processes to allocate resources within the

economy, proactive policies that design and implement market-mechanisms may be the cheapest option for protecting essential stocks of natural resources capital.

The increased need for Indonesian policy-makers to develop an understanding of trade-offs between increased mitigation costs and economic growth resulted in NRMP investing in skills development. An extensive training component was built into the project, and wide dissemination of study results was made. Rather than sell the results, NRMP adopted the strategy of presenting alternative scenarios to decision-makers and thereby encouraged GOI policy agents to develop visions of Indonesia's future. These visions could then be turned into policy targets, which, in turn, could assist to specify policy interventions. Table 1.1 presents some of the issues raised in developing long-term visions about the structure and impacts of economic growth, using two growth scenarios.

**Table 1.1 Two Possible Scenarios of Indonesian Growth**

	<b>SCENARIO A YEAR 2020</b>	<b>SCENARIO B YEAR 2020</b>
Rate of Growth of Per Capita Income	Per capita income growth has fallen more or less steadily since 2003, the year Indonesia became a net oil importer and natural resource depletion became evident on an economy-wide basis.	Per capita income growth has accelerated slowly, but more or less continuously since 1998, due to well thought-out, long-term policies and planning for long-term sustainable growth.
Size of Urban Population/Demand for Urban Services	The urban population has now reached 168 million. Last year, Jakarta's population reached 25 million for the first time.	The urban population stands at 151 million. But because regional urban centers have grown rapidly, Jakarta's population has just reached 12.2 million
Rural-Urban Income Distribution	The rural-urban wage differential has now reached 18 to 1. The government is becoming increasingly concerned about a rural insurgency.	Wages in the agricultural sector have increased greatly due to the government's sustainable agriculture development program.
Demand for Energy/Air Pollution	Energy consumption and air pollution levels are eight times higher than in 1995.	Energy demand is 5 times higher than in 1995. Air pollution about the same.
Food Self-Sufficiency/Agricultural Output	The agricultural resource has become so degraded that hard won rice self-sufficiency has been lost.	Rice self-sufficiency has been maintained, and along with it, food self-sufficiency.
Productivity of Marine Resource	Inland, coastal, and open-ocean fisheries have been depleted. Indonesia became a net importer of seafood products in 2016. Income from marine resources began falling sharply in 2014.	Marine resource are in a healthy state. The marine resource provides a large share of animal protein requirements, with an excess left over for export.
Productivity of Forest Resource	In 9 years, the entire commercial value of the forest will be gone. Income from it began to fall sharply in 2014.	Some of the forest has disappeared, but the present level of income derived from it can be maintained indefinitely.

Source: NRMP presentation to *Bappenas*, 1994.

With methods available to develop policy targets and the means to determine trade-offs, policy-makers are able to outline policy reform programs to meet established targets. The sustainable development portfolio has now grown. It includes improved industrialization policies based on export growth and setting indicators for environmental and natural resources parameters. Decentralizing economic resources management decision-making is recommended to locate decision-making power at a level closer to where impacts of decisions are felt. Decentralization is one means by which values outside the dominant market allocation systems can be incorporated.

Modifying the patterns of Indonesia's natural resources use will require fundamental changes to the pattern and scale of incentives provided for economic growth. Existing and prospective users need incentives to use resources in the least wasteful manner by incorporating higher levels of labor and man-made capital with natural resources. Public policy must provide clearer incentives to increase the degree of value-added processing and for improving resources use recovery rates. Provision of clearer incentives will necessitate removal of existing disincentives created as part of previous trade policies, such as the cascading levels of protection presented earlier.

Although the GOI has made considerable progress in reducing the nominal rates of protection, considerable cascading still exists (NRMP Report No. 55). Furthermore, this "has clear negative implications for efficiency of natural resources use, employment, output, income, export earning, economic growth and ultimately the sustainability of the economic development path". The widely held perspective that protecting domestic producers of manufactured goods derived from natural resources is consistent with sustainable resources management is not in fact the case. While this policy reduces demand for resources in the protected sectors, it increases pressure on the raw material sectors to provide required export earnings. With removal of protection on manufactured goods, the same export earnings could be achieved at less cost to natural resources. In short, deregulation offers a "win-win" outcome for natural resources management.

The pathway through which sustainable management of resources will be achieved requires greater attention, including the provision of a plan for sustainable growth to enable effective implementation. Both sustainable resources management and sustained, long-term economic growth will require improved integration of both planning and trade policy. While assisting the goals of economic growth, recent deregulation policies have not been sufficiently well developed to provide the desired integration. Without improved integration between policy and planning, the likelihood of achieving goals set by the present GBNH national planning guidelines are very slim. A sustainable development portfolio will require that planning and policy be closely integrated and mutually supportive.

The policy implications of trade reform are direct and obvious. Trade policy needs to reduce distortions in the natural resources intensive sectors and provide equal encouragement for diversifying the country's exports away from dominance on a few commodities. In addition, there should be no further sectoral interventionist policies. Sectoral interventions simply add distortions at another level. Not only should tariff barriers be reduced or revoked, so should the myriad of sectoral non-tariff barriers that purposefully distort the relative price ratios faced by producers. Currently, Indonesia is forfeiting many potential benefits due to such price distortions further deregulation to reduce the level and cascading nature of tariffs is again a potential "win-win" option that would increase the likelihood of achieving economic development goals.

NRMP provided several training inputs to GOI policy analysts, covering methods for calculating protection levels and the impact of protection levels on natural resources (NRMP Report No. 55). However, the workshops and seminars held to communicate the study findings to GOI counterparts appeared to have had little impact. Only limited direct policy change resulted from the study itself. Yet, the study was successful in generating further interest on the part of the

GOI Policy Working Group (PWG). Questions raised by the PWG included the role of protection levels in driving resources into and out of favored sectors, and what techniques could be used to reduce the levels of effective protection that are offered.

## 1.4 Lessons Learned: Policy Players and Their Roles

### 1.4.1 Policy Processes and Players

The policy process has two distinct components, the players and the process itself. The players within a policy process have different roles and success determinants. If either donors or government actors ignore these differences, the result will be unanticipated outcomes. Before exploring these roles, the nature and complexity of the policy process for natural resources must be considered. A policy process is based on an issue being raised, interested parties becoming involved, options being determined and evaluated, a decision being made, and a policy being implemented. Ideally, the process will be an open loop; once implemented, evaluation of the policy will identify new concerns or issues.

However, within Indonesia's natural resources policy, the apparent simplicity of the policy process is not possible. High levels of uncertainty and very diffuse impacts through time and space contribute to the complexity. Moreover, the institutional setting for policy further complicates the process. Natural resources are cross-sectoral in nature; actions in many sectors will have natural resources impacts. Resource issues are also cross-spatial; actions may cross administrative levels, ranging from local to national. The structure of the GOI with its multiple layers of administration, adds several additional dimensions to the policy process. The recent trend of reduced public sector involvement and the commensurate increase in private sector investment in development activities requires policy to go beyond existing government structures.

The Indonesian policy process is not one process but a multitude of processes where the issue at hand determines the particular policy processes operating at any one time. Within any policy issue there are a number of roles or players who will be present. The appropriate role for donors is often poorly understood and defined. To clarify these roles, the NRMP experience illustrated why donors might not achieve their goals in policy development. The nature of a player's interest defines his or her role in a particular policy process. Garland (1997) identified four roles for players within policy processes; namely, the *advocates*, *analysts*, *entrepreneurs*, and *educators*, "all of whom exhibit characteristic role behaviors".

The advocate seeks a pre-specified agenda or outcome. They have a stake in outcomes, and from this perspective can rightly be considered stakeholders. Advocates have a clearly defined interest, often by limiting the range of options that are brought to the table. Advocates purposively adopt a selective behavior pattern, using information and arguments that support their outcome while disregarding information that does not. A number of other strategies are

often associated with advocacy, including presentation of myths and untruths to support a position. Success is determined when the advocate's position is accepted.

The role of analyst is slightly more distant than that of the advocate in that it includes determination of the means by which the desired outcome of a policy and its impacts will be achieved. The analyst is not a stakeholder in the issue, while the analysts' client is a stakeholder. The purpose of the analyst is to serve their client's objective. Moreover, the analyst does not determine the range of options, other players determine these roles. The analyst's role is to collate available data and determine if the options serve the purposes of the client. Analysts therefore do not bring their own personal value sets to the policy-making process; they use facts to support or demolish options. Success for the analyst is measured by the client's satisfaction and not by the adoption of any specific policy.

The entrepreneur aims to influence policies across a range of issues drawing on the roles of both the advocate and the analyst. The aim of entrepreneurs is to advance themselves or their organization. Often entrepreneurs will change positions to enhance their role, giving the impression of wide-ranging expertise and knowledge. One common response of the entrepreneur is to selectively use data and facts, ignoring unknowns. Success for entrepreneurs is any outcome that will elevate their position or prestige.

The educator is perhaps the most neutral player within the process. Generally, they have no direct stake in the process other than to ensure that all the information is available to all parties. Their aim is to improve the policy-making process rather than advocate a specific policy outcome. Educators may participate from the beginning with identification of issues and concerns and considering the options. Educators work for the public good, accepting a wider range of value sets. They often search out and provide the widest possible set of information, making explicit the level of uncertainty in these data sets. Success for the educator is when the overall process of policy results in the best possible outcome.

Donors are recognizing that the need for field site interventions is due to the influence of inappropriate policy settings. Donor interventions have increasingly focused on reform of the policies which caused the need for donor intervention in the first place. The NRMP project design also prioritized policy reform. Its designers recognized that existing policy settings were the binding constraint to improved natural resources management outcomes. Therefore, an NRMP Policy Secretariat was established to support the policy process.

The purpose of the NRMP Policy Secretariat was to assist counterpart agencies with developing improved policies. However, it was very unclear what roles the project would adopt within the policy process. Project documentation refers to achieving new and improved policies by specifying the use of independent analysts. The primary role of NRMP in the policy process was therefore as analyst, where a number of analytical studies would be undertaken. The client for these studies was the Project Coordinating Committee (PCC), which as an institution was not even a policy player. The client's objective was to coordinate the project, not act as an advocate, entrepreneur or educator. The structure of the project could simply not support the project intervention strategy. What role USAID wanted the PCC to play in the policy process was unclear. Some of the impacts of this lack of clarity were that policy counterparts were not provided by the client, policy topics became defined by personal interests of government officials, donor staff, and long-term advisers, and the determinants of success were not integrated or coordinated.

By NRMP's mid-term evaluation, the limited impact of its policy input was identified, but its causes were poorly understood. For the donor, success would be measured by an appropriate policy outcome. Their success indicator suggested that their role should have been as advocate or perhaps educator. Yet, the evaluation recommended fewer studies be completed and more effort should be applied to communicating results of studies. However, improved communication would not solve the problem of a poorly designed project component. It was apparent that the same individual cannot simultaneously adopt multiple roles. It is certainly not possible for a long-term advisor to be both advocate and educator. With multiple roles, it is impossible for other players to know what role or outcome the project seeks, and credibility and legitimacy is lost in the process.

The desired outcome of NRMP could not be achieved by adopting the role of analyst. To achieve new policies, the role adopted would need to be either that of an advocate, entrepreneur or educator. Future donor involvement requires a clear vision of desired determinants of success. For example, do donors seek to satisfy a client objective, achieve a specific policy outcome, or simply want an appropriate policy process? Design of policy interventions needs to involve expertise with specific policy process skills and not simply be an add-on provided by other technical staff.

#### **1.4.2 Client Communication**

Following the NRMP mid-term evaluation, considerable effort was then placed on developing increased communication strategies for past and ongoing policy studies. Communication is suggestive of an interaction between two or more parties. This section is organized around who these parties are or might be. For illustrative purposes the communication between the analyst and the client is used, drawing on NRMP's experience with redefining the client and using different techniques to satisfy their objectives.

A main constraint to successful policy roles was poor definition of the PCC as client. Policy studies pursued personal objectives, often with worthwhile results, but provided results that fell outside the donor's determinants of success. The development of economic and environmental models was one example where project investment had disparate impacts. In response to requests for continued investment into modeling these interactions, NRMP undertook a strategic review of modeling needs (NRMP Report No. 69). The review highlighted the inability of a coordinated client group across agencies, such as the PCC, to set policy agenda. The study found that agencies were not prepared to enter a dialogue between ministries, even within ministries, due to the belief that information reflects power and control. Moreover, it was found that while modeling had received a vast investment, the majority of models were never applied, being instead merely a means to achieve post-graduate training. Even within the existing domestic policy process, communication was highly ineffective, especially between advocates and analysts who worked within the same institutions. Mechanisms to link policy roles with policy processes were missing.

In response to the lack of connection between policy roles and processes, NRMP sought to establish a forum outside the existing policy circles to enable policy advocates, educators, and analysts to communicate. Establishment of the Indonesian Regional Science Association (IRSA) enabled such a forum to be created. Initial evaluation of the role of IRSA was encouraging, with members establishing a number of policy processes. In particular, identification of the role of special development regions in more decentralized regional

development was a priority need for a specific client group (e.g., Ministry of Public Works). The client commissioned domestic analysts under the direction of an expatriate advisor to determine more appropriate policy settings. Investment was moved from developing new models to applying existing models, and using IRSA as a communication forum to enable constraints of existing institutional boundaries to be traversed. Outcomes suggested that IRSA provided a mechanism for increased stakeholder participation in the policy process. Membership in IRSA was wide and included government, non-government, academic and private sectors.

Within a sectoral context, attempts to link policy analysis and dialogue were developed around the concept of project task groups (*Tim Kecil* or *Tim Kajian*). Several project task groups were formed within the MoFr to work on specific topics (e.g., forest waste management, improving forest planning, improving biodiversity in natural production forests, stewardship by enclave communities, and improvements to guidelines for natural forest management plans).

The task groups, as new and innovative institutions, developed themes already considered by NRMP, and were used as a forum to determine specific analytical demands required by the MoFr. Any further communication from the task group was demand driven. Task groups actually adopted the role of client in the policy process. For the management of natural production forests, outcomes were communicated up through several organizational levels in the MoFr, and incorporated into planning recommendations for amalgamation and rationalization of the forest concessionaires program (KPHP). Other task groups were less successful, although some continued to meet. Challenges still exist; for example, it remains unclear how to broaden representation in the process while preventing each group from becoming structurally based inside an institution. The other issue was whether a task group approach would support the donor objectives of getting the right policy adopted. The objectives of a task group might reflect the power base within the group, and may not represent the appropriate policy response.

### **1.4.3 Multi-stakeholder Policies**

Addressing policy in Indonesia requires the multitude of stakeholders having greater access and involvement in the policy process. Many levels of participation involvement can be developed. What is essential is that policy initiatives strive to include all stakeholders and be prepared to share power in a manner that enables decision-making to reflect a wider set of values than had previously occurred. This decentralization of decision-making and policy process is an important step for enabling improved natural resources management outcomes. When those personally affected are provided with increased input to the decisions that enable or restrict behaviors, there is greater likelihood that planning and policy will be better integrated.

Without increasing their level of involvement, central policy-making agencies will not be able to manage the increased workload caused by an increasingly complex and sophisticated society. Decisions about what provision should be made for future generations and how to go about this provisioning are simply beyond the scope of a few central public figures. Policy development based on centralized, top-down decisions will increase conflicts and continue to result in the wrong set of behaviors.

The need to incorporate a range of values that fall outside the market processes has been discussed. The economic valuation of resources associated with NRMP's two field sites was an example of how the project acted as an analyst, using short-term technical assistance, and then as an educator, using the long-term adviser. In the role of educator, NRMP systems for including wider value sets were promoted through the Regional Development Policy Unit of Deputy V *Bappenas*. As a consequence, a long-term adviser position was specified to develop the systems for allocating public funds to regional development projects based on these wider value sets. No direct policy advice was recommended other than to demonstrate how the allocation policy could be enhanced. This demonstration included stakeholders from local and central government, NGO's, and the private sector. To enable greater stakeholder involvement, effective policy advice may require a greater emphasis on the role of educator than had previously been provided.

For donors, the message is clearer; understand the policy process and outcomes that are desired and then design interventions around these. Poorly designed policy inputs have left a long list of low impact interventions because they were never designed to achieve anything more than that. Donor involvement, whether as advocate, analyst, or educator, needs to be more clearly stated; multiple roles need to be avoided. If the objective is new policies, the role of advocate is appropriate. If the objective is to develop an improved policy-making process, such as a multi-stakeholder policy process, the role of educator is appropriate. With the existing focus of many government policy initiatives being directed at decentralization, consideration of using multi-stakeholder policy processes as a tool for decentralization needs to be seriously assessed.

## **1.5 Summary of Lessons Learned from Enabling Policy Development**

One of the key issues underpinning a sustainable development pathway is the extent to which total stock of both natural and man-made capital can be maintained for future generations. Some loss of natural resources capital is necessary for any development process, but the rate and extent of such losses become essential parameters for establishing a sustainable pathway to the future. The economic development *versus* natural resources conflict should not remain an issue of "yes or no" but rather one of trade-offs.

For Indonesia, these trade-offs are complicated by the regional nature of the economies within the wider archipelago. Within the myriad of resources and social systems, these same trade-off decisions are necessary. For sustainable development to become operational, society needs to determine what current generations should leave to future generations. Policy-makers must become aware that the priority policy need is more about deciding how to provide for the future rather than attempting to prescribe an optimal provision allocation pathway.

While market-based policies and greater industrialization will assist to increase value of natural resources to the economy in and of themselves, they will not ensure sustainable development. Methods for making decisions about the trade-offs between alternate uses are necessary and involve decisions without consideration of prices. Sustainable development requires economic development to be managed within an appropriate scale of activity to achieve biological and ecological objectives. The scale of the economy is determined by the population size in an area and the level of their resources use. The level of resources use is a function of access to

technology and markets. The need for behavior change to achieve sustainable development goals has been stressed, including the concept of industrialization and the need for decisions without consideration of market prices.

Having considered conclusions from policy studies on interactions of the economy and environment, the need to develop structured planning targets for natural resources management was identified. These targets need to apply both at the national level to enable economic planning and at the local level where resource use and impacts occur. Policy success determinants differentiate the participant's roles within the policy process. Both government and donors have not clearly understood these determinants, resulting in a series of very low impact initiatives. To get the right policy outcome requires the right process, which will need to be more open and accessible, with greater involvement from the full range of stakeholders. Involvement at the appropriate level of participation is the common ingredient that both government and donors have been unable to deliver to date.

From the NRMP experience, lessons learned for the development of enabling policies for sustainable natural resources management in Indonesia are:

- Current policy settings in Indonesia favor economic growth at the cost of sustainable natural resources management and ecological functions. Economic policy settings need to provide less incentive for exporting raw material or semi-finished goods. The removal of cascading levels of nominal and effective protection would alleviate these distortions.
- Deregulation enables internationally competitive prices to provide incentives for innovation and value-adding, which are important components of sustainable development. To improve competitiveness, sectoral and economy-wide policies need to be integrated with planning objectives.
- Markets can provide efficient resources allocation, but will fail to achieve many resources management objectives. Provisioning for the less fortunate and future generations will require decentralized decision-making, often without consideration of market prices.
- Policy interventions by both the GOI and donors fail to recognize the determinants of success sought by each of the players in a policy process. NRMP's emphasis on adopting the role of analyst in the policy process, with the Project Coordinating Committee (PCC) as client, could not provide the success determinants required by the donor.
- Multi-stakeholder policy processes provide an opportunity for linking the various players within the policy-making process. Within this process, NRMP's movement away from the role of analyst to that of educator or facilitator was considered to be more closely linked to donor objectives.



## 2. Sustainable Forest Management

### 2.1 Overview

Chapter Two reviews the forestry sector experience and the lessons learned from a wide range of often diverse NRMP interventions. The economic importance of Indonesia's natural forests and institutional and ecosystem management issues are reviewed. Lessons learned are considered, primarily through field experience from West Kalimantan, by reviewing three fundamental and inter-linked recommended policy reform themes: i) simplifying institutional requirements, ii) reducing natural forest undervaluation, and iii) reducing uncertainties of resources allocation rights.

Promoting sustainable natural forest production and management in Indonesia must consider the ecological, economic and socio-political constraints to effective forestry policy implementation. NRMP experiences with forestry sector policy and field research activities document the extent of non-sustainable forest use in Indonesia. Given the tremendous socio-economic and ecological value of Indonesia's forestry sector, this non-sustainable use of forest resources has major implications. Therefore, future gains in natural resources management will require major changes to address the misuse of forest resources in terms of revised forest production objectives and forest management policies. Objectives should aim to maximize the value of all forest goods and services, reduce uncertainties of resources rights and contested land claims and incorporate a diversity of stakeholders. Especially important for improved forestry management are local and regional control of production and management, or decentralization of forestry activities. The impact of additional economic, ecological and social costs arising from inappropriate regulations is emphasized. Major recommendations include a pronounced shift from a "command and control" prescriptive approach to the design of an ecological and economic "outcome-based" management regime. The impact of NRMP field studies and surveys, policy reviews and extensive dialogue with various agencies contributed much toward this process.

Future gains in sustainable forestry will require changes to the underlying causes of inappropriate forest management policies. For the MoFr and donors, this requires addressing all the causes in an integrated manner, including policies that address:

- *Simplification of institutional requirements:* planning constraints, management constraints, compliance and enforcement of forestry regulations, and negotiation and production costs
- *Reduction of natural forest undervaluation:* increasing the value of natural forest ecosystems beyond utilization to include environmental services and biodiversity values

- *Reduction of uncertainties of resource allocation rights:* concession licensing constraints, industrial plantations, contested production forest boundaries, and absence of full forest management rights for local communities or other stakeholders.

## 2.2 Economic Role of Indonesia's Natural Forests

Indonesia's central policy objective has been to maximize economic growth, narrowly defined. Forestry and other sectoral agencies have institutional and organizational structures that were developed specifically to support this overriding national economic objective. In response, the forestry sector provided a major contribution to the economic growth rates that were achieved under the New Order government. The size and importance of the forest sector can be evaluated relative to its contribution to the national economy. The forestry sector's national worth increased from US\$2 to \$9 billion between 1980 to 1994. During this same period, export sales grew from \$0.5 to \$4 billion as a result of large-scale expansion of the plywood sector. In 1994, forest products provided 20% of total non-oil export value from Indonesia.

Despite Indonesia's vast wealth of natural resources, including one of the world's most economically valuable production forests in both commercial volume and area (ca. 64 million ha), natural production forest management is currently not sustainable. The economic contribution from forestry is increasingly at risk with estimates of annual deforestation rates ranging from 700,000 to 1,000,000 ha. Based on an estimated annual harvest of 40 million cubic meters, harvest levels are approximately double the estimated annual sustainable yield of 22 million m<sup>3</sup>. These current practices have created a rapid and precipitous decline in the volume of wood resources available for future harvest as well as an associated reduction in forest land area. Based on these alarming trends, the natural forest sectors (e.g., plywood, sawn timber and re-processed timber) cannot maintain their current contributions to national economic growth. The World Bank predicted that by the year 2000 forest export figures will decline and may plummet to zero by 2015 (Douglas 1995). The potential socio-economic losses from non-sustainable use of natural forests are large. Formal employment in the forestry sector is estimated in excess of 700,000 (NRMP Occasional Paper 2).

While Indonesia's forests provide a major contribution to national economic development, the forest resources are of even greater significance to the estimated 80-120 million Indonesians who live in rural areas and depend either directly or indirectly on forest products. Forests provide significant levels of direct income for rural communities. For example, 30-80% of household primary income in communities living in or around Bukit Baka-Bukit Raya National Park are derived from forest products (NRMP Report No. 5, Curran and Belsky in press). These direct incomes from "informal sectors" are excluded within aggregated economic data and thus under-represent the important and often critical direct contributions natural forests provide to the domestic economy in general and the rural community welfare specifically. Moreover, indirect benefits and ecological services are provided by natural forests over multiple spatio-temporal scales. These ecosystem services rarely are quantified unless defensive expenditures are required to redress adverse conditions when these services are disrupted or disturbed (e.g., topsoil loss and erosion, flooding and mud slides, sedimentation, reduced water quality and human health). When full accounting of both direct and indirect benefits of forest resources are included, material goods and environmental services from natural forest resources are certainly undervalued.

While working definitions of “deforestation” and the absolute rate and area of deforestation is contested, often with emotionally-charged and politically-motivated debate worldwide, deforestation continues relatively unabated across all regions. Deforestation takes many forms; some temporary, some irreversible. Human behavior at multiple levels is the major cause of deforestation. The proximate agents responsible for deforestation range from corporate entities to slash-and-burn farmers. Blaming these agents for the resultant deforestation contributes little to identifying the multiple web of causalities that ultimately create the problem, and often stimulates inappropriate government responses that exacerbate the problems (NRMP Report No. 58).

Resources management decisions made by the diverse users of forests and by forest land agents are driven primarily by socio-economic incentives and disincentives. These are created through a combination of misguided development and regulatory policies and disregard enforcement of other policies. With increasing resources consumption exerting demands on the forests of the Outer Islands, coupled with national and international competition for investment opportunities, the future of Indonesia's natural production forests depends on implementing appropriate forest policies with equitable distribution of the costs and benefits these policies impart (NRMP Report No. 58).

Currently, an array of regulations mandate practices for the exploitation of natural production forests. The GOI have recognized the immediate threats to these forests; namely, actions of large-scale concessionaires, transmigration sites, industrial plantations and slash-and-burn cultivation. The GOI have developed a diversity of policy instruments aimed to address biodiversity and watershed conservation, reforestation, waste reduction, value-added output, employment absorption and community development for forest villagers. If the health of Indonesia's forests corresponded directly to the number of forest management and forest industry regulations, there would be few resources management problems. Tragically, as a result of these accumulated regulations and political interests, there is less forest (NRMP Report No. 58).

Given the inability of forest policies to achieve their stated goals, some individuals maintain that forest management and industry regulations are fundamentally sound but enforcement is weak, and thus increased numbers of well-trained foresters are needed. Although shortcomings of enforcement and human resources development undeniably contribute to the problem, the underlying cause of deforestation rests more with the nature of the policies themselves. Often well-intended policies designed for other objectives create unintended outcomes and fuel rather than restrain deforestation (NRMP Report No. 58).

Certainly not all forest policies can be described as well-intended. However, focusing criticism on examples of powerful individuals from the private sector exerting influence over forest sector decisions runs the risk of ignoring the problems of misconceived, albeit well-intended, policies. These policies may be pervasive and restrictive on the sector as a whole, and risk reinforcing the general government perception that all policies are sound and simply require improved implementation or enforcement (NRMP Report No. 58).

Current natural forest yields cannot be sustained. However, the ability to increase the net value of forest utilization over time will depend on revising forest use objectives. This revision would intend to reduce annual harvest volume and area quotas, to create appropriate incentives to adopt sustainable utilization practices, and to incorporate a diversity of goods and services in

management objectives. If these objectives are met, investments in forestry (e.g., timber harvesting) would be able to compete with other land uses where a comparative advantage exists and will contribute appropriately to the primary national goal of sustainable development (NRMP Report No. 58).

## 2.3 Institutional and Ecosystem Management Issues

The underlying problems associated with natural forest management policy undeniably are difficult to resolve given that several institutions compete for control of forest land-use. The differing goals of stakeholders compound this problem. Central government agencies, corporate private concessionaires, local government, local residents, and NGO's tend to have strong views on the fate of the forest resources, which the National Constitution proclaims belongs to all Indonesians. Among the numerous government and non-government stakeholders, some have a disproportionate influence on policymakers, while others are barely recognized or lack any decision-making authority (NRMP Report No. 58).

The Ministry of Forestry and Estate Crops (MoFr) issues the majority of, but not all, forestry policies. Policies which influence forest utilization are also issued by the Ministries of Agriculture, Mines, Trade and Industry, and Finance. Policies emanating from these various institutions may lack complementarity or be in direct conflict. For example, the MoFr regulates forest management, land use, and transport of forest products. However, conversion of forest land to agricultural use is increasingly sought by the Ministry of Agriculture. The Ministry of Mines has an obvious interest in the mineral wealth underlying the forest cover. MoFr and *Bappenas/Bappeda* often disagree over land use designations during the spatial planning process. While the Ministry of Trade and Industry has established mandatory marketing agencies for plywood and rattan, its Directorate-General responsible for small-scale industry has sought deregulation of inter-island shipping of rattan and the export of rattan webbing. The Ministry of Finance would prefer that all timber royalties (e.g., IHH) enter general budget accounts rather than allow funds to be allocated for specific applications under the control of another ministry. Examples of multiple management and conflicting views are mirrored in these same ministries at the provincial and regional government levels. Moreover, the central, provincial and regional administrations all seek greater control over regulations and a larger share of royalties. For example, provincial and local municipal government agencies are inclined to view favorably the conversion of natural forest to agricultural production, given specific local pressures and costs borne by extraction and control of forestry revenues by central government (NRMP Report No. 58).

Forest concessionaires and industry oppose increases in royalties and other payments. They complain of excessive compliance and bureaucratic costs of forestry regulations. Because of inefficiencies and high costs, the MoFr inspection system is, for the most part, discredited and ignored by the forest concessionaires. A few concessions are managed well, but the tendency is to regard all with suspicion. Furthermore, insufficient emphasis is placed on incentives to reward the better forest managers. This promotes distrust but often collusion between the two groups, concessionaires or contractors on the one hand and government forest managers (NRMP Report No. 58).

There are cases in which local communities have attempted to complain about damage to their forest resources caused by commercial timber harvest. Lease rights granted by government to corporate concessionaires deny historical rights of access for local rural residents (e.g., compensation for logging damage of non-timber forest products previously harvested on a small-scale by local rural residents). Local and external NGO's attempt to direct government attention to the socio-economic losses incurred by local communities and the detrimental environmental logging impacts. Most concessionaires view timber extraction as a short-term business venture in which ecosystem impact has little consequence. In fact, existing MoFr policies have encouraged this short-term approach. Fostering understanding between the two different cultures of concessionaires and villagers is difficult to achieve; long-established residents have little in common with newly-arrived company employees who are typically not hired locally (NRMP Report No. 58).

Indonesia's tropical moist forest ecosystems are indeed renowned for their high level of biodiversity. They span over nine major biogeographical zones with high levels of endemic species. Even within Kalimantan, forest types range from *ramin* dominated peat swamp to upland mixed dipterocarp forest on several geophysical substrates. The cultural diversity of those living in and around these forests and across the 14,000 islands, be they residents, or employees of corporate concessionaires, adds another major dimension of complexity to these forest ecosystems. However, the bio-cultural complexities of Indonesia's forest resources, is often perceived as an additional obstacle to sound forest management (NRMP Report No. 58).

Unlike commercial tropical timber operations in African and Neotropical forests, where only a few select specialty hardwood species are extracted, commercial enterprises in Indonesia extract hundreds of species primarily from the Dipterocarpaceae (Curran and Kusneti 1992). The ecology, demography and regeneration of the Dipterocarpaceae pose unique constraints to forestry as several hundred species often synchronize reproduction over large areas only once every 2-7 years (Curran *et al.* in press). The spatio-temporal variation of this natural system is unique to Southeast Asia and requires understanding the ecology and demography of these forests to design sound policies that incorporate the ecology of the harvested species. Forestry policy must be designed to ensure both sufficient residual reproductive stock and adequate recruitment.

Although understanding the ecology of these diverse forests is essential to devise appropriate silvicultural treatments, this process could take several decades. Yet, waiting until there are "sufficient data" is often used as a tactic to maintain the *status quo* or divide the scientific community into debate among competing views while harvesting continues. A complete understanding of the complexity of these ecosystems is desirable, but given the urgency of the problem such complete understanding is unnecessary for designing practical forest policies. Adaptive management is an effective approach because timber harvest must be viewed as a large-scale perturbation experiment, where scientific learning and policy revision are incorporated throughout the process. An active dialogue among policy makers, foresters and field ecologists is essential for adaptive management; this proved to be a highly effective approach under NRMP. If the specific objectives of the forestry sector are clear to researchers, rapid assessments can generate sufficient information in an effective format for assessing policy alternatives. Admittedly, some issues are much more tractable than others.

The NRMP experience demonstrated that an investment in interdisciplinary research studies of general importance provided relevant information for assessing practical implications and

outcomes of proposed policies. NRMP also identified key issues and challenged previous assumptions overlooked by the government. Furthermore, risk assessments can provide guidelines for the policy options based on ecological and social variables that agencies have not incorporated into their planning.

### ***Key Questions Underpinning Natural Forest Management Complexities***

Three basic policy questions surrounding natural forest resources establish the framework for evaluating achievement of sustainable management (NRMP Report No. 58). Answers to these questions, in turn, reveal the three policy-driven and interrelated constraints: undervalued forest resources, uncertainties of resource allocation rights, and overly prescriptive and bureaucratic regulations. These central policy questions are:

- How much is it worth? Specifically, are alternative land uses worth more to stakeholders than present uses?
- Whose is it? Specifically, who are the direct users or stakeholders? Is their stake perceived as equitable? How long do the rights of access and exploitation last?
- How is it regulated? Specifically, is the policy environment appropriate to the forest management objectives, and is the capacity of its enforcement mechanisms adequate? Is adequate accountability ensured?

The central question is: "Are incentives and disincentives faced by forest managers supporting harvesting decisions that allow for adequate regeneration, and thereby sufficiently maintain the natural forest ecosystem into the foreseeable future?" Notwithstanding the efforts of government, non-government and private institutions, the answer is no.

NRMP design sought to strengthen the capacities of the GOI and private concessions to adopt practices for natural forest management that would achieve sustainable yields. While the design objective was optimistic, NRMP did successfully gain a better understanding of some of the policies and practices contributing to the continuance of unsustainable forest management.

During the process of developing this understanding, NRMP followed a sequential pathway, moving from a broad understanding of production forest issues in West Kalimantan and an assessment of the Indonesian silvicultural system (TPTI, *Tebang dan Penanaman Terbatas Indonesia*, or the Indonesian Selective Cutting and Planting System) to a more detailed understanding of individual management at the HPH concession level. The insights gained from these investigations informed a review of existing forest management policies, with particular emphasis on the GOI's changing policy and planning objectives.

As NRMP progressed, greater emphasis was placed on distilling lessons from these experiences and using them as the basis for policy dialogues with the GOI and private concessions. The lessons learned for sustainable natural forest management fall under three major themes:

- Simplifying institutional requirements
- Reducing natural forest undervaluation
- Reducing uncertainties of resource allocation rights.

## **2.4 Lessons Learned: Simplifying Institutional Requirements**

### **2.4.1 Planning Processes**

The current regulatory framework for managing natural forests (e.g., TPTI) is highly prescriptive and indirect. Forest practice regulations focus on issuing licenses, permits, and approvals for prescribed requirements (e.g., road construction, equipment types, personnel qualifications, programs for research and development, financial reporting, and timber harvest limits). Only a few regulatory requirements focus directly on the impact of logging activities. Instead, the overwhelming majority of regulations prescribe what forest managers should do rather than what should be achieved (e.g., stipulations about machinery used and staffing qualifications) and therefore provide little assurance that impacts on the forest ecosystem are within acceptable pre-determined limits.

The failure of this prescriptive approach is evident from examining, for example, the production forests in West Kalimantan. During 1992, field surveys of 35% of the active HPH's with reviews of all 72 HPH's in West Kalimantan were conducted to assess harvest levels and standing stock management (Curran 1992). These active HPH's reported productivity levels at least 25% above the forestry department's predicted average commercial volume for the province. Furthermore, the total area of HPH production forest available in West Kalimantan for timber extraction in 1994/95 was only 69% of the original production forest area allocated to concessions. The rate of West Kalimantan timber extraction was unsustainable. Rather, extraction proved to be unprofitable on the 30% of the concession's land that was converted to non-production forest status. A case in point was a 200,000 hectare concession that ceased activity after its 20-year lease and was found to have a residual timber stock less than 20 m<sup>3</sup> per hectare over the entire concession area. At this level of stocking, the land classification shifted from forested to unproductive land.

Even in the best of cases, ineffective standing stock management was observed among all the HPH's surveyed in West Kalimantan. The applied silvicultural techniques did not improve the quality of the remaining stand. The major contributing factor was the discrepancy among TPTI theory, ecology and field practice. First, HPH staff and bureaucrats had a poor conceptual understanding of the TPTI objectives and practices. This insufficient understanding exacerbated the impacts of a rigid regulatory system applied by forestry officials. Secondly, the differing focus of HPH staff and forest officials when evaluating TPTI compliance lead to vastly different interpretations of outcome. For example, HPH staff tended to focus on forest management, while forestry officials focused on post-harvest treatment. Forestry officials base their determination of the acceptable level of TPTI implementation on area covered rather than on actual effects of these practices on the timber stand. Conversely, HPH staff base their performance on the ability to extract the volume of timber demanded by downstream processing.

To overcome these constraints, the NRMP study (Curran and Kusneti 1992, Curran 1992) concluded that a major shift from post-harvest treatments to pre-harvest planning and improved harvesting techniques was required. This shift of focus included longer-term management and planning beyond annual work plans, improved infrastructure (e.g., road and bridge construction), 100% cruising tree identification, and detailed topographic maps to plan extraction and skidding and to lower the impact of harvest on the residual stand.

The NRMP response to the planning process constraints was to promote “adaptive planning”. Because of the issues identified in the HPH concessions survey, NRMP commissioned reviews of current planning procedures. Three independent reviews were conducted over a three-year period. This approach for delivering technical assistance enabled officials and participating concession personnel to assess the conclusions and recommendations made during each assignment.

The first review examined the structure and content of the concessions’ Long-Term Planning Guidelines (*Rencana Karya Pengusahaan Hutan*, RKPH), their procedures to collect technical and economic information, issues concerning the potential harvest of non-wood products, and guidance for designing fire mitigation programs. Amendments to the RKPH were also examined to allow more effective reporting and to link forest utilization planning to sustainable management criteria for forest concessions.

The second review investigated the “Rolling Planning” Guidelines for Five-Year Forest Concession Plans (*Recana Karya Lima*, RKL) and Annual Operating Plans (*Rencana Karya Tahunan*, RKT). With forestry officials, guidelines and plans included methods to evaluate alternative planning options and improve data accuracy. Because of the recognized need to improve the field level application of these alternative techniques, the focus shifted to issues of implementation.

The third review involved the Self Approval Process for the RKT, intended to develop a practical planning and management system proposed for “self-approval” in pre-selected concessionaires. NRMP established a working group or Task Force (*Tim Kajian*) to improve concession planning guidelines and to develop a practical self-approval process (NRMP Report No. 34, Armitage and Bennett 1995).

The process to address the issues raised in these three reviews resulted in increased participation within the forest planning community. Studies of the RKPH, RKL and RKT Guidelines were discussed frequently with counterpart officials of the Directorate-General for Forest Utilization (DJPH) in Jakarta and in the provincial forestry offices of the *Kanwil Kehutanan* and *Dinas Kehutanan* in West and Central Kalimantan. Technical assistance and support provided by the MoFr in Jakarta and West Kalimantan were effective as they contributed to the conclusions reached in these reviews. Assistance from the provincial forestry authorities in Central Kalimantan was limited. Support and assistance provided by individual concessionaires and the Association of Forest Concession Holders was not only generous but essential for conducting the reviews. Achievements, conclusions, and recommendations were presented at workshops in Jakarta and in West and Central Kalimantan. Overall, discussion was broadly based, frank and constructive. Although some issues remained unresolved, many recommendations did receive endorsement by the MoFr. To date, there have been no official

actions to amend the RKPH, RKL and RKT guidelines to reflect NRMP recommendations (NRMP Report Nos. 29 and 42), nor apply the advice provided in working papers discussed with the Task Force (*Tim Kajian*) for improvement of concession planning guidelines.

The main lessons learned or conclusions from NRMP's assistance with forest concession planning guidelines are summarized below:

- The reviewed topics were relevant, and the studies were timely in terms of awareness and commitment by PHPA of the MoFr to improve the extent and quality of sustainable management practices on forest concessions.
- NRMP assisted both to identify the underlying weaknesses of forest concession management and document areas that could be addressed through development assistance.
- If implemented with appropriate policy changes, NRMP analyses and recommendations could lead to beneficial and measurable improvements in the managerial performance of many concession holders.
- NRMP assisted reviews that were beneficial for introducing new ideas about forest resources management planning to counterpart officials and concessionaire technical staff. Thus, NRMP's involvement has filled a training role; personnel gained new insights and knowledge by association with project activities.
- The *Tim Kajian* / Task Force mechanism is effective for encouraging discussion among officials on the project reviews, recommendations, and conclusions (NRMP No. 52, Bennett 1997). Workshops tended to be less satisfactory. While both mechanisms improved the level of participation, the lack of implementation of NRMP recommendations suggested the need for either reformulation or enhancement to effect real change.
- Studies produced during several different assignments were an effective means of delivering project assistance because study results gave government officials and concessionaires time to reflect upon the conclusions and recommendations reported at the end of each consultant's visit. Commitment and support from senior officials in DJPH facilitated progress with the reviews.
- Competitive awards for applied research to improve quality and relevance of forestry research were very useful (NRMP Report No. 28, Bennett 1997).

## 2.4.2 Management Challenges

NRMP attempted to distinguish between the underlying causes and the symptoms of forest degradation and loss. The daunting complexity of the biophysical, economic, social and political elements of sustainable forest management, coupled with the institutional intricacies would seem to call for highly involved and sophisticated approaches to deforestation control. However, the institutional and biophysical complexities of natural forest management do not necessarily require complex solutions to prevent deforestation. Regulation of forest management and industry must be radically simplified and re-oriented towards outcomes or goals. Rather than dictating how forest managers should comply with prescriptive regulations, outcomes should be established that allow managers to design their own methods to meet targets. A better understanding of the fundamental constraints is essential to see how effective policy solutions could be developed and applied (NRMP Report No. 51, Bennett 1996).

The distinction between prescriptive and outcome-based management approaches is more than semantic. The latter regulates forest operations according to how they meet specified objectives. Prescriptive approaches dictate the options available to management decision-makers so that goals can be achieved. Prescriptive approaches, on the other hand, are not inherently bad. The major advantage of prescriptive, command and control approaches is their ability to be applied to site specific conditions. Currently, however, this is far from possible in Indonesia's diverse natural forests without several site or at least region-specific designs. Moreover, if forest regulations incorporated both the ecological and socially desirable functions, the number of regulations would proliferate beyond reason. Many regulations have little relevance to low impact logging and instead provide incentives for economically and ecologically adverse outcomes. For example, the restrictive cut control mechanisms result in practices poorly adapted to local conditions, reduce the value of the forest, and increase avoidable waste. The volume limit in the Annual Allowable Cut (AAC) is a typical quota mechanism that results in high-grading where concessionaires can selectively choose more valuable logs from the available standing volume (NRMP Report No. 51, Bennett 1996).

The opportunity to high-grade arises from excessive timber allocations to concessionaires relative to their allowable cut levels. This excess is due to the application of safety and exploitation factors (Curran and Kusneti 1992, Hendrickson 1992, NRMP Report No. 33) and means that only 60% of the sustainable volume can be extracted. In effect, relative to the allowable log volume, the harvestable tree resource is over-abundant. Extraction tends to be wasteful. Slightly defective logs are ignored, more trees than necessary are felled, and economically-usable wood is left behind in the forest (NRMP Report No.33). Many of the regulations pertaining to construction within concessions also encourage harmful practices. For instance, the requirement to provide a "sun strip" on both sides of the road so as to allow new roads to dry and settle is often manipulated by concessionaires. Because logs of harvestable diameter located in sun strips are excluded from the cut quota of the AAC, concessions have tended to construct the widest allowable roads.

The NRMP response to management constraints was to promote "low impact logging". NRMP investigated the extent and costs of logging impacts as part of a low impact logging initiative. Working with concessionaire staff, the levels of avoidable logging waste were systematically quantified (NRMP Report No's. 33 and 37). The definition of "avoidable waste" was based on a consensus between concessionaire staff and technical expertise. While demonstrating large

levels of waste, concession field staff maintained that waste levels were over-estimated within the NRMP field site in West Kalimantan.

Further work undertaken to highlight the economic parameters of logging waste (NRMP Report Nos. 44, 71, 72) indicated that the potential benefits from reduced avoidable waste were significantly important for both the concession and the GOI. Based on this, low impact logging systems were developed and linked to higher resources extraction levels in a pilot logging trial (NRMP Report Nos. 58 and 70).

Results from this work informed policy discussions within a *Tim Kajian* framework. Over an extended period, alternative responses to prescriptive regulation of natural forest management were promoted. Workshops were held to discuss the issues with project staff, forestry officials, and private sector concessionaires. During these workshops, an NRMP trainee from a private sector company cited his research to highlight the need for increased forest utilization given increasing resources scarcity. Collectively, these initiatives resulted in a changed logging policy for this concessionaire. However, to date, no change to the underlying national policy approach has been implemented.

### **2.4.3 Compliance and Enforcement of Forestry Regulations**

The critical institutional requirement for prescriptive command and control mechanisms is the ability to enforce compliance. Unfortunately, this is not being achieved in Indonesia. Before 1989, no fines were imposed. With installation of a new Minister of Forestry in 1989, 40% of Indonesia's HPH's were temporarily banned for breaching their obligations. The Minister fined 187 HPH's for excessive logging, and 114 HPH's were blacklisted for failing to pay replanting fees to the MoF Reforestation Fund (*Dana Reboisasi*, DR). However, by April 1990 the number of concessions increased from 561 in 1989 to 575, indicating that no net loss of concession licenses actually occurred as a consequence of non-compliance enforcement.

Curran (1992) assessed the costs and the application of fines in West Kalimantan relative to forest extraction levels. During the period from 1989 to 1992, 97 fines were issued by the West Kalimantan *Dinas Kehutanan* to forty-five of the total 68 HPH's, suggesting that enforcement efforts were increased in contrast to the period prior to 1989 when no sanctions were issued on concessions in the province. Despite the apparent increased enforcement of regulations, concession compliance in West Kalimantan had not increased significantly. The criteria for applying any of the four types of sanctions were vague, as were the level of fines. The four types of sanctions were:

- Withholding the release or assignment of the new annual work plan, which delays production and output. Indirect costs include loss of river transport options in the dry season or unofficial payments to facilitate processing.
- Reduction in the AAC, which reduces the level of productivity.

- An official sanction of as much as thirty times the IHH can be applied at the processing mill for every cubic meter above the assigned AAC. Several companies ceased logging for a period of two months to avoid this sanction.
- A maximum fine of US\$50,000 or a jail sentence for logging within a Protection Forest (*Hutan Lindung*) was imposed.

The impact of sanctions on timber company behavior is ineffective because of the high financial returns from timber. The average annual timber company sanction in West Kalimantan produced US\$32,000 in official fines. Larger timber groups were able to recover these costs from less than two weeks of production. Repayment of all fines by the top eleven conglomerates required harvesting an average of 73 hectares, based on a 60% AAC. While fines and sanctions may appear large to forestry officials, they are relatively inconsequential for influencing concessionaire behavior. Tremendous financial benefits still flow to non-complying corporations that incur low penalties even if caught in violation of the regulations.

Non-compliance persists for other reasons as well. In West Kalimantan, 16% of the production forest area on the Sarawak, Malaysia, border is controlled by the military through logging subcontractors. While other forest operators work through provincial agencies, these operators work directly through the central forestry agencies for their annual work blocks and determination of harvesting areas. Local and provincial forestry officials provide the AAC for these areas. Unfortunately, data used to allocate the AAC are unverified, and the harvested areas did not coincide.

The NRMP response to constraints resulting from non-compliance and enforcement of forestry regulations was to promote the use of “performance bonds”. To encourage compliance, the contingent liability of non-compliance must equal or exceed the benefits of non-compliance. Current sanctions do not reflect the economic benefits of non-compliance and are ambiguous in both their application methods and levels. In response, the use of performance bonds involving a large deposit (75% of annual gross income) by logging concessionaires was recommended by Curran (NRMP Report No. 4, Curran 1992). This performance bond was to be applied in combination with outcome-based indicators on the leased area. However, this recommendation has not developed further, and there has been no action. If performance bonds are adequately assessed, made transparent and accountable, they will hold great promise for identifying responsible concessionaires and for providing security deposits on forest leases.

#### **2.4.4 Negotiation and Production Costs**

Natural forest concessionaires must cope with more than 65 distinct regulations, many of which require annual, quarterly or monthly reporting after field implementation. Corporate concessionaires engage full-time administrative and technical staff to meet the reporting and processing requirements of these regulations, which often require several bureaucratic steps for acceptable compliance. An example of a concessionaire's reporting efforts to meet these regulations highlights the problem. During 1995, this concessionaire filed reports on two presidential decrees (*Keppres*), four government acts (*Peraturan Pemerintah*), ten ministerial decrees, 37 Director General decrees or circulars (*Surat Keputusan* or *Surat Ederan*), in addition to circulars from *Litbang* (1), *Kanwil* (12) and *Dinas Kehutanan* (3). The concessionaire

also were required to file fourteen monthly reports and four quarterly reports submitted to the various MoFr agencies (NRMP Report No. 51).

Not only is there a tremendous reporting demand on concessionaires by Government officials, but concessionaires are also subject to widely varying interpretations of these regulations and practices by provincial and local government officials. Government authorities from each region apply different implementation standards and sanctions for the same TPTI parameter. Multiple visits by different forestry officials provide mixed messages to the concessionaire. The result is a high level of uncertainty for the concessionaire and a severe reduction in the effectiveness of the avoidance role of sanctions. As the current prescriptive approach identifies loopholes, it fills these with more requirements, reflecting concern about the future of Indonesia's natural forests. Inspection resources remain the same, and existing resources are used only to verify reporting procedures and not to evaluate actual forest management (NRMP Report No. 51).

While the current regulatory requirements faced by concessionaires are confusing and ambiguous, they may prove to be insurmountable if extended to community forests. How could community forest managers negotiate the present array of regulations for natural production forests? These communities currently face tremendous obstacles before they can officially benefit from formally-recognized forest timber utilization (NRMP Report No. 51). Successful forest certification by an independent agency, which thereby qualifies the concessionaire for de-bureaucratization and deregulation ((NRMP Reports No's. 46 and 77).

Illegal logging at abandoned HPH's and protected forests thrives in such a circuitous and bureaucratic environment. In West Kalimantan, illegal logging is controlled by business people, government civil servants and HPH concession officials who hire local villagers to fell and transport logs to loading ports. Local community involvement is solicited through third parties, who often garner unofficial clearance letters from local level or higher officials. Illegal logging continues relatively uninfluenced by existing sanctions. The interaction of increased sawn timber taxes and significant increases in domestic demand for logs has shifted the illegal log market by changing the demand for logs before adequate controls at ports were established. It has been inferred from field observations that Illegal logging may be filling the demand for domestic construction timber. The volume and type of illegal timber are not factored into provincial planning processes or statistics.

Concerns about deforestation are driven both two factions. Conservationists often view logging and current forest practices as the major threat to biological resources and diversity. Foresters view the deforested areas as a loss to forest production. Inappropriate management prescriptions to these issues contribute to concerns about continued deforestation. Reduction of available forest land reflects the inability of forest revenues to overcome production costs (e.g., establishing property rights, forest management activities, returns from alternative land uses). These prices and costs determine land uses. Policies may have greater impact on cost thresholds of alternative land uses than do the prices.

The present regulatory system results in significant production costs. For example, the approval process for the AAC can require a year, creating uncertainty and encouraging poor planning by the concessionaire. Delays affect the construction of logging roads, for example, and often result in their use before completion; this, in turn, results in increased costs and soil erosion. Another observed example was delayed arrival of the MoFr inspector who authorizes the production report (LHP). This delay can halt the river transport of several hundred cubic meters

of logs if river levels fall. Ironically, the foresters who express concern over the loss of forest land by conversion continue to support existing regulations without giving adequate consideration to the additional production costs and impacts. Again, these costs would be heavy burdens for local communities to bear because they cannot support personnel to deal with high levels of bureaucracy. Logging small timber volumes would not provide the revenue streams required to support these costs. Consequently, the results are land conversion and illegal logging; both options may provide higher net returns than would compliance with the current system.

The NRMP response to constraints produced by negotiation and production costs was to promote “simplified outcome-based community forest management” (NRMP Report No. 51). Working with forestry officials, NRMP advisors recommended developing an outcome-based system for community forest regulation. The focus on community forestry was intended to provide disadvantaged groups with more immediate economic gains and to provide forestry officials and concession managers with an opportunity to learn what outcome management would entail. Impacts are unavoidable if a forest is to be logged. Levels of disturbance must be maintained within limits of ecological resiliency and forest recovery over reasonable periods. Sustainable forest management requires that these impacts be kept below maximum acceptable levels of change to avoid irreversible disruption of ecological processes. These impact thresholds become the indicators of sustainable forest management. Managing forests within several key thresholds that represent complex ecosystem dynamics supports sustainable forest management in the following ways (NRMP Report No. 51):

- *Simplicity* (an essential benefit to community forest managers)
- *Adaptability* (to enable forest managers to adapt to site conditions)
- *Innovation and efficiency* (allows managers to improve efficiency through decision making)
- *Maximize economic value* (by enabling all the economically valuable wood to be extracted up to the thresholds)
- *Lower cost compliance* (due to reduced burden on local forestry enforcement agencies)
- *Outcome-orientation* (developed in forest-users community, increased awareness of impacts).

Suggested impact thresholds include five core indicators for which realistic outcome thresholds could be set (NRMP Report No. 51):

- *Damage to residual stands*
- *Site disturbance* (soil displacement and compaction)
- *Canopy cover* (area and dispersion)
- *Commercial trees* (composition and density)
- *Hydrological system* (flow and sedimentation).

The benefits and options associated with outcome-based indicators were developed and discussed with a *Tim Kajian* from the MoFr. The interest expressed during this process resulted in linking this approach to establishing community forests. Real concern was expressed about the use of this approach for commercial concessionaire-based logging. To date, there has been no further development of policies or pilots to test and evaluate the suggested framework, and these are urgently needed. For the most part, this reflects the perception among forestry officials of a power shift, in which logging decisions would move out of their control to the private sector. Higher authority than that represented in the *Tim Kajian* will be necessary to achieve positive action.

## 2.5 Lessons Learned: Reducing Natural Forest Undervaluation

Forest resources are of lower value to forest managers because policies have depressed market prices for logs and non-timber products. While non-market values could raise the value of forest resources (NRMP Report No's. 64 and 67), translating these intangible values into tangible incentives has proved difficult. Here, "value" refers to the open market demand for forest products. While policies may not have been designed to reduce the value of logs, they have resulted in an undervaluing of forest resources in several ways: i) encouraged wasteful utilization, ii) favored land conversion to non-forest uses that offer higher economic returns, and iii) reduced revenues from timber and other forest products.

Prohibitive taxes on a range of forest products were applied in an attempt to force added value on the timber sector. The taxes effectively ban or limit the marketing or use of logs to the domestic wood-processing industries and exclude international uses, which cannot afford the logs inclusive of these taxes. This strategy was initially applied to logs and later extended to domestically produced sawn timber and thus reduce the profitability of sawn timber exports. The intended impact of such taxes was to reduce log demand for the production of sawn timber and to protect the emerging domestic plywood industry (NRMP Report No's. 44, 71, 72). A similar rationale was used to discourage exports of raw and semi-finished rattan, and thereby stimulate development of manufactured rattan for export, particularly as furniture (NRMP Report No. 40, Bennett *et al.* 1997). As with most policies of this type, the beneficiaries receive windfall gains and then invest their energies and economic power to protect the *status quo*. With these processing industries now well-established, the policies remain in place. These policies protect the industry but place the integrity of the forest resources base at risk. Taxes have created a number of undesirable outcomes, including:

- Reduced price of domestic logs, which encouraged wasteful utilization (NRMP Report No.37).
- Increased the relative value of other land uses, particularly in more remote areas. In the rattan industry, for example, the export ban reduced domestic prices due to over-supply, and forest gate prices plummeted as a result. Rattan harvesters then had few incentives to maintain forests that once supplied rattan.
- World prices increased by the withdrawal of Indonesia's supply, encouraging other nations to enter the market or substitute products and thus effectively increasing competition with Indonesia.

Mandatory marketing boards were established to increase Indonesia's power within price setting processes, and to prevent unhealthy competition among Indonesian exporters. The emerging domestic industry concept was further supported by policies that forced all resource harvesters to invest in downstream processing. The forced vertical integration of production and processing functions discouraged forest concessions from maximizing output and profits. No incentives exist for production units to seek the highest use of their forest resources.

Conversely, concessions focus on the supply dictated by mills that produce a narrow range of products. The concessions' primary financial consideration is to reduce costs and maintain a steady supply to the mill. There are no rewards for low impact logging. Wood of non-export milling quality is discarded because it is technically illegal to market domestically. As wood becomes increasingly scarce, concessions face incentives to source wood from illegal sources to supply domestic demands.

Restrictions on the local community timber trade is another issue pertaining to undervaluation of forest resources. Trade restrictions have been applied to control exploitation, especially by sub-contractors. One impact of these restrictions is that villagers are typically only permitted to fell small quantities of timber for their own household use, preventing any opportunities to increase the value of the forest for local household incomes.

The purpose of royalty payments is to prevent windfall profits, discourage wasteful use, and provide revenues for the reforestation fund. Volume-based stumpages are applied for administrative ease. Because royalties are inappropriately assessed (e.g., not by relative values of different commercial species), the outcome is high-grading and increased waste in the forest (NRMP Report No. 4). This is further exaggerated by the AAC assessment, which understates the supply of economically extractable wood. Although originally devised for reforestation of harvested production forests, the reforestation fund (*Dana Reboisasi*) is now targeted for investments to establish industrial pulp and paper plantations.

The NRMP response to these constraints posed by forest undervaluation was to promote the creation of domestic competition. Competition encourages innovation and efficiency. Competition in the wood-processing sector is not encouraged by existing forest policies or by the current forestry power base. However, potential revenue gains are available from the relaxation of vertical integration requirements (NRMP Report No. 72). These include increased efficiency as smaller production units concentrate on harvesting activities while larger operations are able to increase their raw material supply to increase processing efficiencies. The withdrawal of trade restrictions and mandatory export marketing board membership would assist by directing resources to the highest value use (NRMP Report No. 55). Other strategies recommended reducing, if not removing, the sawn timber tax (NRMP Report Nos. 71 and 72) and the industrial concentration policies in the wood processing sector.

## **2.6 Lessons Learned: Reducing Uncertainties of Resource Allocation Rights**

A body of secure, enforceable rights is one of the critical management requirements for property. Without these conditions, the holder is not guaranteed continuous access to the benefit stream arising from their resources rights and investment. Under such uncertain

conditions, those with resources rights tend to maximize their short-term use to capture the largest benefit stream in the shortest amount of time while their rights still hold.

Uncertainty surrounding resource allocation policies may be spatial, temporal or both. First, it is not always sufficiently clear where exactly the forest management unit is (principally a matter of boundaries), nor who has formal and informal access to it. Second, forest managers face uncertainties about how long the access rights will last. These uncertainties increase risk and favor short-term exploitation, and may include (NRMP Report No. 58):

- Inadequate infrastructure development (e.g., temporary roads and bridges)
- Inadequate efforts to reduce logging impacts to allow adequate second harvest regeneration
- A minimalist approach to community relations
- Low interest among local communities in preserving forest functions.

Some of the policy constraints to resolve resource allocation uncertainties are concerned with:

- Concession licensing
- Industrial plantations and contested production forest boundaries
- Absence of full forest management rights for local communities.

### **2.6.1 Concession Licensing**

Contracts concerned with timber concession licensing rights extension must first be considered. Over 83% of West Kalimantan concessions, for example, considered their extension option when their licenses expired prior to *Repelita V*. The selected HPH concession's assessment of the value of remaining production forest reflected the perceived profitability of remaining forest areas even with infrastructure already in place. An extension to the concession enabled the HPH to harvest the remainder of its allowable production areas. Yet, only four HPH's in the province had applied for an extension in 1992, while 87% had already ceased operations or planned to do so when their lease expired (Curran 1992).

The 20-year concession license was adopted to allow assessment of the previous lease before MoFr would grant a renewal or extension. Criteria for the review and renewal process remained unclear due to the lack of transparency in the process and the lack of clear objectives. Despite full compliance, no concessionaire can guarantee that their 20-year license will be renewed. The concessions' limited interest in extending operating licenses supported the view that the majority of concessions were operating for short-term gains available within their existing contracts. Only 12% of West Kalimantan's concession land area could be considered acceptably managed according to prevailing forestry regulations. The causes of this scenario were linked to uncertain resources rights and capital investments with 5-7 year life spans (Curran 1992).

Because of these license renewal uncertainties, no serious attempt was made to conduct long-term planning for future cutting cycles. Infrastructure, such as transport systems and camps, is designed for short-term use while harvesting practices place greater emphasis on reducing their costs rather than reducing forest damage. The relationship between communities and concessionaires also typically deteriorates during the latter half of the 20-year period. Because it faces little potential risk in penalties, a concession can avoid its local community relationship

and the associated costs by expressing its intention to not renew its concession license. Within some abandoned concession areas, increased land encroachment occurred because the area was treated as an open access resource. This new access has often displaced those who previously had traditional, often undocumented, land claims and encourages permanent conversion of natural forests.

The MoFr established the *Bina Desa Hutan/* PMDH Program in an attempt to increase the benefit streams to local communities. In this case, economic and social development projects were established by the HPH. Unfortunately, this program has often been misguided and conducted in a top-down manner. The concessionaires who received the forest land leases ostensibly implemented the rural development programs approved by MoFr. Success has been evaluated through reports detailing area covered and number of people participating. In addition, when concessionaires transfer their holdings or convert them to industrial plantations (HTI), commitments to these programs also dissolve.

The NRMP response to constraints and issues of timber concession rights extension was to promote the development of community-based *Bina Desa* programs. Considerable effort was spent on developing and demonstrating how these programs could be revised to be responsive to community needs and their available resources. Shifting the focus of the *Bina Desa* programs from the autocratic top-down agricultural development models to more appropriate solutions, based on local economy and ecology, was developed in the Bukit Baka-Bukit Raya area of West and Central Kalimantan (NRMP Report No's. 43, 53 and 60; Bennett 1996). Additional input was provided by action trainers working on local skills development for agricultural crops promoted by the existing *Bina Desa* program. In particular, dryland and wet rice technologies were demonstrated with significant initial impact for participants in degraded grassland areas with few agricultural alternatives. These technologies required considerable external inputs and were not suitable across many areas of Indonesia. Continuation and extension of these technologies was uncertain when the program support ended. Again, the underlying policy changes, necessary to encourage longer-term investments, have not occurred.

## **2.6.2 Industrial Plantations and Contested Production Forest Boundaries**

Land designations and boundaries are often conflicting and ambiguous because of the initial land allocation process, inadequate ground-truthing, and continued efforts to accommodate new concessions. In addition, requirements that industrial plantations be linked to concessions have created a multi-use forest area concept that was not originally considered. The industrial plantation program (*Hutan Tanaman Industri*, HTI) has aimed to regreen Indonesia's forest lands, in part, to counter criticism of expansive timber harvesting programs. However, the planting of pulp species should not influence reforestation programs for native hardwoods. Nor should the number or area reforested under the HTI be combined to mislead the public about the extent of replanting dipterocarp or other native commercial timber species. During *Repelita IV*, for example, only 4.6% of the planned 1.5 million hectare goal was planted under the industrial plantation program (Curran 1992). Despite this significant shortfall, the target for the *Repelita VI* timber estate program has increased four-fold to 6.2 million hectares.

During the HTI program's initial implementation, Curran (1992) investigated the early sites during surveys of West Kalimantan in 1991-92 for NRMP. From 1990 to 1991 in West Kalimantan, 1,158,750 hectares of HTI licenses were granted, ranging in size from 7,600 to 315,000 hectares. The 1991 area assigned to clear cutting for industrial estate planting was 143,151 hectares. One concern regarding the placement of timber estates on concessions is the extent that they may undermine or conflict with natural production forest management. The observed negative impacts that may arise from this are discussed below.

Some manipulation of sites is made by companies that have reported low standing volumes within a concession and thereby have its classification changed to unproductive or conversion land. The official criterion of 20 m<sup>3</sup> per hectare for unproductive land classification is actively debated among forestry officials. For sites classified as unproductive land, large financial gains were generated solely from the sale of timber obtained from clearing land for plantations. Combined with the region's current timber shortages for industrial requirements and expansion of massive wood processing factories, HTI site selection was extremely vulnerable to misreporting and political influence. The timber produced from preparing timber estates generated one million cubic meters more than the most generous target for concession forests. This estimate was based solely on the area designated for conversion to plantations (e.g., oil palm) in 1992-93.

Insufficient consultation with local communities over appropriation of plantation land and location of transmigration villages precipitated considerable tensions and conflict with land use and traditional ownership claims. To compound the problem, proposed locations were often in conflict with current land-use status as demarcated by central government agencies.

Many HPH's are reluctant investors into industrial estates, especially those in remote areas with associated high transport costs to mills, because of perceived low profitability. Some of the reasons for this may relate to the uncertainty associated with the life span of plantations and the productivity of HTI, which had not been tested in the West Kalimantan sites. Preliminary evaluations of HTI profitability suggested that these concerns were highly relevant; conservative economic analysis with optimal ecological conditions produced significant losses per hectare and negative returns on investment Curran (1992). These negative economic results during the first cycle occurred even with the provision of significant government subsidies for plantation establishment.

Establishing industrial estates in concessions creates a number of risks to natural forest cover. Risks can arise from the methods of site clearing, often involving the use of inexperienced transmigrants, and from the associated population increase in areas adjacent to natural forests. Site clearing generally involved burning large areas (average 6000 hectares per burn) and using labor who are unknowledgeable about local climatic and ecological conditions. This practice greatly increased the risk of fire escaping to surrounding farms and natural production forests. With HTI agreements covering 6-20 years, there was uncertainty over the production capacity of plantations to provide sufficient revenues over the project life. Transmigrant families and villagers often must expand their existing small subsistence farm plots or open new plots in logged natural forest.

Investments into industrial processing capacity have led to development of a harvestable resources base to provide necessary raw materials. In West Kalimantan, establishment of only 20,000 hectares of HTI annually was expected. Even with a wood shortage for established processing industries, further industrial investment in wood processing was planned. Resulting from establishment of large-scale HTI areas, land clearing for plantations has provided

considerable volumes of timber for the wood processing industries. For example, in the 1992-93 fiscal year, timber volume from proposed plantation sites exceeded targets from the total natural production forests areas managed under the TPTI system in West Kalimantan.

Under Forestry's existing command and control regulation systems, the requirement to monitor forest practices with widely divergent extraction and harvest procedures increased dramatically. Given the current limited management capacity to oversee a natural forest system for only timber, these multiple-use systems (HPH/HTI) place additional requirements on this capacity. Without the additional monitoring and revised protocols to incorporate both production and plantation forestry at the same site, the levels of abuse to natural production forests will increase.

### **2.6.3 Absence of Full Forest Management Rights for Local Communities**

Full rights to forest management have been withheld from local communities and the private sector. The intention of this strategy was to maximize profits for concession holders, resulting in increased royalties paid to the government and thereby improve the national economy. Another reason for withholding local forest rights has been to prevent excessive exploitation and lack of accountability resulting from a community selling its rights to third parties. The central government and the concession holders view local residents as a major liability to their forest management objectives and as being susceptible to high paying outsiders. The logic behind this reasoning may lie with the desire to maintain and maximize profits of existing timber concession companies, often with powerful political backing.

Local peoples' rights to forest resources and land are particularly problematic within a natural production forest. Indonesian law does not recognize overlapping land-use rights or designations (e.g., *adat*, or traditional inherited land and resources rights by groups or individuals). In all cases, primacy is given to the rights of concessions. Under the community forestry (*Perhutanan Kemasyarakatan*) program, villagers may harvest some non-timber forest products but not timber for sale, and these programs are administered in only a few concession areas.

The NRMP response to the absence of full forest management rights for local communities was to promote the establishment of "Traditional Forest Areas" (TFA). The establishment and recognition of traditional rights was addressed through consultative interaction with villages adjacent to Bukit Baka-Bukit Raya National Park. Present and historic management regimes were compiled through working with community members. During this process, the local institutional base for resources rights was identified. Although considered by many to be an important component of forest use, the traditional inherited land and resources rights (*adat*) in these communities were breaking down. Historically, local *adat* rights had focused on social interactions within a few communities within a watershed rather than on human-resources interactions across multiple levels or on domestic and internal markets. Historic management arrangements in this area of Kalimantan offered only limited opportunities for effective input to resources management given current market pressures and political interests.

Community sketch-mapping and agricultural histories were used to determine areas where local communities either held perceived or legitimate claims (NRMP Report No. 52). These concepts were developed into a project design for traditional forest areas within concessions that

integrated local ecological and geographical knowledge, social preferences and existing institutions (NRMP Report No. 39 and 63). The design was based on a pilot study that aimed to establish clear resources rights for enclave villages, and was intended for implementation during the second-phase NRM Program cycle. The major impact of the TFA management concept will be determined by the ability of the pilot study to convince decision-makers to recognize multiple claims to forest land and seriously address the underlying issues surrounding community resources rights.

## **2.7 Summary of Lessons Learned from Sustainable Natural Forest Management**

NRMP has identified several policy issues that need to be addressed if natural forests are not to become islands in wider landscapes of intensive land use. As Indonesia's policy broadens the objectives of development from that solely for narrowly circumscribed economic growth to a more balanced concept of equitable sustainable development, fundamental questions about the ability of existing forestry institutions to support the wider goals remain unanswered. The prospects for policy reform in Indonesia's forestry sector are uncertain. "Bigger carrots and better sticks" is one means to describe policy reform needs; provide incentives for good management and appropriate, focused and well-applied disincentives to ultimately accomplish behavioral changes. The difficulty facing donors and the MoFr is to simultaneously address all three major themes discussed in this chapter; namely, i) simplifying institutional requirements, ii) increasing the valuation of natural forest, and iii) reducing uncertainties of resource allocation rights.

Simply reforming forestry policies may not deliver the required outcomes. Multiple stakeholders operate within policy frameworks that influence the forestry sector. Policies of other agencies affect forest management and must also be addressed if improved outcomes are achieved. Therefore, policy revision requires implementing multi-stakeholder processes to allow integration of these often divergent views and objectives. NRMP investigated these issues to determine the priorities for applying innovative institutional programs and policies to enable Indonesia's improved sustainable use of natural forests.

In general, the MoFr and donors must pursue an integrated approach to forest policy revision that accommodates the following issues or lessons learned:

- Unless the real long-term values of forests are quantified and revealed, there will continue to be over-exploitation of forest products. Current policies in Indonesia undervalue forests and their products and provide no incentive for efficient or sustainable use.
- The current excessive uncertainty over access to benefit streams from resource allocation rights has resulted in right-holders adopting a short-term perspective over resources exploitation to maximize the value of their right. Moreover, right-holders face even less incentive to invest in reforestation and replanting. As a direct result, historic management of forest products and services has been disrupted through a combination of market forces, conversion of lands, and opening new access to resources.

- The excessive use of centralized command and control policies that specify inputs and reporting requirements and increase the cost of operating reduce the incentive and value of improving management. These policies have excluded community ownership and reduced or stifled innovative management approaches. The lower returns from forestry also result in reduced ability to compete with alternative land uses, such as large-scale conversion to pulp wood and oil palm plantations.
- If the quality of residual stand management is to be improved, pre-harvest treatments and improved harvest techniques need greater attention, rather than the current set of post-harvest planning and damage control activities. Improvements include longer-term management and planning beyond annual work plans, improved infrastructure, 100% cruising identification of trees, and lower impact logging. There is also a greater need for more creative development of rapid assessment of key ecological, economic and social indicators of good management, and for devising a reporting and evaluation procedure that rewards outcomes rather than only compliance with prescriptions.

The necessary debate to initiate these and other changes has begun in the MoFr and other governmental and non-governmental agencies. Effective change will depend upon the underlying interests in forestry. Improved understanding of stakeholder involvement has been identified to develop a more adaptive and cost-effective management framework. NRMP identified the need for improved policies that encourage more internationally competitive pricing and greater decision-making responsibility with clear objectives for forest managers. However, the next chapter stresses the need to consider and protect conservation values that fall outside of existing markets and many of the current development decision-making processes.

## **3. Conservation Area Management**

### **3.1 Overview**

Chapter Three focuses on NRMP field site experiences with preparing management plans for Bunaken National Park in North Sulawesi and Bukit Baka-Bukit Raya National Park within West and Central Kalimantan. With regard to undertaking national park management planning, emphasis in this chapter is on the need for more accurate identification of stakeholders, more effective local community consultative processes for planning and implementation, and enabling more positive impacts on biodiversity conservation goals. Lessons learned for conservation area management focus on i) national park management planning constraints, ii) park management and regional development planning, iii) financing effective conservation management, and iv) institutional reform for conservation management.

Regional development planning must link conservation with economic development, supporting the goals of both long-term sustainable development and biodiversity conservation. The management of national parks and the rest of Indonesia's conservation area system is an essential contribution to the country's development process and a prudent long-term investment. While the focus is on national park management, effective protection of the biodiversity within a park requires sustainable management of resources beyond its borders. Development and conservation are not mutually exclusive, but interdependent. National park management must be viewed in a wider context. Parks and other protected areas should be seen as supportive of a wider system of integrated natural resources management. Thus, parks management planning needs to be linked to broader regional spatial planning.

Park management planning must be flexible and people-oriented. NRMP experiences in the national parks at Bunaken and Bukit Baka-Bukit Raya have confirmed the fundamental importance of developing adaptive, multi-stakeholder national park management. Innovative management by a coalition of stakeholders at each park could provide effective protection of Indonesia's conservation system and support sustainable regional development if supported by appropriate enabling policies at the national level. The role of PHPA as an important stakeholder in park management must be strengthened. Their relatively insignificant involvement in the planning process was seen by NRMP as a serious constraint to effective management planning and subsequent implementation.

### **3.2 The Role of Conservation in Indonesia's Development**

The importance of Indonesia's natural resources for economic growth and development has been discussed. However, effective efforts to conserve these natural resources in terms of maintenance of both long-term biological diversity and ecological functions must be considered. It is argued that natural resources conservation is essential to maintain long-term sustainable development and ensure new future economic opportunities. Underpinning Indonesia's natural

resources capital stocks is one of the world's richest centers of biological diversity. Indonesia is one of the top two "mega-biodiversity" countries in the world. For a country that represents only 1.3% of the planet's land surface, Indonesia has a very high proportion of the world's biodiversity (Table 3.1). However, knowledge of the extent and potentials of this diversity is insufficient. Effective biological diversity protection is also insufficient, and many species and ecosystems will become threatened and then lost along with opportunities to discover their full value and utility.

**Table 3.1 Species Richness of Globally Mega-biodiverse Countries**

Country	Mammals	Birds	Amphibians	Reptiles	Butterflies	Angiosperms
Indonesia	515	1,519	270	600	121	20,000
Brazil	428	1,622	516	467	74	55,000
Colombia	359	1,721	407	383	59	45,000
Mexico	449	1,010	282	717	52	25,000
Zaire	409	1,086	216	280	48	10,000
Tanzania	310	969	127	244	34	10,000

Source: KEHATI, 1995.

Indonesia is rapidly exhausting its natural resources base. Rapid development has helped to reduce poverty and provide new employment opportunities, at least in the short-term; however, current resources-use trends are unsustainable. The development process is eroding the biological resources and ecological support functions needed to sustain development. Development activities must balance goals of today with those of tomorrow. One way to conserve biodiversity and maintain ecological functions for continued economic growth and social development is through effective management of a protected system of conservation areas. While it is often difficult to determine the required size and coverage of the country's conservation area system, it must be large enough to protect viable representations of major ecosystems and their component floral and faunal communities. A range of ecological systems could thus be supported and allow for the prerequisite conditions of sustainable development.

Although Indonesia has designated a large area for conservation and protection, the conservation area system is under continual threat. A number of indicators suggest that irreversible losses are increasing. If effective protection is not improved, extinctions will increase along with irreversible losses from supportive ecological functions. Indonesia is among the top five countries with the most threatened mammals, and heads the list for threatened birds (IUCN 1996). The fate of bird species has drawn much attention as good indicators of biological diversity and ecosystem health. The large number of threatened bird species in Indonesia highlights the changes associated with the habitats on which these species depend. Likewise, only 29 percent of Indonesia's coral reefs are in good condition, with many areas reportedly pristine 20 years ago now laying as dead rubble (Caesar 1996). By example, the fate of birds and coral reefs should be of major concern as clear indicators of ecosystem health and the inefficiency of natural resources utilization in Indonesia.

Biodiversity conservation in Indonesia is often considered to mean strict preservation and is thus often perceived as antithetical and opposed to economic development. Economic

development harnesses and exploits natural resources. Protection and maintenance of ecosystems, species, and genetic resources are often perceived to be at the expense of economic development. It is the perception of many government officials and the private sector that protected areas are totally closed to any form of economic development. From this perspective, these areas represent lost opportunities on the opposite extreme of economic opportunity. There is little understanding of the supportive links between conservation and development.

Striking a balance between conservation and development is a prerequisite for long-term growth and long-term economic prosperity. Ideally, the two concepts could be brought closer together in a socially acceptable and unthreatening manner. Through implementation of sustainable natural resources management, “appropriate use” as opposed to “no use” would be supported; this is the basis of sustainable development. Sustainable development thus implies long-term, low-impact utilization of natural resources. It necessitates the efficient use of a region’s natural resources base, with substantial incentives to reduce overall economic dependence on this base.

Biodiversity conservation refers to the maintenance of species and ecosystem diversity, and may be extended to include maintenance of the ecosystem functions required to support continued economic growth. Ecosystem functions include prevention of soil erosion, flood protection, climate maintenance, agricultural support, and other natural resources utilization. *In situ* biodiversity conservation, i.e. within the natural conservation area system, preserves areas of ecological importance that directly or indirectly support the surrounding developed area. Conservation supports sustainable development by maintaining ecological functions that allow for economic growth and reduction of public expenditures that would otherwise be needed to alleviate environmental crises (e.g., forest fires, floods, droughts, pest infestations). Conservation actually promotes national stability by minimizing perturbations to the interdependent economic and ecological systems. *In situ* conservation is intended to be accomplished through maintenance of Indonesia’s important conservation area system, which is currently not being effectively managed or protected.

### **3.3 Indonesia's Conservation Area System and Management Issues**

The Indonesian government has set a total conservation area target of 18 percent of the country’s land area (MoFr 1995). This target intends to fulfill the safe minimum requirement for future needs of biodiversity conservation. However, the extent to which this targeted area will provide sufficient coverage for important habitats and ecological functions, in both quantity and quality, remains to be seen. Protecting isolated areas of high biological diversity and high ecosystem integrity, within a regional landscape that is rapidly degrading, may neither sufficiently maintain biodiversity nor provide for future natural resources development requirements. Current management of the conservation area system is weak.

On paper, through official maps and government decrees, Indonesia has established one of the most comprehensive systems of conservation areas in Asia. However, selection of areas comprising the conservation system has rarely been determined scientifically. Instead, it has been determined by setting aside a large portion of the country that was not subject to competing demands. The intention was to plan, manage and evaluate these areas at a later date when resources became available. Approximately 16.9 million hectares of terrestrial area,

or 8.5 percent of the country's land area, and about 4.5 million hectares of marine area have already been established for conservation. Table 3.2 presents the conservation area system by protected area status as of 1996/1997, and is limited to parks and reserves. A further 7 percent (approximately 3 million hectares) has been proposed as terrestrial protected areas. Thirty million hectares of marine conservation areas have also been proposed for gazetting before the year 2000. This expansion aims to incorporate conservation areas in each major habitat type within the seven bio-geographical zones represented in Indonesia. Protection Forest (*Hutan Lindung*), an official MoFr forest land category, is often included within the conservation system but is not included here. Large areas of protection forests (*Hutan Lindung*) have been designated, with areas reported to be between 9.5 and 15 percent of the country's total land area, but their durability is questionable.

**Table 3.2 Structure and Extent of Indonesia's Protected Areas System**

<b>Classification</b>	<b>Total Number</b>	<b>Area (%)</b>	<b>Area (hectares)</b>
<b>1. Terrestrial Areas</b>			
1.1 National Parks	30	61	10,397,420
1.2 Strict Nature Reserves	172	13	2,210,247
1.3 Nature Recreation Parks	76	2	285,647
1.4 Wildlife Reserves	45	21	3,576,928
1.5 Grand Forest Parks	11	1	237,373
1.6 Hunting Parks	13	1	234,392
<b>Subtotal</b>	<b>347</b>	<b>100</b>	<b>16,942,007</b>
<b>2. Marine Areas</b>			
2.1 National Parks	6	81	3,682,955
2.2 Strict Nature Reserves	5	4	194,850
2.3 Nature Recreation Parks	13	13	597,582
2.4 Wildlife Reserves	3	1	65,220
<b>Subtotal</b>	<b>27</b>	<b>100</b>	<b>4,540,607</b>
<b>3. Combined Totals</b>			
3.1 National Parks	36	66	14,080,375
3.2 Strict Nature Reserves	177	11	2,405,097
3.3 Nature Recreation Parks	89	4	883,229
3.4 Wildlife Reserves	48	17	3,642,148
3.5 Grand Forest Parks	11	1	237,373
3.6 Hunting Parks	13	1	234,392
<b>Grand Total</b>	<b>374</b>	<b>100</b>	<b>21,482,614</b>

Source: PHPA, *Statistik Kehutanan. Bidang Perlindungan Hutan dan Pelestarian Alam, Tahun 1996/97*

Protected areas were first established in the 1700's by a Dutch Colonial officer concerned about the loss of natural habitats on Java, a region facing rapid population growth (Supriana and Sukandar 1996). Long before this historical event, several sultanates had set aside large areas designated primarily as hunting reserves. Some societies had also set aside locally respected and managed protected areas, sometimes as "sacred forests", as part of their cultural traditions. Some locally respected and managed "sacred forests" still exist today. However, the first official government reserve was not established until 1889 at Cibodas, and in 1916 the first conservation legislation was passed as the Nature Reserve Act. Shortly thereafter in 1919, the first strict nature reserve (*cagar alam*) was established. Strict nature reserves were initially intended as areas deemed in need of protection and excluded from any utilization whatsoever. However, since the 1980's, a broader classification system has been applied (IUCN 1994), involving management approaches ranging from total exclusivity to community or commercial use of resources inside protected areas. The first national parks were established in 1980 (including Gunung Leuser, Gunung Gede-Pangrango, Baluran and Komodo), and the first national marine park (Kepulauan Seribu) was established in 1982.

Legally, the management of Indonesia's conservation area system is established within Act No. 5 of 1990, "Conservation of Living Resources and Their Ecosystems", and a number of supporting regulations and guidelines for operational matters (e.g., national park planning, species conservation). Institutionally, management responsibility lies with the Directorate-General of Forest Protection and Nature Conservation (PHPA, now known as PKA or *Perlindungan dan Konservasi Alam*) within the Ministry of Forestry and Estate Crops (MoFr). During NRMP and prior to Ministerial restructuring, PHPA was one of four Directorate-Generals within MoFr. PHPA was comprised of central offices located in Bogor and Jakarta, 8 regional (*Balai*) representative offices, 28 provincial (*Sub-Balai*) offices and 12 national park management units (*Unit Pelaksana Teknis*, or UPT) with a total staff of about 4,860 in 1996. An additional 22 national parks were awaiting staff allocation for implementation of UPT management status. Based on current standards, the UPT's will require approximately 2,200 additional staff (MacAndrews and Saunders 1997).

While the extent of Indonesia's conservation area system is impressive, adequate management remains a formidable challenge. Many management tools currently being used have proved ineffective for addressing threats to conservation values. There is a need to recognize these weaknesses and develop appropriate corrective responses, including:

- Shifting management planning from a standardized, inflexible blueprint approach to more locally adaptive, site-specific and on-going management approaches
- Initiating institutional reforms that strengthen the park managers' capacities to participate in regional planning and development
- Developing park management around a participatory multi-stakeholder process that identifies and supports the rights and responsibilities of the various stakeholders.

The NRMP experience offers insights into some of the opportunities and constraints of national park management in Indonesia. The GOI requested NRMP assistance for development of two management plans: Bukit Baka-Bukit Raya National Park (mostly montane tropical forest in West and Central Kalimantan) and Bunaken National Park (comprised of island, coastal and predominately marine environments in North Sulawesi). NRMP focused on planning for these

two parks as pilot projects, and a review of these experiences provides valuable lessons for national park management elsewhere in Indonesia.

### **3.4 Lessons Learned: The National Park Management Planning Process**

#### **3.4.1 Management Planning Guidelines**

Management of a national park in Indonesia officially commences with the development of a twenty-five year management plan, which is expected to strictly adhere to the MoFr's "National Park Twenty-Five Year Management Plan Guidelines". These rigid guidelines present a detailed table of contents for a three-volume management plan:

- *BOOK 1: The National Park Management Plan*, which includes a comprehensive set of activities and budgets, mainly focusing on a first Five-Year action plan
- *BOOK 2:: Data Projection and Analysis*, which provides information and analysis to justify the overall plan
- *BOOK 3: Site Plan*, which includes maps and figures for management zones, infrastructure and site development.

Government guidelines also stipulate the management plan review and approval process at the national and provincial levels. Upon review by a forum of related agencies at the provincial level, the management plan containing the best alternatives should be acknowledged by the Head of the Provincial Development Planning Agency and be evaluated by the Head of the Provincial Office of the MoFr. Each national park management plan would then, in theory, be approved and endorsed by the Director-General of PHPA.

MoFr national park management staff place great emphasis on the production of an approved Twenty-Five Year Management Plan. This document provides the basis for both increased access to funds for the national park and, more importantly with UPT status, independent budgetary status from other protected areas in the region. Thus, the Twenty-Five Year Management Plan is perceived as a blueprint for management, providing the budgetary guidelines for each national park's Five-Year Management Plan (RKL) and annual budgets (within the RKT).

The concept of standardized management plan guidelines does have its merits. The use of guidelines attempts to ensure that certain sets of standardized baseline data are collected and relevant government agencies are consulted. Most importantly, the guidelines ensure that comparable sets of information are presented in the same format for each park. This provides the opportunity for decision-makers within PHPA to monitor and manage the national parks within an overall system. This could be particularly useful for maximizing the efficiency of both financial and human resources allocations.

However, the current management plan guidelines are also fraught with problems and constraints. NRMP proceeded with design and production of two management plans, but the

plan guidelines have proven to be a constraint to effective management. One shortcoming is that park planning guidelines demand too much information that is irrelevant for managing parks (Taylor 1996). The guidelines emphasize data collection rather than management and problem solving, and provide inadequate guidance for scoping analysis and planning. A second shortcoming is the static nature of the detailed guidelines which offers little flexibility to adapt planning to the unique conditions of each national park. Management activities and budgets are reflective of situations and conditions existing at the time the management plan is written. Once the management plans have been finalized and approved, there are no mechanisms in place to amend them to reflect changing ecological or socio-economic circumstances. Consequently, plans become the end goal of the planning process rather than the means for effective and flexible on-going management.

A third shortcoming of the MoFr national park management plan guidelines concerns human and financial resources allocation priorities, which are confined to the existing protected areas. There is little strategic analysis to determine if resources required for a given area might be better utilized in another location. In effect, the existing system does not allow PHPA to capture the largest potential gain from the available resources. A fourth shortcoming of the current national park planning model is the lack of a "learning-based approach"; that is, learning from experience about what happens under certain conditions and discovering the underlying causes and patterns of certain outcomes. There are currently neither evaluation nor feedback mechanisms in place for decision-making. Without effective learning opportunities, management decision-making remains *ad hoc* and reactive, decreasing the likelihood of effective long-term management. By contrast, an iterative and learning-based management process would allow for the design of more rapid and effective decisions in response to similar future situations.

Thus, there is a very great need to develop alternative planning frameworks and decision-making processes to replace the existing management plan guidelines. One strong indication of this need is the response to park management plans developed and presented to the MoFr by NRMP. The overwhelming response to these documents has been, "But what do we need to do? The plan is too long and complicated to be useful." While the management plan guidelines stipulate that government agencies be consulted in the review and approval process, there tends to be little sense of ownership of a park's Twenty-Five Year Management Plan by these agencies. Although the plans are prepared through strict adherence to the guidelines, there is already mounting evidence that the current system of planning is not adding value to the effective protection of Indonesia's national parks and other reserves in the conservation area system. Continued donor involvement in management plan preparation exacerbates the problem. By 1996, twenty-four management plans, based on the MoFr guidelines, have been completed or are in progress, yet only four have been approved. Moreover, completion and approval of a management plan is not necessarily a good indicator of effective management planning. In short, the current blueprint approach to national park management planning is inappropriate for Indonesia's varied and complex national park system.

The unique features, opportunities, and constraints of each national park, compounded by the dynamic nature of Indonesia's development process, requires an adaptive approach to national park planning that is responsive to changing local circumstances. As such, planning should be an on-going part of national park management. NRMP experiences in Bunaken and Bukit Baka-Bukit Raya national parks demonstrate that management planning is ineffective under the current set of guidelines. Rather, management planning must be treated as a flexible and adaptive process, constantly reviewed within the integrated context of overall park management

and regional development. Throughout this process, multi-stakeholder participation must be developed and nurtured to a point of ownership, far beyond mere consultation as prescribed by the National Park Management Plan Guidelines and as experienced by NRMP.

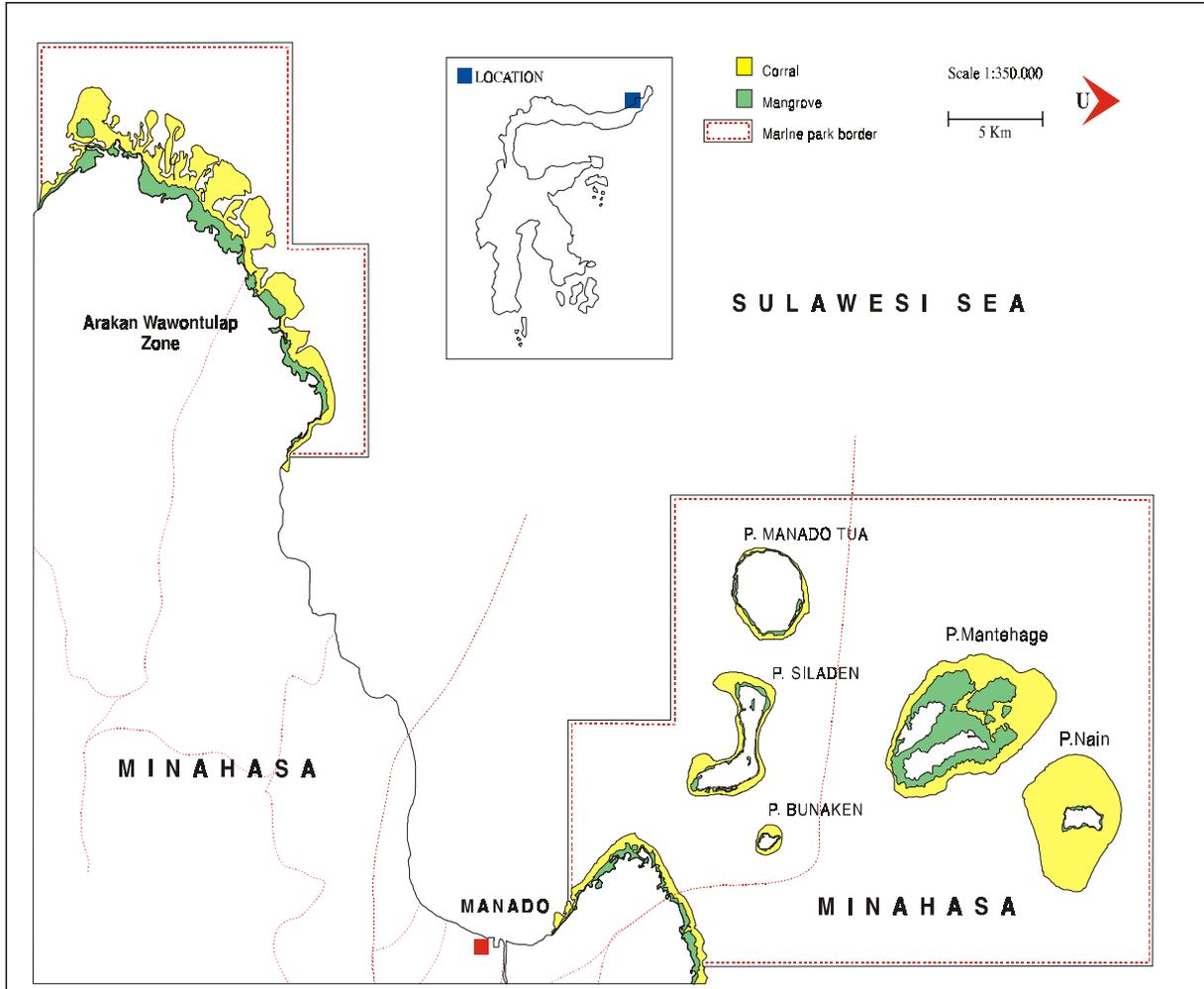
NRMP focused on management plan preparation for two of Indonesia's thirty-six national parks: Bunaken and Bukit Baka-Bukit Raya. While both are national parks, Bunaken and Bukit Baka-Bukit Raya have very little else in common. Bunaken is a marine park located just minutes from Manado, the capital of North Sulawesi. With its international reputation for diving, Bunaken is a major growing tourist destination. Relatively isolated, Bukit Baka-Bukit Raya is a mostly montane tropical forest block straddling the provincial border of West and Central Kalimantan. This terrestrial park is located more than a day's journey from either of its associated provincial capitals, and is of far greater interest to the seven timber concessions surrounding it than it is to tourists.

Although significantly different in terms of conservation values, access, and stakeholder interest, both national parks had Twenty-Five Year Management Plans prepared by NRMP consultants under the guidelines set forth by the MoFr. Beyond this, NRMP attempted to develop these two management plans in a participatory nature, consulting perceived stakeholders (with an emphasis on local communities) throughout the process. The two management plans have been submitted and approved, and are being utilized by their Park Heads (KTN).

### **3.4.2 Bunaken National Park**

Located just a short boat ride away from the North Sulawesi provincial capital at Manado and its international airport, Bunaken National Park is an internationally-acclaimed scuba diving destination (Fig. 3.1). Its park status acknowledges ecosystems worthy of preservation to maintain and further cultivate tourism development and support the fishing sector. Its coral reefs and steep walls team with brightly colored fish and other marine life. The Park's conservation value consists of its great marine biodiversity and tourism potential. Located in the "coral triangle" or center of the world's most diverse marine regions (eastern Indonesia, southern Philippines and the northern Great

**Figure 3.1 Bunaken National Park in North Sulawesi**



Barrier Reef in Australia), Bunaken represents some of the greatest marine biodiversity in the world. Marine biologists estimate that within this 80,000 hectare park there are more than 2,500 species of fish representing 175 families. The largest number of species occur on the coral reefs, and the deep waters between reefs provide suitable habitat for pelagic fish and mammal species, including marlin, tuna, sharks, and whales. Beyond its important coral reefs, the park contains approximately 20 percent of the province's mangrove habitat, with 28 major mangrove species identified. Bunaken National Park also provides habitat to several endangered species, notably the dugong, green and hawksbill turtles, all seven species of giant clams found in Indonesia, several other mollusc species, and the recently discovered primitive *Coelocanthe* fish (previously only known from the Comoro Islands near Madagascar).

### ***Participatory Planning and Management***

A cohesive Bunaken National Park community does not exist. The various stakeholders come from different backgrounds, sharing and competing economically. The discourse within this group is more hierarchical and top-down than it is democratic. Antagonism among stakeholders is fueled by conflicting economic interests and is embedded in conflicting cultures. The dominant political culture tends to be the Minahasa, and the dominant economic culture tends to be Indonesian Chinese. Both groups are predominately Christian with strong terrestrial orientations. By contrast, people living in and adjacent to the marine park are more diverse; farmers tend to be Christian and fishers tend to be Muslim. Resources use is opportunistic; families use low-capital systems to meet subsistence and market demands.

Park stakeholders competed for a range of resources (e.g., dive sites, fish and other marine resources, mangroves, and tourism development sites). In reality, there was little sense of community among Bunaken's diverse group of stakeholders, which included:

- Various government agencies at the national, provincial and local level
- Private sector investors and traders
- People living in settlements in and around the park
- People economically linked to resources (products or services) extracted from the park.

Bunaken's status as a national park does not provide a common meeting ground, but rather incites a power struggle among stakeholders over resources-use rights. The role of SBKSDA/PHPA as an important stakeholder in park management was never clear. Their insignificant involvement in the planning process was seen by NRMP as a serious constraint to management planning. As stakeholders compete to control resources, the ambiguity presented by national park status may be more destructive than protective of Bunaken's resources base. Those losing or concerned about losing control of resources rights and responsibilities sacrifice intangible long-term benefits (e.g., conservation, sustainable resources use, stewardship) for rapid, often destructive, short-term gains.

As such, the designation of Bunaken as a national park incites further division within the community, and has led to power struggles for resources rights. Those who perceive a loss of rights or experience reduced access then lose a sense of responsibility over these resources. They have rapidly increased their exploitation rates as a result of this perception. Given an uncertain future, those who exploit for short-term gains would appear to be making a prudent decision.

The provincial level government and local investors have great interest in Bunaken. Unlike most national parks, Bunaken is located in the provincial capital's backyard and is perceived as a key element of provincial economic development. Bunaken is perceived as a magnet for money. That is, if Bunaken is kept intact, tourists will come in larger and larger numbers, spending increasing amounts of money on diving trips. The perimeters of the park, including mainland and island coastlines, are considered ripe for tourism development. From provincial government and private investor perspectives, people using Bunaken's resources for non-tourism purposes pose a threat to the park's ability to sustain tourism and its potential income stream. A more base argument would be that these people, especially those living near the main dive areas, are an eye-sore on valuable land. From this limited perspective, the best management option would imply their elimination from the park.

As stated previously, each stakeholder group is its own diverse community, representing its own wide range of people with various backgrounds, interests and aspirations. Many of these groups have had little or no interaction, share little in common with other groups, and are in active competition with one another for resources rights. For example, government officials and investors interested in expanding the tourism sector are in clear competition with fishing communities. Given this diversity and competition, developing participation in an equitable and constructive manner posed a formidable challenge for park management.

The conflict over local residents in and adjacent to the park derives partly from insufficient knowledge of the relative value sets of alternative uses of park resources. The relative value sets for Bunaken indicate that local fisheries still provide the highest contribution to the provincial economy (US \$6 million) compared to tourism (US \$4.3 million) and preservation (US \$4.1 million). Inadequate data on fishing from the park meant that the official data recorded perhaps only 10-15 percent of the actual fish catch. As a consequence, provincial decision-makers undervalued the importance of the fishery. This situation is perhaps aggravated by the manner in which benefits are distributed between the fishery and tourism sectors. Tourism contributes to wider regional and national goals and benefits urban communities, while fishing supports rural communities. Co-management of these park uses is required, and implementation must be made in a manner that sustains healthy coral reefs. This will require all users to modify their behavior in certain circumstances.

Very few local residents reap the benefits of tourism, and they perceive a number of problems associated with tourism. Dive sites are often located in favored fishing spots. Tourism development, especially along the park's northern coast, is leading to environmental degradation that is negatively impacting local livelihoods. Specifically, clearing mangroves is leading to beach erosion, increased flooding, coral reef damage, and loss of breeding habitat for economically important marine species. The national park's conservation objective to preserve ecological functions is being lost to economic development opportunities.

The main goal of NRMP field work in Bunaken was to facilitate participatory and flexible management of the park, based on a participatory planning process for the development of the national park management plan. Throughout the NRMP experience, project staff and field workers attempted to generate and nurture community participation. NRMP's work in Bunaken became a good example of community participation in national park planning. However, the success of Bunaken's participatory planning process must be measured in terms of the level of planning participation, management flexibility, and the subsequent participation in national park management implementation.

No foundation for stakeholder participation existed at Bunaken when NRMP began field work in 1992. Facilitation of a participatory planning process thus became difficult. Field staff intended to work with local Manado-based NGO's. However, these NGO's had insufficient experience with natural resources management, conservation awareness, and community organizing. From among the twenty NGO representatives invited to participate in NRMP's first three-week community awareness program, only five completed the program. These five were then recruited as NRMP field-workers. Over time, they formed their own NGO and named it *KELOLA* (*Kelompok Pengelolaan Sumber Daya Alam*, the Natural Resources Management Group). *KELOLA*'s staff hoped to provide a bridge between the formal park management administration (UPT) and local communities.

Given their enthusiasm for the participatory nature of the Bunaken National Park management plan and developing skills as field assistants during the planning process, *KELOLA* staff had great potential as active participants in Park management. However, this would only be possible with a long-term financial commitment to *KELOLA*'s continued involvement. One shortcoming of NRMP was that, while it professed local NGO institutional strengthening, no measures were taken to maintain long-term NGO effectiveness beyond the project period. Thus, while *KELOLA* developed the skills to support the management of Bunaken National Park, they lacked the financial resources to do so. Like most other NGO's in Indonesia, *KELOLA* must engage in a project-to-project approach for institutional survival. *KELOLA* must focus on opportunities presented by funding agencies, and can only pursue Bunaken National Park management activities if those agencies provide support.

Beyond seeking NGO involvement, NRMP field work in Bunaken focused on four specific entities of the national park community; namely: i) national government officials from PHPA, ii) provincial level government officials from *Bappeda* and other agencies, iii) tour operators working within Bunaken's scuba diving industry, and iv) people living in or adjacent to the park. The provincial and local level government agencies were regularly consulted during development of the management plan. Tour operators worked together to agree on tourist diving zones and diving protocol within the national park. Input was sought from people living in and around the park to determine appropriate utilization and protection zones. However, in many respects relevant to management issues, each of these groups was treated independently. Few clear examples were available of participatory planning forums, with representatives from the various stakeholder groups working together in a participatory manner.

As the project matured, more and more time and energy was focused on the people living in or adjacent to the national park. Spearheaded by the efforts of NRMP field staff, a number of "community-based" field projects were initiated. Projects included a formal Participatory Rural Appraisal (PRA) training workshop, a community-based ecotourism project, a Sloping Agricultural Land Techniques (SALT) project, a sustainable mangrove management study, and a seaweed study. The intention of these projects was to further involve the immediate local communities in resources management. This was approached through the provision of income generating opportunities (e.g., ecotourism and SALT) and active involvement in resources management (e.g., sustainable mangrove management).

## ***Lessons Learned from Bunaken***

Overall, the Bunaken experience has shown that while efforts to engage in a participatory planning process were made, at least in the form of a consultative process, a blueprint approach to management planning that desires and promotes participation is not necessarily feasible. An important issue is ownership of the planning process and durability of implementation and on-going planning beyond the life of the initial supporting project. Several lessons are described pertaining to: i) defining the community, ii) traditional approaches to natural resources management, iii) responsive management planning, iv) competing political interests, and v) ownership of the management planning process.

### *Lesson One: Defining the Community*

As the Bunaken experience shows, community participation must be redefined in the context of a multi-stakeholder process, where stakeholders are comprised of the many disparate groups of the community and are recognized as having different, often conflicting, interests that need to be negotiated. Participatory management also requires extending rights for resources management and decision-making to the various stakeholders, with responsible, sustainable use of these resources being the requisite condition for the continuation of those rights.

One of the primary lessons learned from these local community participation development endeavors was that there was great disparity even within this distinct subgroup of the national park community. Each settlement had a unique set of issues relative to the park. Within each settlement, and often within the same families or households, people had different perceptions of the national park. In some villages (e.g., Rap-Rap) there existed clear distinctions between the Christian farming community and the Muslim fishing community. Within a fishing community, different individuals seek different resources. For example, some are pelagic fishers, others utilize reef resources, while others earn a living through exploiting the tidal mangrove forests. Mangrove forests may be adjacent to the village, but could just as likely be on another island and next to another village. Except for their proximity to the park, the people of these local communities actually have very little in common with one another.

Community participation efforts by NRMP failed to recognize the diversity of local communities. Instead, each settlement was treated as a homogenous group. Community meetings were routinely relied upon as equitable forums for bringing together people concerned about shared values. In reality, community meetings tended to attract only a small portion of a given settlement, and meeting participants often had little to lose or gain from a particular meeting's subject matter. It is important to note that specific target groups using resources avoided the meetings.

The NRMP sustainable mangrove management study was particularly instructive in this regard. Community meetings and forums were initiated to understand local use of mangroves and to ultimately develop a community-based sustainable resources management plan based on a zoning system. Some of the meetings drew large crowds; others did not. In some villages, it was virtually impossible to even schedule a meeting. The main problem was failure to involve those people economically linked directly to the mangrove forests and their rapid destruction. Quite sensibly, these people avoided the opportunity to participate in community-based

mangrove management. As individuals, they had nothing to gain and everything to lose. The mangrove forest was zoned as forestry land, and exploitation of mangroves within the national park was illegal. With neither resources use rights nor guarantees of future use rights, no incentives to participate in such meetings were apparent. Individual economic interests clearly outweighed commitment to community and participatory planning processes.

The number of community meetings and participants are often used as indicators to measure effective community participation. Frequent, well-attended meetings are used to indicate successful community participation. However, this indicator is often misleading. Village-based community meetings represent one specific community, those people living in a single administrative village. When dealing with natural resources management, it is often necessary to redefine “community” as those stakeholders or resource-user groups directly linked to a resource. This typically subdivides the administrative and spatial boundaries of a village community into meaningful components. Furthermore, community meetings may be deemed successful, but success is predicated on clear identification of relevant participants. It does not matter how many people attend a community meeting. What matters is how many of the “right” people attend and to what degree they are willing to participate and interact.

NRMP made many positive steps towards addressing community participation in Bunaken National Park planning. However, the time, vision, or foundation to satisfactorily achieve effective participation was insufficient. The level of participation achieved was a certain degree of public awareness and consultation, primarily for data collection and zoning. Participation through community meetings resulted in consultation with those who turned up, and did not always correspond with those who were needed. This level of community participation was insufficient for active national park management. Achieving higher levels of participation will not likely come from further community meetings of this nature.

### *Lesson Two: Traditional Approaches to Natural Resources Management*

A second lesson learned during NRMP efforts to develop community-based management at Bunaken was that traditional natural resources management mechanisms, which could be applied to park conservation or sustainable development, were not necessarily available. Throughout the planning process and during virtually every community-level field activity, great efforts were made to find traditional natural resources management tools that were sustainable and could be applied to the Park’s management. These management mechanisms simply did not exist because historically there had been no reason for them to exist. If there were traditional and sustainable mechanisms of management, current GOI laws provide no incentives without changes in tenure and resources rights.

Because of low population, it is presumed that resources scarcity was not historically a major problem. If required resources became scarce in one area, people could simply move elsewhere. Given the relatively short history of fishing communities living in and around Bunaken National Park (only four or five generations old, having migrated primarily from other coastal areas of Sulawesi), it is likely that their traditional resources management followed a pattern of migration from resources scarce areas to the more fertile waters of Bunaken. Resources may become scarce locally due to physical scarcity, loss of perceived user rights, government laws, or political and economic powers. Faced with resources scarcity, communities in and around Bunaken will most likely follow tradition and move to new, more fertile waters.

### *Lesson Three: Responsive Management Planning*

A third lesson learned from NRMP involvement at Bunaken was the need for flexibility in park planning. Such flexibility does not exist in the blueprint nature of the MoFr's national park management plan guidelines, which require comprehensive management activities and budgets over twenty-five years. This is unrealistic for any country, particularly those experiencing rapid rates of economic growth and development. National park management must be flexible and adaptive, and planning must be perceived of as an ongoing process.

The need for flexibility is clearly exemplified by the experiences from Bunaken National Park. During the short time between management plan submission and approval, the park experienced a dramatic shift in economic development and natural resources use through rapid development of seaweed cultivation. Increased seaweed mariculture led to an unpredicted population increase, particularly on Nain Island, changes in fishing practices, and unsustainable pressure on the park's mangrove resources.

While seaweed farming in the park actually started in 1989, it was not considered an important issue during the development of the Bunaken National Park Management Plan, prepared between 1991 and 1996. Initially cultivating on the reef flats surrounding Nain Island and along the southern coastline, the few seaweed farmers quickly became disenchanted with poor prices and difficult marketing. By 1991, seaweed cultivation seemed to have come to an end. It certainly did not seem to be an important natural resources management issue. However, a quiet rebirth of seaweed mariculture in the Park occurred in 1992. *CV Sumber Rezeki*, a Manado-based company, guaranteed seaweed farmers a purchase price of Rp. 350/kg of dried seaweed. Over subsequent years, the purchase price for dried seaweed continued to rise. By 1995 the price had doubled, and in 1996 was up to Rp. 1,000/kg. As prices continued to rise, more and more people started cultivating seaweed in other areas of Bunaken National Park and along mainland coasts. As a result, several major changes in the use of the park's natural resources had not been anticipated during management plan preparation; namely:

- People stopped fishing to become seaweed cultivators. More than 64% of seaweed farmers in Bunaken National Park are former fishermen.
- Seaweed cultivation spread from Nain Island to virtually all reef flats in the park. More than 200,360 seaweed lines were spread across some 463 hectares of reef flats near Nain, Buhias, Tangkasi, Tinongko, Bango, Rap-Rap and Wawantulap. While most prevalent along the Nain reef flats (more than 70% of which are currently being used for seaweed farming), more than 1,439 households were cultivating seaweed on reef flats within the Park (61% of which were started in 1995 or later).
- The economic incentives of seaweed farming resulted in increased population pressure within the national park. Before the recent seaweed boom, population pressures had remained relatively steady, but afterwards and particularly on Nain Island, there was much immigration. This included returning family members and outsiders marrying into the community.

- The rapid growth of seaweed cultivation drastically changed natural resources utilization. Positively, it has enhanced local fish populations because of reduced fishing efforts. Negatively, it is destroying the park's important mangrove habitats; mangrove trees are used for seaweed stakes, construction material for drying floors, shelters, and other purposes. In 1995, Bunaken's seaweed farmers used more than 3,008 cubic meters of mangrove wood, or 37.6% of all mangrove wood harvested that year. Given the poor condition of the park's mangrove habitats, this use rate is non-sustainable.

The expansion of seaweed mariculture was not predicted during the park's management planning process, and there were no adequate tools to address it in the park management plan. At the time of management plan consultation and writing, the market value of seaweed was low and not competitive with fishing. However, when seaweed prices broke the Rp. 650/kg barrier, its cultivation became more attractive. As a result, natural resources use became highly concentrated and potentially threatening to the resources base.

The significant impact of seaweed mariculture within Bunaken National Park, and the management plan's lack of responsiveness to it, underscores the need to move away from the current rigid management plan guidelines to a more flexible, adaptive planning process. With this dramatic change occurring so soon after completion of the management plan, one can assume many more changes over the next twenty-five years. In a country experiencing rapid economic growth and development, it becomes impossible for planners to predict and plan for changes in natural resources use for twenty-five years at a time. National park management planning, therefore, needs to be treated as a flexible, adaptive process that supports management on an on-going basis. As this case study shows, planning cannot simply be the preface for management, Instead, it needs to be linked with ongoing issue identification, decision-making and evaluation systems.

#### *Lesson Four: Influence of Competing Political Interests*

Bunaken National Park now has an approved Twenty-Five Year Management Plan, but how successful will be its implementation? Many political issues minimize the effectiveness of Bunaken's management plan. An approved and effective management plan clearly threatens powerful stakeholders. Many provincial-level government officials and private sector investors could lose access to the Park if sole control lies with the MoFr. To capture ongoing and projected tourism revenues, it is in the best interest of provincial government and private investors to maintain control of Bunaken at the provincial rather than national level. These political issues became clear during the development of the management plan; these important stakeholders showed great reluctance to support or even participate in the national park planning process.

#### *Lesson Five: Ownership of the Management Planning Process*

The need to develop appropriate ownership of the management planning process and overall park management is critical. This is especially true in light of NRMP's recommendations to shift from the current management planning system to a more adaptive one.

SBKSDA, the provincial-level office of PHPA responsible for Bunaken National Park and all other protected areas in North Sulawesi, was conspicuously absent from the Bunaken park planning process. SBKSDA's minimal role in park planning was due to several reasons. The office did not allocate appropriate human resources to the planning process and, therefore, only a limited number of staff was responsible for ongoing Park management activities. Secondly, existing staff lacked the skills and experience necessary to collaborate with teams of consultants who often worked under strict time constraints. Thirdly, the goals of SBKSDA differed from NRMP planners and other national park stakeholders and were not necessarily taken into account by NRMP. SBKSDA were more concerned with achieving the budgetary benefits and the independence associated with UPT status than developing a participatory, multi-stakeholder management process. Given SBKSDA's insufficient involvement in the planning process, it is unlikely they will use the management plan in its entirety as intended.

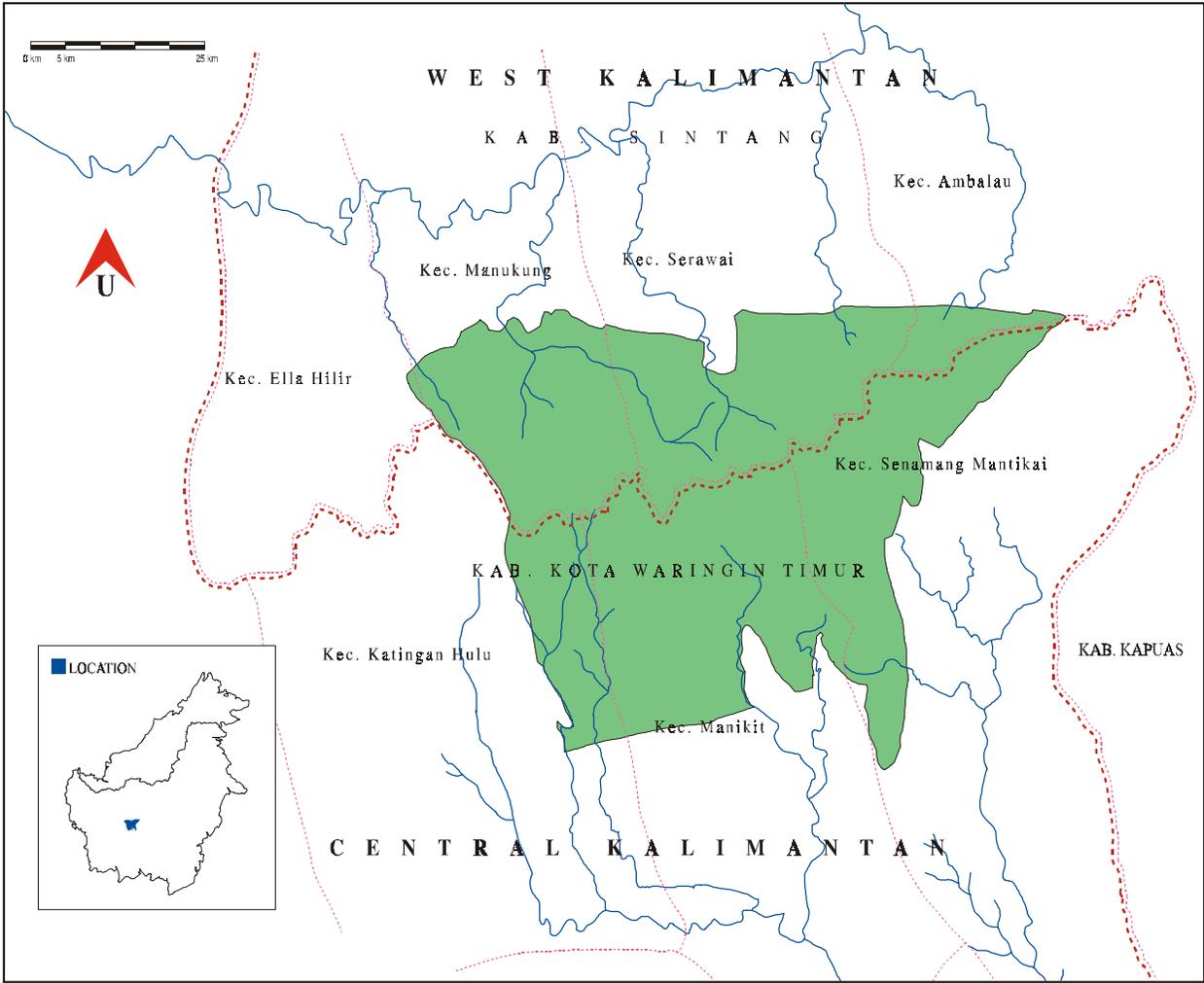
It became evident that effective implementation of the management plan would be hampered. The management plan may support SBKSDA's goals of achieving UPT status and thus enhance its financial position and management independence. However, the plan will not result in an ongoing, participatory management process. Further, it is unlikely that current SBKSDA staff will actually be transferred to the Bunaken UPT if and when the new status is formalized. The sense of ownership of SBKSDA staff in the planning process becomes weaker as they perceive their involvement as only temporary, and this is ultimately one of the greatest obstacles to effective park management.

### **3.4.3 Bukit Baka-Bukit Raya National Park**

NRMP also prepared a management plan for Bukit Baka-Bukit Raya National Park, following the MoFr guidelines and pursuing a participatory planning process. Straddling the Schwaner mountain range in the heart of Kalimantan, Bukit Baka-Bukit Raya is a relatively small national park, recently created through the consolidation of two adjacent "strict nature reserves", or *cagar alam* (Fig. 3.2). These two reserves had adjacent boundaries along the Schwaner mountains ridge line, which also forms part of the boundary of West and Central Kalimantan provinces. These two reserves had been administered from their respective capitals at Pontianak and Palangka Raya, more than a day's journey from either nature reserve. The new national park status changed this management delineation, but it remained unclear as to whether park management fell under the jurisdiction of West or Central Kalimantan. In either case, the transition from low-level "benign neglect" management of two adjacent nature reserves made at great distance was a major constraint for improving the level of involvement necessary to manage Bukit Baka-Bukit Raya as a national park.

Covering 181,000 hectares, the national park is comprised of tropical lowland and montane forests with a high diversity of Bornean flora and fauna. It comprises an important water catchment area for both the Kapuas River, West Kalimantan, and the Katingan River, Central Kalimantan. The Park is mostly mountainous, and vegetation varies according to elevation. Lowland vegetation, up to an elevation of 400 meters, comprises typical lowland Bornean rainforest and contains almost 30% of the species of the Dipterocarpaceae tree family. Vegetation types include highland, montane, and rare, diverse and important riparian vegetation. A faunal survey conducted by LIPI in 1994 indicated a rich diversity of mammals, birds, reptiles, amphibians and insects. Some of the mammals include orangutans, gibbons, red langurs, pig-tailed macaques, pigs, sun bears, sambar deer, mouse deer, pangolins, and many squirrels and bats.

**Figure 3.2 Bukit Baka-Bukit Raya National Park in West and Central Kalimantan**



The Park's mostly intact ecosystems, have been affected by neighboring logging concessions and clearance for crops by resident farmers. A main logging road runs through the heart of the northern slopes of Bukit Baka. Most threats to the Park originate entirely outside the boundaries and expand inward. Main threats are from logging in the Park by timber concessionaires and illegal loggers, expansion of cultivation, hunting and collecting, and illegal small-scale gold mining. Indigenous Dayak people have been living in and around the Park for many generations, and recently there has been an influx of immigrants associated with the logging companies and for agricultural land clearance.

### ***Participatory Planning and Management***

NRMP attempted to prepare Bukit Baka-Bukit Raya's management plan in a participatory manner similar to the approach used at Bunaken. Like Bunaken, the participatory and community-oriented approach proved to be more of a community consultation process. There was little coalition building among stakeholders. Too much emphasis was placed on communities living in settlements adjacent to the national park, and too little emphasis placed on the competing demands from timber companies operating concessions adjacent to and, in some cases, overlapping the national park, and from small-scale gold mining operations.

Unlike Bunaken, the management plan for Bukit Baka-Bukit Raya National Park was prepared under great time constraints. The plan was approved by the MoFr during the final year of NRMP's involvement in Kalimantan in 1996. A preliminary management plan for Bukit Baka-Bukit Raya had been prepared and submitted to the MoFr many years earlier, at the commencement of NRMP field activities. The plan was never approved by the MoFr, ostensibly because of its failure to follow the newly established guidelines. While the final approved management plan includes some data and concepts from the original management plan and other project documents, it is primarily the result of a rapid consultative process with national park stakeholders, including:

- MoFr/PHPA officials at the national and provincial levels
- Other government agencies at the provincial and local levels
- Timber company officials operating concessions in or adjacent to the park
- Indigenous people and immigrants living in settlements adjacent to the park.

While great efforts were made to facilitate active participation throughout a consultative process, stakeholder participation was weak. Some may have been disappointed with the failure of the original management plan, while others simply felt neither a sense of ownership nor commitment to an abstract concept of a national park located in this remote part of Kalimantan.

Although the approved management plan follows the MoFr's guidelines, its potential for implementation is questionable. Both West and Central Kalimantan SBKSDA offices operate on severely limited budgets with inadequately trained staff. Compounding this problem, Bukit Baka-Bukit Raya's great distance from provincial-level offices presents an extremely expensive logistical problem that constrains effective management. The park cannot move; park management administration must become more "localized". Currently, the park has UPT status and is headquartered in Sintang, West Kalimantan, but this is still about 100 km from the park and inadequately staffed and funded.

## ***Lessons Learned from Bukit Baka-Bukit Raya***

Lessons learned from the NRMP experience with national park planning at Bukit Baka-Bukit Raya are described and pertain to: i) management costs and conservation values, ii) multi-stakeholder identification, iii) buffer zone development and regional planning, and iv) institutional capacity for management.

### *Lesson One: Management Costs and Conservation Values*

Establishing the management costs of any national park requires understanding the conservation values and costs necessary for maintenance. According to the Bukit Baka-Bukit Raya National Park Management Plan, the objectives of management were:

- Protect native ecosystems and maintain the natural diversity of species
- Maintain the high quality of surface waters discharged from the watershed
- Help improve the quality of life of local residents
- Provide high quality experiences for park visitors.

These four objectives are based on the assumption that the park's conservation values are ecosystem maintenance, watershed management and tourism. Of these three values, Bukit Baka-Bukit Raya's most significant conservation value is probably ecosystem maintenance. The park remains largely an upland wilderness core area within a greater region of lowlands quickly being converted to agriculture and timber extraction. It should be noted, however, that due to its relatively small size the park's contribution to wider, regional ecosystem maintenance is rather limited. Perhaps surprisingly, the park's conservation value as a maintained watershed is also minimal. While the park contains the headwaters of a number of important watersheds for West and Central Kalimantan, water captured within the park is insignificant in proportion to the volumes of water entering these watersheds beyond the park's boundaries. Exploitation of park resources by local communities is also relatively minimal. Clearly, the biggest threat to park resources is from timber companies. Management options geared toward community development near the park appear to be largely misguided and of limited management value. Finally, tourism development for the national park is untenable. Although circumstances may change, current tourism statistics in the region indicate insignificant demand, and investment does not warrant expenditures on tourism infrastructure, especially from the public sector.

Bukit Baka-Bukit Raya clearly has conservation value. However, the cost of capturing this value is low relative to many other national parks and protected areas in Indonesia. Compounded by its inaccessibility and associated high management costs, the Park does not warrant an expensive and complex management plan. In fact, it may be more prudent to maintain Bukit Baka-Bukit Raya as two separate forest conservation management units along provincial boundaries. Successful management of Bukit Baka-Bukit Raya should not be treated as an expensive, complex integrated conservation and development project, but rather as an inexpensive, ongoing process of low level management coupled with serious restrictions on commercial timber extraction. This low-level management approach would thereby make available scarce resources for other national parks.

## *Lesson Two: Multi-stakeholder Identification*

The Bukit Baka-Bukit Raya management planning process failed to clearly identify and facilitate the participation of the most relevant stakeholder groups, the timber companies. Too much emphasis was given to the relatively small population living adjacent to the park and who had little impact or claims on the park. Too little emphasis was given to the companies operating concessions adjacent to and within the park. The result was a management plan promoting costly and potentially ineffective community development programs. Greater emphasis should have been placed on promoting more cost-effective and sustainable timber concession management.

The greatest threat to Bukit Baka-Bukit Raya continues to come from the local timber companies. These companies pose potential threats to the integrity of the national park directly by encroachment for timber extraction. Indirect threats include road construction and provision of inducements (e.g., land) to immigrants into previously uninhabited areas. Managing this threat should be straightforward and inexpensive. Park management must oversee annual logging plans and ensure that concessions do not encroach upon the park and that road construction is kept to a minimum. Important meetings to accomplish this could easily have been made in the two provincial capitals or even Jakarta, with a small team of forest rangers responsible for field monitoring the logging concession agreements. The topography of Bukit Baka-Bukit Raya National Park contributes to this management prescription. Primarily comprising steep slopes and shallow, narrow rivers, Bukit Baka-Bukit Raya is not currently cost-effective for logging. With or without protected area status, it is unlikely that large tracts of the park will be logged, given current technology and costs, because of its terrain and relative inaccessibility. Clearly, the southern lowland forest in the relatively flat Central Kalimantan portion of the park requires the greatest protection and monitoring.

In contrast to the timber contractors, local people living in and adjacent to Bukit Baka-Bukit Raya posed little threat to the integrity of the national park. Nevertheless, NRMP field activities and the national park management planning process focused substantially on village development activities as an alternative to local people's exploitation of park resources. Because this small population had little impact on the park's resources, such activities proved to be extremely costly and with little return in terms of conservation objectives.

NRMP initiated development activities to encourage community participation in the park planning process. This participation was largely consultative in nature; park planners and consultants frequently met with local people to gather information and share ideas regarding the management plans. Consultations were in the form of community meetings, interviews and questionnaires. Visits by project staff and consultants lasted from a few hours to several days. The community consultation process was concentrated in seven villages (Tumbang Kaburai, Nanga Juoi, Nanga Siyai, Sungkup, Beleban Ella, Riam Batang, and Tumbang Tabereau). These villages were the most accessible to the NRMP project office at Pontianak, and offered relatively good road access to the park, adjacent villages, and a project guest house. While many other communities living adjacent to the park received few visitors and virtually no consultation, NRMP became concerned that these seven villages might be overemphasized.

Responding to this concern, NRMP initiated a series of community development activities in the more neglected villages. Gravity-feed water systems were installed, and follow-up sanitation training programs were provided. An agricultural development training project was then

initiated. NRMP intended to offer community development activities as incentives for local participation in the Bukit Baka-Bukit Raya national park planning process. Perhaps surprisingly, leveraging community support for the park planning process through community development was misguided. Real community support was only an illusion of participation; local people became less concerned with national park management planning issues and more concerned with answering consultant questions properly so that the direct benefits of development activities would continue. It may have been better to use these projects to leverage or facilitate linkages between concessionaires and communities via more effective *Bina Desa* programs.

Finally, using community development activities to encourage participation is also expensive. The costs for generating and supporting community participation for the planning process throughout implementation of the twenty-five year management plan would grow dramatically to maintain this participation. True participation in natural resources management must be built on a foundation of trust, and clearly shared rights and responsibilities. Thus, it may be naive to assume that participation and co-management can be traded, bought or negotiated merely through community development projects.

### *Lesson Three: Buffer Zone Development and Regional Planning*

The Bukit Baka-Bukit Raya National Park management plan was written during a time of great support by the international conservation community for integrated conservation and development projects (ICDP's), community participation, and "buffer-zone" management. These interlinked concepts are based on the assumption that people living near protected areas, need alternative income generating opportunities. These viable alternatives would provide incentives to offset resource access losses as well as stress the importance of local participation in conservation management of the park. As such, the management plan provided a complex prescription of community planning and development activities. If successful, these activities would encourage the local population to remain but would also attract other voluntary or spontaneous immigrants.

Given the park's remoteness from centers of development in West and Central Kalimantan, the potential contribution of a successful buffer-zone community development program, that has linkages to the park's conservation objectives, was questionable. Given the dearth of effective economic and social development activities near the borders of Bukit Baka-Bukit Raya, a new program may succeed in drawing some people away. However, the program may actually attract significantly more people into and immediately adjacent to the park. This concern questions the justification of buffer-zone development activities and implies that provision of development opportunities could inadvertently lead to increased pressures on park resources. The experience at NRMP Bukit Baka-Bukit Raya suggests that a "buffer-zone" definition needs to be made less within the context of a narrow geographic band surrounding the park and more within the context of regional spatial plans.

As part of a twenty-five year management plan, economic and social development activities presented to support conservation objectives must look far beyond a series of small-scale community development activities and instead consider overall regional planning. Treating an entire region as a "buffer-zone" allows for comprehensive planning within an existing regional planning and development framework necessary to draw people away from environmentally sensitive areas toward growth existing centers. Due to existing institutional arrangements, this

would be easier to manage by focusing separately on each province. This, in turn, would support the original gazetting of Bukit Baka and Bukit Raya as two contiguous but separate forest management entities and reduce the need for excessive administrative coordination.

Rather than focusing on independent community development projects with no clear linkages to regional planning and development, such an approach would provide the tools for sustainable regional development. The basis is sustainable resources management with adequate investments in infrastructure and training for local people. Through this approach, people could be drawn away from remote areas toward areas of growth and development, if they choose to do so. This could reduce human impact on national parks and other protected areas, and support economic and social development based on sustainable natural resources management.

NRMP development activities with communities living adjacent to the national park illustrate the problems of a buffer-zone strategy in a remote area and in the absence of clear links to regional development plans. To develop support for the national park planning process, NRMP initiated a potable water delivery program in several West Kalimantan villages adjacent to the park's border. The program unquestionably benefitted these communities; access to potable water reduced illness from water-borne disease and generally contributed to improved quality of life. Yet, the potable water delivery project was restricted to only a few villages located immediately adjacent to park borders. Most other villages in the region did not benefit. Ironically, the potable water project acted as an incentive to attract people to move closer to the park. The project did gain a positive degree of support for the park by people living in a very select few villages. However, by attracting new people to settle near the park, the clean water project actually increased pressures on park resources.

#### *Lesson Four: Institutional Capacity for Management*

Bukit Baka-Bukit Raya community development projects accomplished under NRMP also highlight institutional weaknesses in delivering integrated conservation activities to remote areas. There was little government support for these projects, and NRMP made great efforts to work with and support local NGO's for project facilitation and implementation. Similar to the experience from Bunaken, difficulties were inherent in the NRMP process of identifying NGO partners in West and Central Kalimantan. NRMP eventually identified representatives from some local NGO's to work on specific activities. However, given the great logistical costs and constraints of working in this remote area, it was highly unlikely that these NGO's would be able to continue their facilitation and support for community development activities around the national park.

It must be stressed that insufficient institutional capacity and human resources required to implement the complex management prescriptions for the Bukit Baka-Bukit Raya National Park are not necessarily a serious constraint in this instance. As mentioned previously, the prescriptions are costly and misguided in terms of addressing real threats to conservation values of the park. Management should place greater emphasis on ensuring that timber companies do not encroach upon the national park or construct unnecessary roads that would attract spontaneous immigration. A low-cost management approach by SBKSDA/PHPA would be sufficient to support the park's relatively low to medium conservation value. This approach would enable the allocation of scarce funds to other parks, with higher conservation values, within the context of Indonesia's conservation area system.

### **3.5 Lessons Learned: Park Management and Regional Development Planning**

As a form of land-use, national parks and other protected areas compete with other land uses. Designated protected areas also complement and interact with alternative uses of the same resources outside the protected areas. Adjacent land-use may constrain the ability of the protected area managers to achieve management goals. Conversely, protected area management requirements may constrain other activities in the adjacent area. The jurisdiction of park managers typically extends only as far as the park boundary. Thus, managers are placed in a very difficult position politically and socially. In an attempt to improve management effectiveness, conservation managers must address issues beyond the protected area boundaries and attempt to exert some influence on the adjacent region. This can only be accomplished by park managers who coordinate well with other agencies and stakeholders. Furthermore, the park must not be managed in isolation but rather within the context of regional development planning.

NRMP experiences in Bunaken and Bukit Baka-Bukit Raya national parks have shown that focusing solely on the areas immediately surrounding the boundary is insufficient. Conservation managers, in the regional context, seek to increase economic returns and decrease social costs for people living in adjacent areas. In return, managers seek local community promises to reduce their impacts on resources within the park. If successful in terms of local economic development, such programs may become counter-productive by actually providing incentives for residents distant from the park to immigrate. This scenario would thus prove that the “buffer zone” conservation and development interface efforts would become self-defeating for achieving long-term conservation objectives within the park. Seaweed mariculture at Bunaken National Park provided an example of how an improved local economic opportunity within and adjacent to a park resulted in immigration and stress on the park’s biodiversity resources.

How can the lessons learned from Bunaken and Bukit Baka-Bukit Raya national parks be used to improve both the management of protected conservation areas and local social conditions? The underlying issue is how to absorb growth in the workforce. Given the opportunity, people are likely to move away from an area of exploited resources if the return on their labor is lower than could be acquired elsewhere. The sustainable use of natural resources use is directly linked to increased industrialization of the economy. If industrialization is appropriately located, opportunities could attract people away from protected areas. A potentially important supportive aspect of conservation management consists of appropriate planning and enabling policy implementation for industrialization in the wider region. The importance of conservation needs to be strongly advocated within the regional planning process. The expected volume of labor absorption required to promote conservation and protect biodiversity must be identified and communicated during regional economic planning and development forums. PHPA is faced with this difficult task of maintaining a voice in the planning and decision-making process of the wider region. For a number of institutional and jurisdictional reasons, this is unlikely to occur. Both the regional and provincial level PHPA offices (BKSDA, SBKSDA and BTN) report to a national level ministry and are, therefore, effectively silenced in regional development forums. Restructuring PHPA, as presented in the institutional reform section that follows, has the potential for being a significant means to support a strategy of regional industrialization within the context of regional industrialization.

A review is required of the major shift of financial and human conservation resources away from i) infrastructure development and park management within the boundaries of the protected area, on the one hand, to ii) community development inputs for park co-management planning and protection activities. The relationship between improved levels of social welfare and resources conservation attitudes appears to have very little foundation (Heinen 1994, Saunders and Weber 1996). Wells (1997) reported a lack of evidence to support the claim that increased social welfare reduces resource dependence. There are several examples in Indonesia where increased income levels resulted in new technology applied to resources exploitation, thus enabling higher income levels to support higher consumption expectations. NRMP noted this phenomenon at Bunaken with the growth of the seaweed mariculture industry and the changing gear types in local fisheries, and at Bukit Baka-Bukit Raya as a result of the increase in the number of chain saws used to harvest ironwood (*ulin*).

Why then do donor and public sector investments continue to be made with the intention of providing social and economic opportunities for remote communities in proximity to protected areas? Most likely, these investments are made to gain access to communities to fulfill consultative requirements, as was the case with the NRMP process. After all, the primary goal of the ICDP approach to park management in the regional context is biodiversity conservation within the park, followed by the secondary goal of supportive community development. The aim is to produce co-management systems where local people are more involved in activities that directly or indirectly support protection of a park's biodiversity. The intent of these consultations is also to improve the standard of living for local communities, provide higher incomes to be invested in new technologies, or improved market access. Yet, these are the very outcomes known to reduce the likelihood of long-term local control over resources. While this approach is criticized here, it is done so from the perspective of long-term biodiversity conservation.

Conservation objectives by themselves do not provide justification for investing in community development. The benefits for conservation accruing from community development is at best speculative and probably misplaced. Successful community development increases the risk of exploiting the very conservation resources and values that are targeted for protection. While not degrading the importance and aims of a co-management scheme, the NRMP experience showed that community development needs to occur in a wider economic context than the protected area itself. Development should ideally occur some distance away from the protected area so that regional development can provide the underpinning services and infrastructure that promote industrialization. By adopting a strategy in which people are attracted away from the protected area, it is possible that the conditions for local control of resources can be maintained for a longer period.

National park management, therefore, must be incorporated into regional development and the spatial planning process. Regional development agencies need to realize that the "opening up" of remote areas, while supportive of short-term economic development, may at the same time jeopardize the effective protection of critical ecosystems and biodiversity within the conservation area system. The typical government spatial planning process currently relies heavily on biophysical classification of space to determine land suitability and development options. There is a need to move away from the use of biophysical classification, which attempts to optimize spatial allocation of resources based on land suitability, to a range of criteria that include socio-economic conditions. Greater attention must be directed toward the net benefits of establishing and operating particular land uses that exceed the net benefits of other options. While biophysical classification and optimization can predict the most intensive and physically sustainable use options, they exclude important aspects of planning that must be considered (e.g., proximity to markets, prices, labor availability, cultural norms, and economic trade-offs).

among alternate production systems). The socio-economic approach is likely to provide better clues to how changes in management and land use can be initiated: "By analyzing the economic incentives driving current land-use, it is possible to widen, in an informed fashion, the number of available mechanisms for enabling individual land use decision-makers to make improved allocation decisions" (Aylward *et al.* 1995).

As the frontiers of land utilization expand outward to accommodate population growth, and the need for consumption-based welfare increases, the net benefits of alternate land uses become one of the key determinants of land allocation. Regional development initiatives are aimed at reducing the costs of production associated with such sectors as agriculture, manufacturing or forestry. The provision of new roads and improvements to existing roads lower transportation costs and enable the frontier of economic utilization to move further away from urban settlements and closer to market access.

The preservation of biodiversity requires land use arrangements that are more complex than fences and permanent restrictions in protected areas (Hyde *et al.* 1996). Land-use arrangements need to be site and ecosystem-specific, which conflicts with the predominant approach of Indonesian policy. Yet the apparent desire of Indonesian policy-makers to adopt uniformity is highlighted by their reluctance to generalize the large number of pilot projects to the wider community. Uniformity is perceived as being less costly than developing appropriate site-specific responses. Although relatively inexpensive, uniform responses must ultimately bear the costs of continued failure to achieve significant benefits in biodiversity conservation and sustainable use of resources. Hyde *et al.* (1996) concluded that policy interventions "to correct problems associated with forest land tenure, deforestation, and forest management do not necessarily improve on market based solutions because forest lands often have low values and are widely dispersed".

Spatial planning and regional development policies must account for sectoral policies that discourage investment in sustainable land use. Sectoral policies pertain to establishment and transfer of rights, regulating the relative value of alternative production systems and the costs of transition. The Spatial Planning Act No.24 (1993) provides the basic framework for zoning and land use planning, resources development, conservation, and other uses. Specifically, the Act provides for sustainable resources management and, once implemented, should provide a basis for including conservation values in a regional context. The Act provides for broad consultation, which could use the multi-stakeholder process described earlier in this chapter. In addition, it allows for the use of economic incentives and disincentives, suggesting that market-based approaches and market constraint systems are tools already available to Indonesian policy-makers.

### **3.6 Lessons Learned: Financing Effective Conservation Management**

Management plans have been completed for many national parks within Indonesia's conservation system, including Bunaken and Bukit Baka-Bukit Raya with NRMP assistance. Field management of these parks, however, remains largely ineffective. Extensive funding continues to be targeted toward select national parks, but the measurable and tangible results of this funding are questionable and unsatisfactory. Key problems for implementation of

biodiversity conservation management center around issues of effective financing and institutional reform. This section provides some recommendations for changing and strengthening these fundamental conservation management tools.

Management of Indonesia's conservation area system has received substantial funding. In 1996 alone, the GOI allocated \$38.3 million to PHPA. Considerable loans and grants have been made by the World Bank, the Asian Development Bank and bilateral foreign government aid agencies in support of biodiversity conservation through park planning and management. Additional funding and technical assistance has come from a variety of international NGO's and other donors. Indonesian and international commentators often argue that funding is the single greatest constraint to effective conservation management. However, the NRMP experience shows that this is not entirely the case. Rather, it is inappropriate allocation of funding, and the resulting implications for staffing and activity expenditures, that pose the greatest constraint. If conservation management is to improve, funding allocation must be improved and requires a shift in budgeting procedures toward more cost-effective measures. Cost-effective conservation management refers to maximizing the protection of conservation values for the least cost both in terms of the whole system and its component parks and reserves. Once these values have been determined, scarce funding and human resources must be allocated judiciously. This necessitates not only a clear understanding of conservation values, but also an understanding of how to achieve conservation objectives in the most efficient way given the available resources.

Achieving cost-effective conservation management requires establishing clear links between funding allocations and conservation objectives. Currently, this link does not exist for two related reasons. First, funding allocations are made on an input-oriented, projects basis focusing vaguely on the development of particular national parks. Funding focuses more on infrastructure development and capital costs, and less on management and operational activities. A breakdown of PHPA's 1996/97 budget showed the largest proportions of funding going toward administration (8%), facilities (29%) and equipment (12%). Relatively small allocations were made toward buffer zone activities, education and awareness, and staff training (MacAndrews and Saunders 1997). Too much is spent on building park infrastructure, and not enough on the required behavioral change and public awareness programs that could support long-term park conservation. Secondly, little of the funding allocation is linked clearly to conservation values and management objectives. Many building projects have been of no relevance to effective park management, and represent inefficient use of funds. If there were stronger links between conservation values and the budgeting process, the result would likely be a dramatic funding shift. Much more money would be invested in behavioral change programs such as community organizing for park co-management, participatory boundary identification, local consultative process development, NGO involvement and facilitation, education and awareness, and human resources development (e.g., training staff and local management collaborators, both from the village communities and the government agencies).

Effective and efficient budgeting for management of Indonesia's conservation area system requires at least three interrelated steps, linking the management of each national park into the overall system. First, conservation values for the entire system in general, and each national park in particular, must be clearly determined. Simultaneously, scarce financial and human resources to manage the system must be quantified. Second, work plans and budgets for each national park should be prepared in the field and should focus on those activities most supportive of a particular park's conservation objectives. It is important to identify verifiable indicators within the plans to measure and monitor the degree of successful implementation of plans. Third, work plans and budgets should be sent from the field to the PHPA national parks

headquarters in Jakarta, where they would be competitively evaluated and prioritized within the context of the needs of the overall conservation area system. Resources allocations could then be made, based on a more cost-effective basis, in accordance with each investment's contribution to the protection of the country's biological conservation values. Such a process would ensure that activities in each national park are as efficient and effective as possible and that the management of each national park supports the overall objectives of managing the biodiversity within Indonesia's conservation area system.

### **3.7 Lessons Learned: Institutional Reform for Conservation Management**

Increased efficiency and effectiveness of conservation management in Indonesia will also require significant institutional reform. Reform should encourage PHPA to adopt an outward rather than inward looking perspective, focusing more on conservation management and behavioral change processes rather than development inside a national park. The capacity for improved resources allocations within the conservation area system would be strengthened, and new opportunities for additional funding and staffing resources would be made available.

PHPA should reassess its role in individual national park management within the context of the country's conservation area system and regional development. Based on the NRMP experience, it is recommended that PHPA's central function be to manage the country's portfolio of conservation areas. Central PHPA headquarters would be responsible for identifying and maintaining objectives of the conservation area system, and allocating scarce financial and human resources appropriately. Resources allocation among the national parks would be decided from management plans that have identified conservation values and management constraints, management activities and expected outputs, and clear verifiable indicators to measure effectiveness of these activities. Funding and resources allocation to the national parks would be based on the measurable success of achieving the objectives.

Field implementation of national park management should be decentralized and integrated within regional-level planning and development. National park management should occur through the provincial-level *Kanwil Kehutanan*, thus providing a regional-level basis from which to participate in planning and development. This is a fundamental change from the current BKSDA, SBKSDA and BTN system, which has no clear institutional links in the provincial or district level governments. By being linked to the provincial *Kanwil Kehutanan*, national park management would be in a much better position to participate in and influence sustainable regional development planning. This could also provide national park management with access to provincial-level resources allocations.

Effective national park management also requires looking beyond government agencies for support. As the NRMP experience shows, successful management hinges upon adequate participation of all national park stakeholders. Identifying these stakeholders and understanding their interests is the first step in management planning. Stakeholders include a broad range of disparate communities whose interests will be broad and often in conflict (e.g., private sector interests, government agencies, people living near or in the parks, NGO's). Effective management requires facilitating the responsible participation of these stakeholders into a co-management framework. This will necessitate further decentralization of authority through

granting resources rights, for example, and establishing village park management councils as appropriate. The strength of a multi-stakeholder process rests on the capacity of the park management authority (PHPA) to share rights and responsibilities with other stakeholders. Supportive institutional reform should reflect ease of access to stakeholders and potentials to delegate some degree of authority outside of PHPA to local communities in particular.

### **3.8 Summary of Lessons Learned from Conservation Area Management**

NRMP experiences have highlighted the fundamental need to move conservation management from a protected area model with community development based in buffer zones into a wider regional economic development context. To do so requires a new range of skills and approaches for conservation management. The ability to identify industrial production systems with adequate labor absorption capacities that will recruit labor from communities adjacent to protected areas, and the ability to identify what policies restrict private sector investment into such industrialization options became increasingly obvious. Once a strategy can be established, the types of project interventions park managers may adopt change dramatically. The priority is how to deliver skills to those who need to shift their labor from resources extraction to industrial employment and thereby enabling them to compete for jobs.

PHPA is poorly structured and skilled for such approaches. The lack of effective protection provided to the conservation area system has much less to do with funding than is frequently claimed. The fundamental institutional weaknesses in PHPA hinder effective management of the conservation area system. These weaknesses are compounded by the design of park management plans, which are prepared along strict guidelines but are rarely followed and then only on an *ad hoc* basis. Systems with more feedback and learning are required for managers to become more effective in their ability to adapt to the continually changing pressures and threats to biodiversity conservation.

NRMP experience at Bunaken National Park demonstrated the need for improved application of participatory processes, and what was achieved was far from adequate. Greater multi-stakeholder involvement is required to make worthwhile participatory systems. However, this requires real power-sharing and the acceptance of responsibility by those granted these rights to make the necessary trade-offs. NRMP involved those who wanted to listen, not those who needed to listen. This was largely due to insufficient understanding of the concept of community and the demands of multi-stakeholder processes.

NRMP experience at Bukit Baka-Bukit Raya National Park demonstrated how poor identification of stakeholders can divert the project focus away from recognizing the real threats. Insufficient involvement of timber concessionaires resulted in a lack of mechanisms designed to manage the park's greatest threat. This highlights a major institutional issue. Whereas, the benefits of logging at the national level are surely more economics driven, at the provincial level (under current forestry institutional structures) conservation and use values are of similar magnitude. Conservation management is driven from a distant, central national agency. The ability to link important regional values and economic planning to the conservation management system is thus limited. Furthermore, use of traditional community development approaches to gain support for the national park proved to be inappropriate.

Overall, the lessons learned from NRMP experiences with planning and implementing national park management in Indonesia include:

- Effective management of national parks and other conservation areas must be adaptive to on-going ecological and socio-economic change. Indonesia has experienced rapid economic development and, more recently, dramatic economic, social and political upheavals, with serious consequences for natural resources utilization. There is no blueprint for long-term natural resources management that can be applied to all conservation areas. Management planning should focus less on writing plans that adhere to strict central government mandated guidelines. Rather, the emphasis should be on local-level human resources development for decentralized planning and management.
- Managing national parks is about managing and empowering people. The NRMP experience demonstrates the need to recognize the many stakeholders associated with a national park and to develop a multi-stakeholder planning process that actively and equitably involves them in decision-making. The stakeholders represent a park's community, comprised of diverse groups often with competing interests.
- Participation in national park management is an important but vague concept. The NRMP experience achieved a consultative level of participation, which proved acceptable only for basic information gathering. For effective resources management, a much greater degree of participation, based on the reciprocity of rights and responsibilities, is required.
- Current national park management in Indonesia is weak. The stakeholder role of PHPA as participant in park planning was not as significant as it should have been. This is not entirely due to inadequate funding but rather to inadequate allocation of existing resources constrained by current organizational and institutional structures. These central allocations and mandates restrict innovative and appropriate local-level planning and implementation.

## 4. Institutional Strengthening and Innovation

### 4.1 Overview

Chapter Four reviews institutional strengthening and the importance of linking institutional capacity to management objectives. The NRMP experiences gained from sustainable natural forest management in West Kalimantan and management planning at Bunaken and Bukit Baka-Bukit Raya National Parks, have emphasized more the inherent institutional constraints than issues concerned with specific field project interventions. One of the constraints identified with many projects in Indonesia is that of inadequate human resources capacities and weaknesses of the institutions within which they operate. Institutional and human resources development for sustainable resources management initiatives are discussed as lessons learned. In particular, lessons learned during the provision of alternative international training options contributed significantly to increasing the ability of counterparts to implement project innovations. This chapter also provides a description of new institutional initiatives to support policy development and the professional development of young policy analysts in Indonesia.

Donor-sponsored projects have typically aimed to strengthen institutions to achieve durable beyond the period of support intervention. This chapter discusses the institutional setting encountered by NRMP, stressing the multi-institutional setting of resources management in Indonesia. The need to establish appropriate human and informational resources capacities to achieve effective innovation is also discussed.

Chapter Four links the two concepts of institutions and resources. Institutional strengthening is as much about mobilizing resources within the existing institutional framework as it is about building the quality of resources. While many GOI and donor agencies maintain there are insufficient financial resources to implement conservation activities, for example, the NRMP experience has found funding not to be the major constraint. Instead, the allocation of existing funds and human resources development is posing the major constraint to effective and efficient management of natural resources in Indonesia.

NRMP was designed to operate across a range of multi-sectoral institutions. As such, a wide range of institutional challenges was encountered in response to which a range of organizational innovations were introduced. This chapter describes this institutional setting and NRMP's innovative approaches to develop institutional resources, including information and skills. Specifically detailed is the role of NRMP in generating an information base while strengthening human resources capacities through training. However, provision of training does not always ensure that project interventions will be maintained beyond the life of the project. This chapter also discusses the need to develop a broader institutional support program through integrating training activities into wider project activities and, in some cases, creating new institutions.

## 4.2 Existing Institutional Setting and Issues

NRMP design was based on a seven-year intervention period, subsequently extended for a year. NRMP intended to support the "adoption of improved policies [and practices] in natural resources and urban/industrial environmental management". The intervention portfolio was based on:

- Developing the organizational capacity of institutions with responsibility for analysis and formulation of national policies related to natural resources management
- Enhancing GOI's capacity to manage natural production forests for sustained yields through assistance to a private forest concessionaire
- Developing the capacity to prepare and implement protected area management plans
- Supporting analytical and managerial capacity through graduate training.

NRMP focused on institutional support both in terms of the organizational entities and the underlying policies and regulations that determine how society interacts with its resources base. Implementing NRMP's institutional focus proved to be more complex and difficult than the original project design had anticipated. Perhaps the most consistent lesson learned during the life of NRMP was this: As new innovations and inputs were introduced, time and again the constraints were largely institutional. The constraints pertained to either structure of organizations or their associated regulations and policies. Rarely, was financing found to be a major constraint. With hindsight, a more careful design that provided increased options for adaptability could have better predicted these constraints and reduced their impacts. Not adequately addressed were the specific institutional complexities that constrained resources management in Indonesia.

Resources management in Indonesia is cross-sectoral in nature and permeates throughout the variety of productive and non-productive sectors. The organizational institutions in Indonesia are sectorally aligned, such that no single organization has exclusive responsibility for natural resources management. Rather, the GOI has embedded sustainable resources management and sustainable development principles within state policy and planning guidelines. To develop innovations in resources management requires a multi-sectoral approach, which in Indonesia requires multi-institutional participation. Deforestation, for example, cannot simply be addressed through the single sector institution of the MoFr, rather it requires inputs from the range of other ministries (e.g., Agriculture, Transmigration, Home Affairs), all of which have competing demands on forest lands.

Potential integration of government agencies is difficult due to the number of structural divisions. For example, the sectoral alignment of agencies is further complicated by the multiple levels of government, ranging from the central, provincial, district and local administrative levels. Any implementation requires a high degree of coordination among the multiple levels of each agency, such as between the *Kanwil* and *Balai* system within the MoFr. While coordinating a multi-sectoral approach to sustainable resources management is necessary, it is difficult within the current institutional setting. Current GOI institutional barriers to coordination include:

- Layers of hierarchy between central and local levels of government
- Inter-ministerial competition for resources
- Differences between implementing and coordinating bodies
- Internal divisions between Directorate-Generals that are responsible for competitive resources management functions (e.g., forest utilization and conservation).

The hierarchical nature of government administration is becoming increasingly complicated by moves to devolve autonomy throughout public administration to the provincial level. Within the MoFr, provincial representation already exists for some functions through the *Kanwil* offices with line control to the provincial decision-making process. However, many other functions remain centralized within the *Balai* system whose line control is through the central MoFr.

The complexity of natural resources policy innovations is, therefore, dramatically higher than for traditional sectoral intervention projects. During the initial years, NRMP struggled to work within this complexity. The project documents suggested that nation-wide policies were the priority, yet many of the success indicators for these innovations required provincial or lower level support. This presented a major problem, which is still evolving in Indonesia today.

Historically, institutions were created to support the overriding objective of national economic development. With decentralization, a conflict arises as to which objectives institutions will support. Provincial agencies are rightly more responsive to provincial benefit streams than are national agencies. A case in point is the use of forests. Many regions are faced with a demand to transform forests into oil palm or other agricultural plantations. While national level foresters claim higher value to the nation from retaining the land under forests, provincial representatives often claim the opposite. Both may be correct. The distribution of benefits in the forestry sector is highly biased towards the national level through high levels of industrial concentration, the use of monopolistic marketing arrangements, and a strong linkage to national political structures. Forestry provides little benefit to local communities or to the provinces, leading to provincial agencies rightly determining that their political constituency will receive greater benefits from converting forest land.

Even within the MoFr, a similar conflict exists. Here the conflict is based on the importance of conservation *versus* industrial use. Conservation provides a benefit stream that is more provincial and local than does forest utilization, resulting in the likelihood of provincial agencies being more supportive of conservation than are national agencies. However, if forest utilization property rights were reviewed, such that local communities could gain benefits from the sale of timber, the same provincial agencies would more likely support logging (NRMP Report No. 67). Many nationally determined project innovations may be in direct conflict with provincial objectives. For example, nationally-oriented rattan marketing and processing policies have resulted in local harvesters (generally low-income, small-scale gatherers and farmers) having to bear the cost of shifting resources to centrally-controlled corporate entities. The short-run gains from this policy have since eroded to the point that production is now declining and economic losses have been incurred.

If developing natural resources management policy was simply a matter of multiple institutions broadening the basis of input to policy, current decision-making processes could address the issues. However, the differing objectives held by various stakeholders require development of more sophisticated policy dialogue processes, where objectives are negotiated and trade-offs

identified. Currently, there are two other trends in the Indonesian policy process that also need to be considered. The first is the switch from command and control policies to incentive systems based on market-based processes. The second, partly a consequence of the first, is the need for wider stakeholder representation that allows the private and non-government sectors a role in decision-making processes.

Multi-stakeholder policy development is as yet a poorly developed institutional innovation. It has the potential for offering a mechanism to improve the quality of new institutional initiatives. In this light, the types of institutional strengthening provided and the lessons learned are discussed to specify how future innovations might be able to avoid some of the institutional constraints encountered by NRMP.

### **4.3 Lessons Learned: Institutional Strengthening**

#### **4.3.1 Decision-making and Data Collection Requirements**

The need for informed decision-making has been stressed throughout the NRMP experience. Whether for the creation of policy or the management of protected areas, a common requirement for informed decision-making is quality information. Indonesia has a wealth of officially generated information or secondary data which can provide useful input to decision-making. However, for a number of data sets, the quality of data is such that it simply misinforms the user, limiting their ability to create value in their decision-making. During the completion of economic valuation surveys in both NRMP field sites, a number of data inadequacies were quickly encountered, which are presented here to highlight the lessons learned and to stress how donors could assist in developing an informed decision process.

As Indonesia is a geographically and socially diverse archipelago with a high degree of centralized decision-making, decision-makers are often remote from those upon whom their decisions impact. The physical and social distances, and associated lack of feedback and evaluation systems, result in a high degree of reliance placed on secondary data. In working with both *Bappenas* and the forestry sector, NRMP encountered a number of information issues that had direct impact on the ability to achieve improved resources management and economic outcomes. The lack of quality data had a direct economic consequence and, in some instances, placed resources at substantial risk. In other situations, the lack of appropriate data simply prohibited the development of a learning culture among policy agents.

In the case of Bunaken National Park, the impact of poor data can be seen from the initial decision to establish a national park. At that time, officials believed the value of the Bunaken area to be linked to tourism development. Little or no consideration was given to other values associated with the park's resources during planning and policy decisions. Consequently, it was felt that existing residents in the park should be moved out of the area. Ironically, a survey of fishers residing within the park (NRMP Report No. 62) identified the very high value of the fishery, which in 1995/96 was still worth more to the provincial economy than tourism.

There were two main reasons why decision-making priorities favored tourism at Bunaken National Park. First, the economic benefits linked with tourism are more closely aligned to the

local political constituency in urban areas. Secondly, only a very limited proportion of the reef fishery catch is being recorded in official statistics. Consequently, decision-makers with no other information sources would rightly assume fisheries to be worth only 10 to 20 percent of the actual fishery value. The reason for poor information was the total reliance upon one market channel for information when, in fact, local fishers use no fewer than seven different market channels, each of which sets its own prices. While this may seem to be a small issue, the impacts are quite profound. First, Bunaken National Park is close to a provincial capital where fishery monitoring could be expected to have commensurately more monitoring resources than in more remote areas. As such, it is expected that Bunaken may represent a better than average situation in Indonesia. Second, users of fishery data are misled. For example, North Sulawesi regional development agencies have identified both tourism and fisheries as potential growth sectors. While official fish off-take data supports this conclusion, NRMP survey data suggested that additional available fish resources may be limited. In the case of the reef fishery, the 1996 off-take levels were already considered to be at or above internationally accepted levels for sustainable reef production.

The inadequate nature of official statistics, therefore, creates a scenario where public investment is being directed to a sector where resources are already being fully utilized. In addition to the likely waste of public investment, there is the potential impact of developing incentives that result in increased fishing effort, at least in the short run, to an already fully fished resource. Ultimately, fish stocks will collapse, fishers' will suffer reduced incomes and as a result be forced to seek other resources to exploit. Moreover, tourists will be unable to see the coral and fish they seek and will no longer consider Bunaken as a priority destination.

Quality information is a critical input to all decision-making processes, especially centralized decision processes where decision-makers are often remote from the situational and historical context of their decisions. The gathering of micro-level data that is of sufficiently high quality to enable aggregation to the regional and sectoral levels should be a high priority. Such information needs to be considered an investment where public funds will provide significant economic returns. Current GOI information is poor to meaningless. It is not valued for its input to decision-making; rather, it is simply provided to meet specified targets. Inadequate data analysis removes a large potential to develop self-correcting systems for specific data anomalies. No data may be better than bad data in some cases.

This is illustrated by another case from Bunaken related to the tourism sector, which is potentially even more important than the impact of fishery data discussed above. While developing a demand model for tourism to the Park (NRMP Report No. 66), it was discovered that there was virtually no consistent data set for tourism in the province. No data were available on the number of tourists, countries or regions of origin, length of stays, or purpose of their visits. Although this information was collected from tourists as they registered at their place of accommodation, there appears to be no capture of this data at the provincial level. Consequently, partial data sets for one or two months appear to have been extrapolated to provide indicative numbers of visitors. These extrapolations appear to be highly distorted, with some estimates exceeding the capacity levels of incoming transport modes.

The serious nature of this overestimation is due to the major emphasis placed on tourism in Manado and North Sulawesi. Why tourism was prioritized with this inadequate data set is unclear, but it suggests the system of prioritization is far from transparent or systematic. Even existing and new tourism operators in the region are currently unable to obtain sector statistics

that make sense on any basis. If Bunaken is a major tourism destination, how can management of the park operate without the most basic of data sets on this sector? The development of management information requirements and the establishment of data collection processes should be a high priority if preferred outcomes and economic benefits are to be developed from the tourism sector.

A third illustration of the impact of inadequate data sets on management outcomes was provided from NRMP's evaluation of Indonesia's plywood marketing association (APKINDO). In this case, inadequate information prohibited the evaluation. While aggregate sector data were available, data on specific policy objectives as stated in Ministerial or Presidential Decrees or within APKINDO management directives could not be accessed. The extant number of decrees and regulations suggested that a number of policy conflicts existed within stated policy goals that have accumulated since the formation of APKINDO in the early to mid-1980's.

In 1994, a protracted debate about APKINDO's performance began. Of particular concern was APKINDO's ability to manipulate the price of Indonesia's plywood, and the value of plywood to the Indonesian economy was thus being questioned. It was widely recognized that APKINDO's policies, through its price interventions, were resulting in a loss of market share and thus needed to be reformed. Unfortunately, the only comprehensive data set that could shed light on this issue was held by APKINDO, which consider the data commercially sensitive. Indicative data from Japanese import and export statistics suggested that APKINDO's performance in increasing the price for Indonesian plywood might not have been very good. As a buyer of Indonesia's plywood, Japan paid more than other buyers per cubic meter. However, the price the Japanese paid for Indonesian plywood compared with plywood supplied to Japan from other countries was low.

Similar situations showing the need for quality information to support the policy process are found in forest sector taxation, in particular that of sawn timber where policy debates are largely philosophical with little or no empirical or analytical input (NRMP Report No. 72). The purpose of export taxes was to protect the wood supply to plywood producers. In this case, while advocates of the sawn timber tax were the powerful plywood industries, NRMP's analysis of the economic impacts of the tax suggested that wood processors could improve profit margins by investing more into sawn timber and that the wood supply to plywood producers could be guaranteed with a much lower tax rate on sawn timber. At the lower tax rate, sawn timber would become an economically attractive investment and would reduce the waste of forest resources. Without access to primary data on the costs and returns faced by investors, this type of policy analysis could not have provided the required information.

### **4.3.2 Policy Information Requirements**

Effective resources management and economic policies demand information. At present, much of the data required are of poor quality or do not exist. Future policy design cannot, therefore, capture the potential lessons learned from the existing policy environment and apply these to future scenarios. Policy development and philosophy in Indonesia are undergoing some fundamental changes. The most significant change is the shift from "command and control" systems, which specified who could do what and how they could do it, to the recent adoption of market-based policies. The approach of this latter policy design focuses on the development of both positive and negative material incentives to encourage desired behavioral outcomes.

Systematic collection of quality data on the incentives faced by producers, marketers, and retailers is essential for the design of appropriate market-based policy and project interventions. It is of critical importance that the information collected meet the needs of the users; the axiom of what decision-makers need to know *versus* what they would like to know is highly relevant. Large, socio-economic data sets abound; however, very rarely do they provide sufficient added value to the design of appropriate responses to the issues at hand. Focused, user-oriented data sets, on the other hand, can make the difference between just another policy and an effective policy outcome.

Donors collect vast amounts of data, often contracting NGO's to collect socio-economic data sets for subsequent project planning. However, there are very few instances where appropriate training is given to NGO's on how to plan, organize, pretest, implement, or manage data collection, management and analysis systems. A comprehensive data needs-assessment should be an integral part of project design and policy intervention planning.

One criticism of NRMP pertained to its insufficient formal data management within the wider project. The ability of a project to formally organize its data sets in a consistent and accessible manner can provide significant benefits to both the project and to GOI and other counterparts. Such benefits arise from being able to access data on the current status of issues and project initiatives on a real time basis. The avoidance of duplicating data searches and analysis, and the ability to provide current and up-to-date analysis of important trends related to project initiatives would have added value to NRMP's implementation.

There are still many aspects of natural resources management where existing data sets and knowledge are at best cursory. Knowledge of many of the underlying ecological systems and the components of these systems is perhaps far from being fully understood. Current government resources for research are limited, and tend to be provided through formal research institutions with limited access for young researchers to work on applied research topics.

### **4.3.3 Applied Research Requirements**

Applied research is poorly represented within the Indonesian forestry sector, which limits the volume of information and subsequent knowledge about the status, processes, and uses of natural forests within Indonesia. An NRMP initiative, to support the creation of information on the poorly understood natural forest systems of West Kalimantan, was establishment of a competitive grants program to foster applied forest research. In 1993, NRMP implemented the Competitive Awards Scheme (CAS) for applied research at the pilot level, the goals of which were to: i) raise the quality of applied forestry research, ii) increase the relevance of research to local needs, iii) encourage innovative approaches to research problems, and iv) encourage cost-effective research.

The primary objective of raising the quality of applied forestry research was to be achieved through sponsoring a proposal competition among institutions and researchers with vastly different backgrounds. CAS applicants could be affiliated with any institution, including the MoFr's section for research and development or *Litbang*, or even be individual Indonesian researchers with no particular institutional affiliation. One of the advantages of the pilot scheme was that it favored researchers with knowledge of local needs and conditions, who were more

likely to design research proposals relevant to regional needs. The only condition imposed from the MoFr was that any research had to relate to one or more of the MoFr's five priorities in forestry research.

By being open to anyone regardless of institutional setting and training, CAS encouraged innovation and novel research approaches. Where innovation and new approaches were lacking, there was less likelihood that a successful application would result. Three sizes of research grant budgets were established for implementing research to be completed within twelve months or less: large (Rp 10 – 20 million), medium (Rp 5 – 10 million) and small grants (less than Rp 5 million). Competition for grants was strongest in the large grant category, which provided an incentive for cost-effective proposals. Furthermore, small budgets were better suited to researchers working outside a sophisticated research infrastructure. Initially, US\$ 400,000 was to be made available for pre-financing of the CAS over a four-year period. Implementation delays and diminishing resources left about US\$50,000 (Rp 110,000,000) for funding the CAS. Of this amount, US\$4,500 was to cover administrative costs. An additional infusion of counterpart financing totalling US\$17,000 from the *Litbang* research budget was applied toward the total cost.

The main administrative task of CAS implementors was to develop an open, transparent and objective system for allocating funds for applied forestry research. Early in the design of CAS, the institutional framework was considered to be the critical issue to ensure transparent allocation of funds. An independent system of proposal evaluation was adopted. Working with NRMP, *Litbang* formed a CAS committee that was divided into two teams: the selection and facilitation team (TPP) and the independent evaluators team (TPI). The TPP was further split into two task groups: one group to select winning proposals based upon the evaluations of the TPI and a second group to manage the overall CAS. TPI members represented universities and research institutions outside of the MoFr organization. No MoFr personnel were allowed to be members of the TPI team.

Terms of reference and the methodology for CAS took nearly one year to develop. However, the participation of a wide range of stakeholders, and not only *Litbang* staff, during this process was critical to the subsequent support and implementation of the CAS. The terms of reference encompassed six topic areas. As the process progressed, the terms of reference became the guiding principles for both the CAS program managers and applicants alike. The key elements of the terms of reference were:

- Wide participation of Indonesian researchers
- Selection of the best proposals
- Credibility through independent evaluation
- Appropriate topics selected with local needs in mind
- Flexibility in funding, based on funding proven real needs
- Cost-effectiveness to ensure that disincentives exist for inflating research budgets.

The bidding process started in August 1995 with invitations sent to various universities. Leaflets were distributed widely throughout West Kalimantan to informally advertise the CAS. The informal advertising proved to be more cost-effective than the formal invitations; all applications were received within three months. Forty-six proposals were received, mostly from West Kalimantan, of which twenty-four were passed to the evaluation team. Proposals ranged in value from Rp 19.55 million to Rp 0.95 million.

Evaluation occurred in January 1996 with the names and institutions of each proposal concealed from evaluators. Successful proposals were distributed across all grant sizes; two in the large research category, five in the medium research category, and six in the small research category. Research contracts were then negotiated with successful applicants with the understanding that suggestions from the TPI evaluators be incorporated into the project designs before the first of two funding installments were disbursed, i.e. 50 percent of the total grant. Small grants of less than Rp2 million were exempted from this requirement. Once all projects were in compliance, research budgets were allocated in lump sum amounts to avoid bureaucratic regulations over amounts allocated to specific budget items. By the end of March 1997, all but one of the thirteen research proposals had been implemented, including the submission of progress and final reports. Incentives were provided for the five best completed projects in the form of both a monetary reward and the opportunity to present their research at a national seminar. The seminar would promote CAS to potential donors, disseminate the results of the research, and provide a forum among a wider set of agencies to promote similar CAS systems elsewhere in Indonesia.

The CAS system was regarded as an NRMP success, and it generated enthusiastic response from forestry researchers. The MoFr promoted the concept to a wider set of agencies as a potential mechanism for creating applied forestry data sets. The continued success of CAS depends on employing mechanisms that select high quality research and on gaining insights for how to continually improve the awards system.

#### **4.3.4 Improving Capacities and Training Assessments**

An overriding theme of the NRMP experience was the need for improved human resources development. Limited money is not the main constraint to improved resources management outcomes. More important is the capacity for improved decision making, such as access to adequate information to make improved decisions. Training was given a high priority in the design of NRMP. It was seen as a means to achieve one of the project's main goals, that of improving the GOI's decision-making capacity for natural resources management. Training was provided to policy analysts, forest managers, and scientists through courses held in Indonesia and abroad. Training was also conducted through regular seminars targeted at all levels of the project to help in the transfer of knowledge and skills. Although NRMP did not dedicate a training advisor to coordinate the training component, it was able to draw on the skills of the technical assistance team (e.g., advisors in economics, forest policy, conservation, park management, and community development) backed up by many short-term consultants. Formal training was divided into the following three categories, all of which are described in more detail below: i) long-term graduate studies at the Master's level in natural resources policy and management at American universities, ii) international short-term training, and iii) in-country training.

##### ***Long-Term Graduate Studies***

NRMP provided funding for twenty-two Indonesian students to pursue Master's degrees at American universities. This program was open to a wide range of participants, including NRMP's main counterpart agencies (*Bappenas* and MoFr), other government departments, university staff, NGO's and the private sector. In early 1992, a scholarship announcement,

describing the thirteen fields in which support would be provided, the requirements, and application procedures, was sent to GOI agencies, Indonesian universities with natural resources programs, and Indonesian NGO's. Support for graduate studies in the following fields was provided, forest management, forest economics, forest biology, marine management, environmental science, research management, biometrics, wildlife management, resource economics, macroeconomics, institutional management, policy planning, and environmental planning. The provision of funding for participants to conduct fieldwork in Indonesia was also announced. Applications were due on May 1, 1992 so as to allow participants to commence their university studies by January 1993. Twenty-two participants were selected, consisting of three from *Bappenas*, ten from the MoFr, four from universities, three from NGO's, one from a Provincial *Bappeda* office, and one from the private sector.

During the graduate school admission process, it became apparent that the minimum TOEFL and GPA test scores required of the participants fell below the minimum requirements of many American universities. Consequently, a number of participants who had low scores on one or both of these tests faced initial difficulties with graduate admissions. By January 1993, the first four participants commenced their studies in the United States, followed by the majority of participants in 1994, and the final two participants started in 1995. Although NRMP originally intended to fund two-year master's degree programs, in practice, it took most participants at least three years to complete their studies. This was due in part to the need for remedial English studies upon arrival in the U.S. and also to time needed for field work in Indonesia, which added four to five months to degree completion. Throughout their studies, participants could request assistance from the NRMP technical assistance team and an ARD subcontractor. A return trainee survey indicated that the participants felt they were well supported by NRMP throughout their graduate studies. One important element of the graduate studies program was to ensure, as much as possible, that participants were linked to universities and faculty with research experience in Indonesia. However, NRMP imposed no requirement that participants' research topics be directly linked to the project. When participants returned to Indonesia to undertake field work they were assisted by the NRMP staff in both Jakarta and the field offices to make research contacts, collect data, and discuss their field work. The NRMP library and other project facilities were made available to all participants.

### ***International Short-Term Training***

NRMP initially planned for forty-five Indonesian counterparts to receive short-term international training provided by universities and other institutions, varying in length from several days to months. Of this total, twenty analysts from NRMP's Policy Secretariat and thirty trainees from NRMP's two main GOI counterparts (*Bappenas* and the MoFr) and universities were to be provided with training opportunities. NRMP fell slightly short of this target; only thirty-nine participants attended short-term international training courses. Of this total, sixteen participants attended natural resources management courses in the United States, and twenty-three went to other Asian countries.

In addition to the short courses, other comparative learning systems were provided. For example, in November 1993, NRMP conducted a two-week study tour of national parks in the Philippines and Thailand for six participants from the local government in North Sulawesi, who were preparing the Bunaken National Park management plan. During the study tour, participants observed both positive and negative aspects of marine tourism development. A wide range of development approaches were viewed first hand, including differing spatial

patterns of development from high value, low impact ecotourism sites to five-star, mega-resorts. Given the high priority placed on tourism development in Bunaken by local government officials, the lessons learned on this trip were of direct relevance to finalizing the Bunaken Management Plan. One additional benefit arising from the study tour was the good will it created among those who participated.

The inability of NRMP to achieve its targeted goal of short-term international training was due to USAID's requirement that all participants pass the USAID-administered English language test (ALEGU). Additional medical clearances were also required prior to departure. Unfortunately, more than fifty percent of the applicants were unable to pass either one or both of these tests. USAID argued that passing the English test, which proved to be the main obstacle to participation, was a critical indicator of a participant's ability to benefit from training programs. While this is certainly a valid argument, it severely limited access to international training courses for most Indonesian civil servants.

### ***In-Country Training***

NRMP designed an in-country training program for GOI counterparts through formal and informal courses facilitated by a technical assistance team. As NRMP was not a training project, the emphasis on training was placed on the transfer of knowledge and skills by the NRMP team through a large number of training courses run at all levels of the project. Training of trainers, as is often found in formal training projects, was not part of the project design. As the project evolved, participation was broadened to include all project counterparts and any interested groups working in the related field (e.g., government, NGO's, local communities, and the private sector). Training during the project was organized by the NRMP technical advisors and consultants. Within the Policy Secretariat, seminars and short-term training courses were conducted on macro-economic natural resources policy (e.g., input-output modeling, economic valuation), data collection methods, and statistical analysis. Faced with the GOI's inability to provide full-time counterpart policy analysts to the Policy Secretariat, NRMP recruited recent Indonesian university graduates from the top university faculties of economics and management to assist the Secretariat with policy research for up to two years; a core group stayed somewhat longer.

Upon joining the Secretariat, the policy research assistants were initially trained in data analysis and then provided topic-specific training related to their assigned research project. In one study, the research assistants planned and undertook an economic valuation survey of Jakarta residents' willingness to pay for improved water quality of the Ciliwung River. Three of the research assistants used their survey experience to start a small survey firm which they now operate part-time, undertaking public and market segmentation surveys. As research assistants broadened their experience, greater project responsibility was provided, including visiting field sites to carry out surveys and collect data, writing up data analysis and presenting their findings to counterpart agencies. Upon finishing their work with the Policy Secretariat, all the research assistants have moved to challenging jobs both within the public and private sectors and have contributed to increasing the caliber of natural resources policy analysts in Indonesia.

Training was also provided by the Policy Secretariat to a broad audience of counterpart and natural resources management agencies through formal courses and seminars. Training modules were developed and followed traditional packages, i.e. methodology training prior to

topic-specific analytical issues. Packages were developed for trade and exchange rate policy analysis, labor absorption policy analysis, dynamic input-out analysis, economic surveys, contingent valuation, travel cost valuation techniques, and cost-benefit analysis.

At the field level, training was carried out at two NRMP field sites in West Kalimantan and North Sulawesi. In total, 150 courses were provided for 2,692 participants; a total far in excess of that planned. Field level training was targeted at a broad range of counterparts, from local project staff, to community members and associated institutions (e.g., universities and NGO's). Topics included a diversity of subjects, such as multimedia awareness, handicraft production and marketing, newsletter production, and participatory action research training methods.

### ***Lessons Learned from Training***

NRMP spent approximately US\$3 million on its training component, which was aimed at improving the capacity of project counterparts from both the public and the private sector in natural resources policy and management. The graduate studies program brought together a good balance of participants from government, universities and NGO's. Most participants qualified for admissions to good quality American universities. Twenty-one of the twenty-two candidates obtained their degrees and returned to their home institutions. Six students chose thesis topics specifically related to national parks, and the others chose topics relevant to the general aims of NRMP and their home institutions. NRMP was particularly innovative in providing Master's degree training opportunities for participants from NGO's and the private sector. In addition, NRMP was also able to use graduate training funds to assist three ongoing Indonesian Ph.D. candidates, from *Bappenas* and the MoFr, to complete their studies when their previous separate USAID funding ended. Challenges that arose during the training programs offer valuable lessons for similar programs.

#### ***Lesson One: Quality of Applicants***

Emphasizing high quality applicants provided similar benefits to targeting a high quantity of applicants. NRMP was not always able to access students with high GPA scores (which the project design had anticipated) in the natural resources policy area. Generally, the NRMP trainees were selected from available pools, which were primarily from the mid-manager level and mostly from the MoFr. Rather than filling all of the projected twenty-two graduate school positions, NRMP could have accepted a smaller number of better qualified applicants by setting higher minimum requirements for GPA and TOEFL test scores. This might have resulted in the placement of some participants in higher quality American universities and saved costs by reducing the time participants spent in the United States for remedial language training prior to matriculation.

### *Lesson Two: Applying New Skills*

NRMP was unable to overcome trainee's difficulties when returning to their home institutions. This is common to nearly all donor-assisted training projects, particularly in large sectoral ministries, such as the MoFr, which lack the flexibility of staff assignments found in smaller agencies. This was particularly striking in the case of MoFr personnel, who after receiving graduate degrees had to wait up to a year to be assigned to new positions. This not only affected employee morale, but also trainees' ability to work with NRMP on their return from the U.S. as envisaged in the project design.

### *Lesson Three: Maximizing Training Impact*

Greater use of comparative study tours would enable candidates who failed to meet other training entry requirements to participate in human resources development programs. These comparative study tours would provide training opportunities to a wider group of participants, many of whom could not qualify, due to insufficient English fluency, for formal courses. Yet, these are the very individuals that projects and donors expect to be implementing new and challenging approaches to natural resources management. In particular, consideration should be given to providing policy analysts with opportunities to learn how other countries grapple with policy issues.

In-country training proved to be one of the unexpected successes. While it is often planned and anticipated that donor technical assistance teams transfer their technical knowledge, this is rarely done well. In contrast, through its in-country training courses, NRMP ensured that a wide selection of counterparts benefited from their association with the NRMP technical assistance personnel.

### *Lesson Four: The Importance of Information*

Future project designs should recognize the benefit of developing strong information sets early in a project. The establishment of information and data sets during a project's inception phase provides the opportunity to offer counterparts training and skill development in the use of primary data sets.

NRMP primarily carried out training in the Policy Secretariat and in the project's two field sites. Within the Policy Secretariat, emphasis was placed on developing the skills of research assistants and NRMP counterparts. Skill development was addressed through training in research methodology by undertaking policy studies and more general seminars on various aspects of natural resources policy. NRMP technical consultants also conducted training to develop a professional cadre of policy analysts. For example, data collection training provided to NGO's and field staff has enabled these groups to successfully compete for funds linked to these activities. Another example of training inputs was a course offered through universities and the Indonesian Regional Science Association (IRSA) on writing professional reports and academic journal papers.

In NRMP's two national park field sites, training was focused on developing skills of the various stakeholders (e.g., GOI, NGO's, universities, local communities). In Kalimantan, courses were provided in agro-forestry, soil conservation, fire control, environmental awareness campaigns, and social-economic surveys. Low impact logging practices were initially demonstrated within a

forest concession to prove technically that levels of logging waste could be reduced to realize a profit. Several seminars and workshops were used to transfer this information to various stakeholders in the forestry sector, such as corporate executives, management staff, and employees of logging concession operations as well as relevant MoFr officials at the provincial and national levels.

In North Sulawesi, courses focused on the installation of mooring blocks, basic marine biology, development of public awareness courses, participatory planning, and community organization. The use of experiential learning methods through local study tours and the sloping agricultural land (SALT) initiatives successfully targeted a different group of recipients into the training program.

#### *Lesson Five: Training Those Most in Need*

NRMP maintained wide access to in-country and overseas training opportunities by targeting those who needed to apply proposed project innovations. Specifically, requiring long-term technical advisers and short-term experts to incorporate a training component into their work programs would assist counterparts who may otherwise feel threatened or uncertain about leading innovations and interventions. The examples of courses given on data collection, management training, and journal preparation would normally be considered too simple for a project design, yet each played a significant role in supporting the ongoing sustainability of NRMP's initiatives.

Was NRMP training worthwhile? The answer was resoundingly "yes" for two reasons. First, NRMP opened its graduate training program to a far wider range of counterparts than is normally found in official donor programs. In addition to government staff, graduate training was provided to personnel from NGO's, universities, and the private sector. Secondly, during the in-country training program, NRMP emphasized hands-on training, which resulted in a considerable transfer of knowledge from the technical assistance team to a large number of project counterparts and interest groups. In total number of trainees and in the broad range of training provided, NRMP thus made a considerable impact on improving Indonesia's human resources capacity in the field of natural resources policy and management in Indonesia.

## **4.4 Lessons Learned: Institutional Innovations**

Supporting the skill development of individuals through training may not always provide the capacity to implement project interventions in the short-term and maintain the developed innovations beyond the life of the project. In these situations, projects need to provide a wider and innovative institutional support program, and new institutions may need to be created. This section discusses the range of institutional innovations that were applied by NRMP. The innovations included supporting existing institutions and developing new institutions.

### **4.4.1 Government Institutions**

Government institutions can include total institutions, such as the MoFr, or subsections of an entire institution, or the processes and outcomes that design and specify policy. During NRMP,

increasing emphasis was placed on the processes used for institutional development. The application of small working groups (*Tim Kecil*) in the MoFr, described earlier, is one example where forums of young policy analysts acted as a sounding board for previous policy work. These teams were able to define information and analytical gaps and describe how the policy analysis process could be used to achieve better policy outcomes. Here, the role of the *Tim Kecil* was that of advocate in the policy process. While it is too early to determine whether or not this mechanism will work for most policy issues, it has provided useful gains in specific issues. If the concept could be more directly linked to a valid forestry policy client, further gains are possible.

Within *Bappenas*, the Regional Development Policy Unit (RDPU) provided a similar function. Under the umbrella of RDPU, teams were assembled for specific tasks, which once completed were then disbanded to return to their original work units. NRMP assisted the development of RDPU to become operational by formulating a strategy on its role in regional development issues. A major constraint was the time demanded by APBN allocation process, which meant no teams could be formed to respond to many of the topics for which skills were needed. A joint NRMP-World Bank response was to seek funding for a long-term adviser to the RDPU. The adviser would not complete the analyses but would instead focus on developing systems to allocate APBN budget in a systematic and transparent manner. This resources allocation system would then be decentralized into *Bappeda* at the *Tingkat I* provincial government level. Once in place, this would assist to free existing domestic technical resources to undertake the analyses. Other examples of RDPU groups that have completed specific tasks include the design of a decentralized regional development planning dialogue built around provincial strategies, and convening and running a large conference on regional development issues and opportunities for provincial and central agencies.

Existing institutions are often not able to undertake the necessary actions that are required to achieve their objectives. The *Biodiversity Action Plan* strategy of integrating conservation and development is one such case. NRMP found that integration of conservation and development requires linkages between conservation demands (e.g., labor absorption) and regional economic development. Institutional organization for conservation excludes conservation managers from local economic development forums. Decentralizing PHPA by placing SBKSDA offices and park management units (UPT) under the line control of the provincial forestry agency, as opposed to the national PHPA organizational structure, would provide conservation managers a legitimate voice in the regional planning processes.

#### **4.4.2 Quasi-Government Institutions**

As new issues arise, and the roles of government and non-government agencies change, instances will arise where institutional needs or innovations do not fit existing institutions. Consideration should be given to establishing new institutions, or at least derivations of existing institutions. One example was the need to finance a wider range of involvement in biodiversity research and interventions. In response NRMP supported the development of the Indonesian Biodiversity Foundation (IBF, or KEHATI: *Yayasan Keanekaragaman Hayati*).

Conservation has been considered an underfunded initiative in Indonesia (MacAndrews and Saunders, 1997). NRMP project design recognized a need for conservation financing where the finance was applied beyond traditional government expenditures. In response, the IBF or

*KEHATI* was established in 1994 as a non-governmental, non-profit, independent Indonesian foundation, which has the primary objective of biological resources conservation.

*KEHATI* is an example of an innovative approach to institutional development in Indonesia. The foundation acquired a large endowment fund governed by a board of twenty-three trustees. Goals of the foundation are to strengthen Indonesia's capacity to protect and sustain biodiversity for the future benefit of both Indonesian citizens and the international community. Goals are achieved by issuing grants that are intended to: i) create and strengthen the capability of institutions engaged in the sustainable use of biodiversity, and ii) promote the wider adoption of proven policies and practices in biodiversity conservation. Areas eligible for grants from *KEHATI* include:

- Community-based conservation programs
- Developing the knowledge base for strategies to protect, reclaim, conserve and sustain use of biological resources
- Developing environmentally-minded approaches to use biodiversity, especially the development of technologies related to the productive use of resources
- Fostering relationships and cooperative networks among research and study centers, universities, donor agencies, NGO's, and the private sector
- Supporting policy analysis associated with economic choices, institutional arrangements, legislation and inter-sectoral coordination
- Developing a broad public commitment to biodiversity conservation.

NRMP support and involvement with *KEHATI* was aimed at achieving development of an independent, professional non-profit foundation of international standards capable of sustaining itself over time. The foundation would be responsible for managing an endowment fund and providing project proposal grants. The creation of the endowment fund was achieved with a US\$16.5 million contribution or appropriation from USAID. An endowment of this size provided sufficient income to partly recover management and administrative costs while establishing a small grant-making program focused on biodiversity initiatives. The endowment was recognized as seed capital that will assist to attract additional endowments over ten years.

Professional fund managers were employed to invest the endowment in an internationally diversified portfolio capable of providing annual income for programs and adequate capital growth. The investment objective was to preserve its value in real terms while generating income to support the grant-making function. Total return from the endowment has included interest earnings, dividends and capital gains from marketable securities. Current policy stipulates that four percent of the market value of the endowment must be spent annually on grants and operating expenses. Grants are directed towards the subject areas identified above and based on the priorities established within the *Biodiversity Action Plan*.

The *KEHATI* foundation has become established and has invested the endowment with earnings being targeted for grant-making. Grants have focused on support to smaller

Indonesian NGO's. A surplus of income over grants and operating expenses existed as a result of the income derived from the initial endowment. Additional smaller endowments were sourced, and amounted to less than one percent of the initial endowment received. Opportunities exist to improve the grant-making process with bilateral agencies.

*KEHATI* provided a good example of how institutional gaps can be addressed through innovative project intervention. The important aspect of *KEHATI* is its demonstration that non-government aligned institutions can be supported and encouraged to play ongoing roles in critical issues. However, as with most infant institutions, the need for ongoing strengthening and development of a more, outward client-based focus remain important challenges and opportunities to be addressed. Failure to resolve these challenges will result in a declining role for the foundation and ultimately a loss of financial support.

#### **4.4.3 Non-Governmental Organizations**

A common perception of donors and project designers, including NRMP, is that NGO's are small local groups of community-based organizations that represent the unified voice of their community. This is not always the case in Indonesia, where local NGO's tend to be urban-based advocacy organizations, with predominantly young members who lack relevant leadership skills or the ability to facilitate community participation and development processes. An NGO's ability to implement community-level programs is often very limited due to insufficient human and financial resources. NRMP's experience at Bunaken National Park, near Manado, corroborates the findings.

NRMP was fortunate to have been able to attract several individuals from local NGO's to participate in project implementation at Bunaken. NRMP provided part-time work for interested individuals to serve as community liaisons and develop components of the project. As NRMP's work progressed and the management plan was being prepared, it became increasingly apparent that the park management unit (UPT) would not be operational before the proposed end of the project, given the GOI's resources constraints. The NGO representatives working as NRMP field assistants decided to form a new NGO (*KELOLA*) to work in partnership with the GOI to manage Bunaken National Park. NRMP staff assisted with forming the new organization and providing start-up funds and equipment. Subsequently, *KELOLA* has undertaken contracts for the SBKSDA office in Manado and assisted with new and different project initiatives in North Sulawesi, including mangrove and coastal management at Kwandang Bay.

New institutions may be required to deliver and maintain project inputs. However, these institutions need to be formally recognized and contractual responsibilities agreed upon prior to project completion. For example, *KELOLA* was formally established and continued to be involved in park management initiatives, but this role was very limited. Verbal agreements between *KELOLA* and SBKSDA proved inadequate to ensure *KELOLA*'s continued involvement. Formal cooperative arrangements are necessary to ensure that the new institution's role in park management is officially recognized. Without this agreement, the NGO will be unable to effectively contribute in ongoing park management. Consequently, many park management plan initiatives were not undertaken and were deferred to a time when human resources are allocated to a new UPT status.

The NRMP experience showed that successful innovations hinge upon adequate participation of all stakeholders. The first step in management planning requires identifying the key stakeholders and understanding their interests. Stakeholders include a broad range of disparate communities, and their interests will be equally broad and often in conflict. Effective management requires generating responsible participation of these stakeholders. Often, this will necessitate further decentralization of authority through granting decision-making rights and the right to specify resources rights, in some instances.

There are potentially important roles for NGO's in national park management. However, NGO's require institutional support. In both Bunaken and Bukit Baka-Bukit Raya National Parks, NRMP placed great emphasis on NGO participation to facilitate development of a participatory environment for national park planning processes. The important role of NGO's was based on the following assumptions and pressures:

- NGO's are better placed than government agencies and project personnel to link with local communities, thus facilitating a participatory approach to management planning.
- Given appropriate skills, NGO's could implement activities that support the main project goal of management planning (e.g., community development). Such projects would promote goodwill that would ensure ongoing community participation during the planning process.
- NGO's could provide a continuity of activities at the local level after project completion.
- Donor-driven pressure exists to include local NGO's as a main feature for promoting participation and increased democratization of resources management.

Unfortunately, at both project sites, local NGO's were unprepared to accept the required level of responsibility given by NRMP and MoFr. Local NGO's had no prior experience working in the project sites, and most NGO's with any conservation experience were more oriented towards advocacy rather than field work and data collection. NRMP had to generate creative solutions to overcome these deficiencies.

Given Bukit Baka-Bukit Raya's inaccessibility, generating NGO involvement proved to be more difficult than at Bunaken. While there were many NGO's working in and around West Kalimantan's provincial capital at Pontianak, none of these NGO's had the experience or resources to work in the park's remote location. Costs for transporting and maintaining staff in the field were simply too high for the NGO's to bear themselves. Generating NGO involvement, then, required significant subsidies from NRMP. Ultimately, NGO's provided field support to NRMP's long and short-term advisors, and assisted with the park's sanitation and clean water community development projects.

How well will NGO's support NRMP objectives after the completion of the project? Probably not very well. While NRMP had good intentions to work with local NGO's, these intentions were based on a series of assumptions that failed to recognize the institutional limitations of an NGO. Consequently, the NGO's did not have the capacity to play an effective role in perpetuating

participatory management in Bunaken or Bukit Baka-Bukit Raya national parks. If NGO involvement is considered relevant to a project's success, there should be a long-term commitment to NGO institutional development. NRMP had high expectations of the role of NGO's to perpetuate certain project activities after NRMP's involvement ended. NRMP thus should have placed far greater emphasis on supporting long-term institutional development of local NGO's, including:

- Clarification of the specific role of NGO's within the project goals and objectives
- Clarification from project stakeholders, particularly local communities and government agencies, as to interest in interacting NGO's as project intermediaries; this is an important indicator of the appropriateness of NGO involvement in a project
- Evaluation of NGO capacity and establishment of a clear NGO institutional development strategy at the start of the project: This step would clearly identify potential NGO partners or the need to form a new NGO. This, too, is an important indicator of the appropriateness of NGO involvement in a project.
- Provision of ongoing skills training to NGO members in organizational management, development of participatory processes, and a broad range of natural resources management issues.

#### **4.4.4 Professional Institutions**

Indonesian natural resource and economic planners are increasingly well-qualified technicians within their respective disciplines. Technical analyses are undertaken with a strong emphasis placed upon the results supported by often complex technical arguments. However, public policy decision-makers are the clients of government policy analysts. This clientele has little interest in the results of policy studies; rather, they seek the benefits of the analysis.

The need to communicate the benefits of analysis to policy decision-makers was identified as part of a policy strategy for economic modeling (NRMP Report No. 69). The strategy proposed four developments that would assist analysts to move from technically sophisticated results to communication of benefits. Two of the responses were training oriented, while the other two targeted the need for greater interaction of professionally trained personnel outside of their own institutions.

NRMP supported the development of technical expertise by initiating development of a professional society for policy agents, where feedback on model development issues and comparative policy evaluation could occur. This forum would also be used as an arena for analysts to communicate with their clients. The establishment of IRSA, described in Chapter One, is succeeding in this regard. IRSA has become formally involved with regional development workshops jointly sponsored by multi-lateral donors and the GOI. Intellectual forums outside of work institutions are necessary to break down the institutional power bases and provide access to professional development challenges.

## 4.5 Summary of Lessons Learned for Institutional Strengthening and Innovation

One institutional innovation that has yet to develop is determining the mechanisms for decentralizing resources management. NRMP undertook a range of innovative policy approaches, but these need better integration with new institutions and greater participation of all stakeholders in a way that provides better information to skilled management. Existing organizational and policy institutions have been developed for the primary purpose of supporting national economic growth objectives. It is less clear how well the same institutions can function to support more localized economic development goals, and to what extent they can contribute to achieving sustainable resources management objectives. On this latter point, it is generally expected that existing institutions within and outside Indonesia will not be able to support resources management objectives. Continued reliance on the same organizations and policy structures and processes will not provide effective institutional innovation.

The difficulty faced when using existing institutions was demonstrated to NRMP in a discussion with counterparts. NRMP recommended that past distribution channel policies be removed, thereby encouraging incentives for regional development rather than having regional government and the private sector seeking additional subsidies. The response from NRMP government counterparts was to shake their heads and reply, "It is so hard to get rid of past policies. It is easier to create more interventions than it is to remove existing ineffective policies that impede future growth".

Lessons learned for institutional strengthening and innovation may be summarized as follows:

- Institutional strengthening requires wide support to fill institutional capacity gaps, including redefinition of existing institutions and processes to support multi-stakeholder involvement. There is little theoretical or experiential evidence to demonstrate that current institutions, which were designed to support economic growth based on natural resources exploitation, will support sustainable development. Sustainable development requires new skills, innovative approaches, and support for institutional restructuring.
- If counterparts and project stakeholders are to be provided with the skills necessary to implement project innovations, access to training must be more flexible. Increasing the provision of informal training, such as applied research programs and study tours, was a successful NRMP activity.
- Competitive resource allocation processes, using transparent decision-making criteria, provide a cost-effective means to encourage wider participation in applied research.

## **5. Conclusions and Recommendations**

### **5.1 Overview**

Chapter Five summarizes the main lessons learned from the previous four chapters, and reviews the unfinished tasks and conclusions for natural resources management in Indonesia. The chapter draws together the critical issues raised throughout this volume into a set of recommendations. Most importantly, these refer to process-oriented changes and not to direct interventions at the field level. One issue is the need to link industrialization with natural resources management, in terms of increasing the value of resources within the country's economy rather than continually increasing extraction and export of raw, unprocessed resources. Mechanisms that encourage multi-stakeholder processes are essential as a means to provide more effective local involvement in natural resources policy and management. Such processes will require greater decentralization of authority and increased power sharing. The chapter concludes that fundamental economic reforms for deregulation and decentralization could provide a "win-win scenario" for sustainable natural resources management in Indonesia.

This chapter reintroduces some operational aspects of sustainable development, with particular emphasis on the role of technology and the scale of the economy. These concepts were used to highlight key NRMP findings. Policy insights for improved management are largely irrelevant without reform of the underlying policy processes. Reform should move towards a multi-stakeholder orientation. Essential to this reform is the need to reorient policy processes in terms of improved skills and stronger institutions.

### **5.2 Enabling Policies for Sustainable Resources Management**

Sustainable natural resources management is an integral component of sustainable development. Economic development is often considered equivalent to growth within Indonesia's policy framework. Consequently, policy makers and planners have adopted a development strategy based on continued achievement of high economic growth rates as a means to achieve development objectives linked to poverty reduction. Abundant natural resources enable a growth strategy to positively support development objectives where growth quantitatively increases in physical scale or utilization rate, while development is achieved through improvement of these potentials.

Since the 1960's Indonesia's economic growth has been impressive by world standards. Growth has been driven by the rapid increase in the scale of utilization within natural resource intensive sectors related to oil, gas and forestry. These resources are becoming scarce, particularly from forestry, indicating that reliance upon a natural resources-dependent growth strategy will not continue to support development goals into the future. Development will require creating greater value per unit of resource utilization. It is within this setting that NRMP was designed, knowing that fundamental changes were required if development targets were to be achieved. Moreover, without changes significant threats to Indonesia's welfare will result. The nature of the threat involves loss of capacity within natural resources systems that are essential to maintenance of life support systems.

Natural resources have come under threat in two respects. First, harvesting or extraction has exceeded forest regeneration rates resulting in a declining stock of resources. Second, the assimilative capacity of natural systems is exceeded, thus creating greater costs of waste management and a decline in environmental quality. Resources depletion and degradation are certain outcomes if the existing growth strategy continues. While policy makers and planners have begun to incorporate sustainable natural resources management in planning and policy objectives, the reality of achieving such changes has proved to be difficult.

The difficulty in achieving policy change relates to the nature of institutions formed or evolved over the last twenty years. Institutions and organizations were developed to support increasing economic growth rates. Consequently, while policy makers adopt sustainable natural resources management objectives, the institutions to achieve these goals were designed to supply economic growth and not sustainable development. Institutional reform is an essential component for movement towards a sustainable development and natural resources management system.

The NRMP design is aimed to assist the GOI develop policies that moved towards sustainable development. Policy design included economy-wide issues and forest sector management interventions, and new institutions and enhanced skills were established or facilitated to implement and develop new policies. The need for reform was well established; however, understanding its complexity was underestimated. The complexities of working in a sectorally aligned institutional structure on issues that cross sectoral boundaries and administrative scales was a unique approach within Indonesia's natural resources management interventions.

Perhaps the most fundamental requirement to achieve equitable decisions was the need to adopt a multi-stakeholder process that crossed these boundaries. In addition, it was necessary to make decisions at the appropriate level, where the best information is located and where incentives for encouraging appropriate behaviors are most needed. Multi-stakeholder processes enable other functions to be factored into decision-making, such as distribution of benefits and costs. During the NRMP intervention, the concept of participation was developed further than it had been during previous project interventions. There was, however, a poor understanding of what public involvement and participation meant. For most practitioners, participation meant some form of consultation.

Real benefits from participation will come from greater levels of involvement than mere consultation. Developing more effective involvement requires power sharing. When a truly participatory process is adopted there needs to be authority to make decisions and take responsibility for those decisions. Without decentralization of decision-making authority, increased participation has no real legitimacy and participants distance themselves from the process.

Increased participation was important for implementing and developing park management plans and for developing more appropriate policy processes. Important lessons learned related to the need to develop a greater degree of understanding and identification of the stakeholders. For example, community meetings were not effective to achieve participation of the most relevant stakeholders. For resolution of many issues, the people who needed to change their behaviors did not attend. A better understanding of what constitutes a stakeholder or community is required. Fundamental to this is the importance of involving those affected or those capable of influencing outcomes; as such, an entire village, for example, may not be equivalent to a stakeholder group.

In policy processes, stakeholder processes are needed due to the sectoral nature of government administration. For policies to be effective, one must consider the range of incentives created across sectors and agencies. Without effective cross institutional dialogues, policy outcomes will remain uncertain. NRMP designed *Tim Kajian* or *Tim Kecil* policy groups within the MoFr to address this problem with some success. Other approaches involved developing a professional association for analysts where institutional jealousies could be reduced or mitigated. Establishing the Indonesian Regional Science Association (IRSA) resulted in collaborative policy analysis where it previously did not occur.

With the current trend towards decentralization to the provincial level government, these forums will become increasingly urgent. Without appropriate forums in place, it is possible that many national policies currently being disengaged will be inadvertently recreated at lower levels of governance. Creating wider participation across lower levels of governance is therefore critical for improved outcomes. A very strong recommendation is that multi-stakeholder forums be created to strengthen and support the decentralization process.

Project interventions in policy issues were poorly designed. The importance of policy is now recognized by nearly all project design practitioners. Yet, few have expertise for working directly with policy processes, and even fewer have formal policy training. Consequently, donor expectations are generally poorly aligned with projects they decide to fund. During NRMP, the use of analysts meant that the project would not directly create new policy outcomes. If this was the client's need, and the client was successful in the policy process, the desired outcome could be achieved. Even after review, similar mistakes were reinforced by focusing on the policy analyst role and adding to this the new role of policy educator. Yet, the two roles are incompatible for influencing policy change.

Lessons learned through the NRMP experience with identifying and implementing enabling policies for sustainable resources management were:

- Current policy settings in Indonesia favor economic growth at the cost of sustainable natural resources management and ecological functions. Economic policy settings need to provide less incentive for exporting raw material or semi-finished goods. The removal of cascading levels of nominal and effective protection would alleviate these distortions.
- Deregulation enables internationally competitive prices to provide incentives for innovation and value-adding, which are important components of sustainable development. To improve competitiveness, sectoral and economy-wide policies need to be integrated with planning objectives.
- Markets can provide efficient resources allocation, but will fail to achieve many resources management objectives. Provisioning for the less fortunate and future generations will require decentralized decision-making, often without consideration of market prices.
- Policy interventions by both the GOI and donors fail to recognize the determinants of success sought by each of the players in a policy process. NRMP's emphasis on adopting the role of analyst in the policy process, with the Project Coordinating Committee (PCC) as client, could not provide the success determinants required by the donor.

- Multi-stakeholder policy processes provide an opportunity for linking the various players within the policy-making process. Within this process, NRMP's movement away from the role of analyst to that of educator or facilitator was considered to be more closely linked to donor objectives.

### **5.3 Sustainable Natural Forest Management**

The scale of economic activity needs to be within the carrying capacity of the underlying resources to achieve a sustainable development pathway. Scale can be considered to be a function of population and per capita resources use. When the product of these two parameters exceeds the carrying capacity of a system, non-sustainable use will occur. The determination of carrying capacity for any forest resource is not easy because of uncertainty and the widely different distribution and ecology of forest resources.

Carrying capacity may be based on the sustainable level of forest resources use. However, a clear distinction is necessary between renewable resources and non-renewable resources. For renewable forest resources, the rate of utilization needs to be less than the rate of regeneration. Non-renewable forest resources cannot be maintained intact unless “non-use” or deferred use is one adopted option. A quasi-sustainable management regime has been recommended, where the rate of renewable resources use is less than or equal to the rate of replacement. Therefore, for natural forest management, annual harvest from a concession needs to be less than the growth increment on the residual stand. Alternatively, the amount of reforestation growth needs to ultimately replace the harvest. At this stage, Indonesia still maintains a markedly negative balance in these equations, and short-term “mining” of forest resources has been the norm. In addition, the rate of logging waste assimilation must be within the capacity of the forest to assimilate waste. Here we find such indicators as air and water quality are declining due to overloaded waste assimilation capacities. The result may include excessive erosion, floods, forest fires, property damage, and catastrophic social consequences.

The role of man-made capital or technology as a complement or substitute can be seen in developing countries. For example, as new technology is introduced into forestry (e.g., roads and cable logging), logging practices can be made more sustainable by reducing the impact on residual stands. In this sense, technology is a complementary and important ingredient in sustainable development. However, technology can increase the utilization rate of forest resources to levels that exceed sustainable harvest levels for renewable resources. Alternatively, technology can be applied to forest resources to increase value, utilization rates and sustainability.

The concept of value-adding is critical for forest resources-dependent economies striving for sustainability. Policies seek to reduce the net consumption, or growth in net consumption, of forest resources-use per capita and thereby enhance the carrying capacity of the economy. NRMP found that current economic policies did not provide such incentives. Incentives for technology continue to support a growth strategy based on the export of raw materials while increasingly limiting the ability to apply technology in an internationally competitive manner. The process of deregulation has so far not been adequately linked to the planning goal of sustainable development. The result has been a continued cascading effect within protection levels.

Market access is critically important in a developing country such as Indonesia. As segments in the population gain access to markets, as a result of investment into technology, they are able to increase the potential value of their resources. As an economic growth strategy, this is done by increasing the utilization rate and selling to third parties through the market system. In this way, the rate of resources utilization may reach a point where it becomes non-sustainable. Local control or community management of resources does not mean that this relationship does not hold. While local control of resources may be considered beneficial, it is not a panacea for sustainable development. Much evidence indicates that if communities are integrated with technology and markets, resources-use often increases dramatically. That is, what was once considered to be good stewardship actually only represented a lack of opportunity to increase exploitation profitably.

The use of unfettered markets as a basic mechanism of forest management may provide efficient outcomes. However, there is no direct reason why maximizing a sustainable annual profit will coincide with maximizing present values from costs and benefits. Particularly problematic is the inability to capture all use benefits and costs within the property arrangements, underpinning successful market arrangements, and determination of an appropriate temporal distribution of costs and benefits. It is here that the complexity of developing sustainable institutions becomes obvious. Markets do not guarantee sustainable outcomes, yet they provide essential incentives for value-adding to resources.

This paradox of the role of markets needs to be accepted. One set of institutions is not going to be sufficient to meet all prerequisites of sustainable natural forest resources management. Market policies provide a major benefit for providing incentives to industrialize and add value to resources. The additional benefit gained from industrialization is the absorption of labor into processing activities and consequently a reduction of their direct dependence on natural resources for household income generation.

Industrialization policies based on market institutions are fundamental to improving forestry sector outcomes. Of particular importance is the need for increased market allocation. Developing institutions that move the forestry sector towards maximizing value of raw materials, while providing incentives to add value to these raw materials, are essential for achieving more sustainable forestry. Application of more market-based policy institutions would reduce the degree of command and control regulatory approaches currently employed. The predominance of command and control has led to excessive costs of compliance to the point where forest land use is often unable to compete with alternative land uses. In a bizarre policy outcome, policies designed to manage forests are effectively eliminating forest uses due to these competing demands.

While market approaches will improve the situation, there is also a need for increased certainty within the forestry sector. NRMP stressed the finding that concessionaires were increasingly adopting a short-term position with regard to their concession management. With concession renewal uncertainty, concessionaires were harvesting faster in an attempt to maximize the value of their concessions within the initial license issue period. As such, the forest resources available for harvest during the last fifteen years of a concession were being prematurely harvested during the initial contract period. Increased certainty of renewal rights, combined with increased availability of market institutions, would provide more sustainable outcomes. One fundamental required change is to move away from current MoFr command and control systems, based on dictating forest management inputs, to a system that specifies conditions

that provide both positive and negative incentives to forest concessionaires. In this way, concessionaires would be more encouraged to manage their forest concessions more sustainably.

Lessons learned through the NRMP experience with implementing sustainable natural forest management initiatives were:

- Unless the real long-term values of forests are quantified and revealed, there will continue to be over-exploitation of forest products. Current policies in Indonesia undervalue forests and their products and provide no incentive for efficient or sustainable use.
- The current excessive uncertainty over access to benefit streams from resources allocation rights has resulted in right-holders adopting a short-term perspective over resources exploitation to maximize the value of their right. Moreover, right-holders face even less incentive to invest in reforestation and replanting. As a direct result, historic management of forest products and services has been disrupted through a combination of market forces, conversion of lands, and opening new access to resources.
- The excessive use of centralized command and control policies that specify inputs and reporting requirements and increase the cost of operating reduce the incentive and value of improving management. These policies have excluded community ownership and reduced or stifled innovative management approaches. The lower returns from forestry also result in reduced ability to compete with alternative land uses, such as large-scale conversion to pulp wood and oil palm plantations.
- If the quality of residual stand management is to be improved, pre-harvest treatments and improved harvest techniques need greater attention, rather than the current set of post-harvest planning and damage control activities. Improvements include longer-term management and planning beyond annual work plans, improved infrastructure, 100% cruising identification of trees, and lower impact logging. There is also a greater need for more creative development of rapid assessment of key ecological, economic and social indicators of good management, and for devising a reporting and evaluation procedure that rewards outcomes rather than only compliance with prescriptions.

## **5.4 Conservation Area Management**

A consequence of current institutions and policies has been increased pressure on forest resources, deforestation and increased illegal logging in protected areas. In response, there have been increased investments in promoting protection for critical ecological and biological resources. However, the concept of centralized management inputs is retained within the MoFr's inflexible management planning process. The rigidity of management plan guidelines for national parks, for example, severely reduces effective park management, which needs to be more decentralized, site-specific and adaptive to changing circumstances.

The integration of industrialization policy with conservation needs is a critical link currently missing within the ICDP approach to biodiversity conservation management. Current ICDP approaches typically focus on income generation for local communities by creating a growth strategy based on increased resources utilization rates by local communities living adjacent to parks. In this way, the approach aims to reduce pressure on biodiversity resources within a park. If the ICDP focus was broadened to include distant industrial development, the movement of labor away from protected areas may prove an effective means to accomplish this. The approach would require a major intervention shift away from local community income generation to skills development aimed at enabling local people to compete for industrial employment elsewhere.

Current ICDP projects continue to focus on economic and welfare development initiatives for communities adjacent to protected areas. These initiatives are retained due, in part, to the desire of donors to help less advantaged communities while at the same time protect biodiversity. While some welfare improvements may be achieved, there has generally been little positive benefit to biodiversity conservation objectives. Without some fundamental approach changes, most ICDP investments are destined to fail. One problem has been inadequate understanding that not all “park communities” are the same. Some local people are indigenous and have used the land within the park in a variety of ways for many generations; others are recent immigrants. A combination of local agrarian community support and empowerment for co-management of parks is still desirable, and in some cases essential, particularly when the communities are indigenous and hold traditional inherited *adat* land and resources rights.

Alternatively, in many cases the communities adjacent to parks are relatively recent immigrants, have a great impact on resources within the park, and have no long-term interest in managing these resources. In those cases, an ICDP approach that encourages labor movement towards industrialized areas at some distance from the park would be desirable. A main issue is the need for management flexibility that respects the different types of communities living within and adjacent to parks. Regardless of the specifics of the approach, what has been learned is that effective dialogue is needed and must include players from multiple institutions and communities, and especially those who need to make the trade-off’s between current and future consumption.

Several likely scenarios could be drawn for the future management of Bunaken and Bukit Baka-Bukit Raya national parks. As human populations increase, resources demands will increase within the parks and, in the absence of improved and more effective adaptive management, the biodiversity and ecological conservation values of the parks will diminish. Consequently, justification for national park status will disappear. Also of importance is the social impact on local people who will face fewer choices, opportunities and most likely a declining standard of living as local resources are depleted and income-generation opportunities are diminished. These issues are of critical importance and affect Indonesia’s entire conservation area system.

Scenarios, showing the future diminished value of parks in the absence of interventions made now, underlie the reason why NRMP was established. Sustainable development is essential for the country’s future generations. How to achieve the decisions that support sustainable development, and then implement them, remains a challenge. Projects that target this challenge have increasingly focused on policy and community processes to achieve the required behavior changes.

Special mention of commitment techniques, such as “conservation agreements”, is required due to their increased appearance in many biodiversity conservation projects. Commitment techniques include establishing agreements between the management agency (e.g., national park managers) and local stakeholders (e.g., villagers living adjacent to parks) to protect biodiversity resources in return for gaining access to alternative benefits (e.g., improved income generating schemes, micro-credit schemes, improved access to markets, improved social development services and infrastructure). What is particularly useful about commitments is their ability to establish more durable behavioral change than would be the case with material incentives only. The major drawback of commitment techniques is that they have been shown to provide successful additional gains when the commitment was developed with key individuals (e.g., innovative farmers) and not groups. Where attempts to use group commitments have been applied, the change in behavior has been less durable than other alternatives (Wang and Katzev 1990).

The challenge for protected area management and biodiversity conservation is deciding which techniques to apply to successfully change the behavior of those who either currently or have the potential to conflict with conservation management objectives. Other challenges include determining the role and extent of local community empowerment and involvement in co-management of parks. Determining which approaches hold the greatest potential and in which circumstances is the key underlying issue being faced by protected area and resources managers. Heinen (1996) concluded that the basic need for improving management is determining "what social variables are predictors of both causes and solutions for conflict that result from the designation of protected areas."

Lessons learned by NRMP with implementing conservation area management initiatives were:

- Effective management of national parks and other conservation areas must be adaptive to on-going ecological and socio-economic change. Indonesia has experienced rapid economic development and, more recently, dramatic economic, social and political upheavals, with serious consequences for natural resources utilization. There is no blueprint for long-term natural resources management that can be applied to all conservation areas. Management planning should focus less on writing plans that adhere to strict central government mandated guidelines. Rather, the emphasis should be on local-level human resources development for decentralized planning and management.
- Managing national parks is about managing and empowering people. The NRMP experience demonstrates the need to recognize the many stakeholders associated with a national park and to develop a multi-stakeholder planning process that actively and equitably involves them in decision-making. The stakeholders represent a park's community, comprised of diverse groups often with competing interests.
- Participation in national park management is an important but vague concept. The NRMP experience achieved a consultative level of participation, which proved acceptable only for basic information gathering. For effective resources management, a much greater degree of participation, based on the reciprocity of rights and responsibilities, is required.

- Current national park management in Indonesia is weak. The stakeholder role of PHPA as participant in park planning was not as significant as it should have been. This is not entirely due to inadequate funding but rather to inadequate allocation of existing resources constrained by current organizational and institutional structures. These central allocations and mandates restrict innovative and appropriate local-level planning and implementation.

## 5.5 Institutional Strengthening and Innovation

Human resources development is a necessary condition if policy innovation is to be achieved. Current human resources are largely concentrated at the national level where they are employed in routine management and administration activities lacking the time to develop policy innovations in a considered manner. Increased responsibilities to provincial government and non-government agencies requires a marked investment in human resources capacity development.

Multi-stakeholder processes offer the opportunity for more effective and wider participation in policy and project processes. To date, participation is generally poorly served by the donor agencies. The concept of participation is poorly conceived and delivered, resulting in frustrated and cynical stakeholders. The inability to link participation with decentralization of decision-making authority is a major gap in Indonesian policy reforms.

Poor understanding of participation has resulted in projects focusing on consultation, limiting the potential gains for improved resources management. Nearly all project initiatives have requirements for participation within their design. However, inadequate specific knowledge regarding participation and decentralization of authority results in poorly supported processes that target those willing to listen and not those who need to change. Participation is neither about top-down nor bottom-up jargon, rather it a process of multiple stakeholders integrating across boundaries, very much in a systems approach. While being hesitant to apply any new sets of jargon to an industry that weighs itself down with ambiguous glossary words and images, NRMP promoted the concept of multi-stakeholder processes as fundamental to all its lessons learned.

During NRMP implementation, there was significant development of greater participation in a number of processes. During project start-up, consultation was promoted. By the end of the project, wider stakeholder involvement was beginning to be used with interesting impacts. Many among both donor agencies, governments and NGO's have yet to appreciate the wider evolution of these processes, choosing instead to use the language inappropriately. Most believe participation and local communities are important but do not yet possess sufficient understanding of the processes behind them to specify appropriate project responses. Inadequate understanding is reflected in the continued use of ambiguous terminology such as "participation, community, consultation, and bottom-up processes". Greater participation will continue at an appropriate level to include all stakeholders, who in return will be directly linked to the responsibilities associated with their decision-making involvement. Greater recognition of how these underlying innovative processes can be managed and applied will provide an incentive for project designers, project implementers, and beneficiaries to achieve the often intangible benefits sought by all stakeholders.

NRMP was not a training program but did deliver an impressive array of training outputs. Development of domestic capacity became an important focus of the project. Through the provision of international training opportunities, NRMP enabled Indonesian analysts access to Doctoral, Master's, and short-term courses on topics relevant to natural resources policy and management. Formal training was, however, necessarily restricted to applicants with adequate English language skills.

Counterparts and implementing agencies often found training prerequisites almost impossible to attain. Consequently, the very people who needed training most were effectively excluded from the formal training inputs. As a result, NRMP offered a range of domestic training programs and informal topic-related training responses. These were also used to expand the level of involvement in NRMP research and policy programs. In-country study tours and demonstrations proved to be valuable learning experiences.

For effective resources management there remains a huge demand for improved skill levels ranging from the lowest to the highest levels of government and non-government agencies. The use of multi-stakeholder active learning programs, based on experiential problem solving, was shown to be one potential method to develop skills across such a large group quickly. Without these skills, sustainable resources management will remain ineffective with *ad hoc* management activities and unknown results.

Lessons learned through the NRMP experience with implementing institutional strengthening and innovation initiatives were:

- Institutional strengthening requires wide support to fill institutional capacity gaps, including redefinition of existing institutions and processes to support multi-stakeholder involvement. There is little theoretical or experiential evidence to demonstrate that current institutions, which were designed to support economic growth based on natural resources exploitation, will support sustainable development. Sustainable development requires new skills, innovative approaches, and support for institutional restructuring.
- If counterparts and project stakeholders are to be provided with the skills necessary to implement project innovations, access to training must be more flexible. Increasing the provision of informal training, such as applied research programs and study tours, was a successful NRMP activity.
- Competitive resources allocation processes, using transparent decision-making criteria, provide a cost-effective means to encourage wider participation in applied research.

## **5.6 Summary of Lessons Learned from Natural Resources Management**

A key lesson learned from NRMP implementation, underpinning all others, is the need to involve multiple key stakeholders at both local and national levels in policy dialogue. Using a multi-

stakeholder and decentralized policy process should be the most fundamental requirement to achieve wise and appropriate policy decisions. Sound policy decisions may then be translated into sound natural resources management practices and sustainability. Subsequent decisions made at the appropriate scale and jurisdictional level ensure that relevant information on natural resources management problems and policy consequences could encourage appropriate behaviors to overcome the problems. Multi-stakeholder processes also enable other considerations (e.g., distribution of policy costs and benefits) to be better utilized for decision-making at local and national levels.

Throughout this book, emphasis has been placed on several issues, such as: i) how to establish social priorities and ii) how to broaden and support multi-stakeholder participation and action in support of natural resources management. This presents donors with an excellent challenge to develop or strengthen institutions to bring about these changes. While NRMP moved increasingly into new policy arenas, it was not able to develop a planned strategic response to these particular issues. Initially, the following had been identified as separate, unintegrated initiatives that stressed the need to: i) link planning and policy, ii) increase effectiveness and sustainability of natural forest management, iii) increase effectiveness of protected area management and link protected area management requirements to regional economic development, and iv) link regional development to industrialization policies. Yet, implementation of these issues requires a very similar process of multi-stakeholder integration of effort. NRMP concluded that the multi-stakeholder processes for natural resources planning, policy development, regional development, and protected area management would overcome many of the obstacles being encountered and would enable progress towards the search for solutions to most issues.

Successful utilization of multi-stakeholder participation requires a dedicated effort to support such a process. There are no short cuts. The process needs to identify the relevant stakeholders and provide i) the ability to enable them to set their agenda, objectives, and mechanisms to deal with and confront conflicts, and ii) the power to make decisions and take responsibility for those decisions. Central to further development of these approaches is the fact that participation must be understood not simply as consultation but as power sharing. Bureaucrats should not view this process as the giving away of power but rather as a means to share power with all stakeholders (e.g, government, NGO's, private sector, village communities). Once established, these processes would define the institutional portfolio for sustainable development that supports both effective natural resources management and economic growth.

After seven years of NRMP interventions, there remains the unfinished business of fundamentally moving policies from a focus on economic growth to a more balanced focus on sustainable development. The processes to achieve this goal proved to be greater than project designers initially realized. Achieving the goal is not simply about writing improved policies or completing good analysis; rather, it is about developing adequate skills and awareness that would enable all stakeholders to understand how sustainable development is essential for meeting society's needs. Without this awareness and skills development, Indonesia will continue the trend towards creating a sea of degraded lands, of low ecosystem integrity, dotted with small islands of poorly protected conservation areas facing continual pressure to exploit the remaining resources they contain. There is a need to ensure skilled people are available to assist with decision-making on a regional, ecosystem level rather than only focus inside the conservation areas. The notion of biological reserves surrounded by degraded biological deserts is cynical and unworkable, and will ultimately support neither the biodiversity they

contain nor the human societies that depend upon the reserves for their ecological functions and resources.

The NRMP experience thus focuses on process as the unfinished business. Continued evolution from command and control policies to greater and more effective participation is essential. Integration of the needs of resources management within the wider process of decentralization is of top priority if effective stakeholder participation is to become a reality. This requires empowerment of stakeholders to achieve power sharing between government officials and the remaining stakeholders. To realize this multi-stakeholder approach to decision making and power sharing, significant changes to many of the current resources management policies and legislation will be necessary. If NRMP did not achieve all its original goals, it has moved a group of people to a clearer understanding of what needs to be done and has identified some processes to apply to these issues. Desire and energy required to implement these processes remains the unfinished business as Indonesia moves more towards multi-stakeholder natural resources management.

It is therefore recommended that the MoFr and donors pursue an integrated approach to natural resources management policy revision that accommodates the following issues or lessons learned. Lessons learned from the NRMP experience may be summarized and grouped into the following four general categories appropriate to natural resources management in Indonesia, particularly aimed at improved forestry management and *in situ* biodiversity conservation; namely:

- *Enabling Policies for Sustainable Resources Management*
- *Sustainable Natural Forest Management*
- *Conservation Area Management*
- *Institutional Strengthening and Innovation.*

#### *Enabling Policies for Sustainable Resources Management*

- Current policy settings in Indonesia favor economic growth at the cost of sustainable natural resources management and ecological functions. Economic policy settings need to provide less incentive for exporting raw material or semi-finished goods. The removal of cascading levels of nominal and effective protection would alleviate these distortions.
- Deregulation enables internationally competitive prices to provide incentives for innovation and value-adding, which are important components of sustainable development. To improve competitiveness, sectoral and economy-wide policies need to be integrated with planning objectives.
- Markets can provide efficient resources allocation, but will fail to achieve many resources management objectives. Provisioning for the less fortunate and future generations will require decentralized decision-making, often without consideration of market prices.

- Policy interventions by both the GOI and donors fail to recognize the determinants of success sought by each of the players in a policy process. NRMP's emphasis on adopting the role of analyst in the policy process, with the Project Coordinating Committee (PCC) as client, could not provide the success determinants required by the donor.
- Multi-stakeholder policy processes provide an opportunity for linking the various players within the policy-making process. Within this process, NRMP's movement away from the role of analyst to that of educator or facilitator was considered to be more closely linked to donor objectives.

### *Sustainable Natural Forest Management*

- Unless the real long-term values of forests are quantified and revealed, there will continue to be over-exploitation of forest products. Current policies in Indonesia undervalue forests and their products and provide no incentive for efficient or sustainable use.
- The current excessive uncertainty over access to benefit streams from resources allocation rights has resulted in right-holders adopting a short-term perspective over resources exploitation to maximize the value of their right. Moreover, right-holders face even less incentive to invest in reforestation and replanting. As a direct result, historic management of forest products and services has been disrupted through a combination of market forces, conversion of lands, and opening new access to resources.
- The excessive use of centralized command and control policies that specify inputs and reporting requirements and increase the cost of operating reduce the incentive and value of improving management. These policies have excluded community ownership and reduced or stifled innovative management approaches. The lower returns from forestry also result in reduced ability to compete with alternative land uses, such as large-scale conversion to pulp wood and oil palm plantations.
- If the quality of residual stand management is to be improved, pre-harvest treatments and improved harvest techniques need greater attention, rather than the current set of post-harvest planning and damage control activities. Improvements include longer-term management and planning beyond annual work plans, improved infrastructure, 100% cruising identification of trees, and lower impact logging. There is also a greater need for more creative development of rapid assessment of key ecological, economic and social indicators of good management, and for devising a reporting and evaluation procedure that rewards outcomes rather than only compliance with prescriptions.

### *Conservation Area Management*

- Effective management of national parks and other conservation areas must be adaptive to on-going ecological and socio-economic change. Indonesia has experienced rapid economic development and, more recently, dramatic economic, social and political upheavals, with serious consequences for natural resources utilization. There is no blueprint for long-term natural resources management that can be applied to all conservation areas. Management planning should focus less on writing plans that adhere to strict central government mandated guidelines. Rather, the emphasis should be on local-level human resources development for decentralized planning and management.
- Managing national parks is about managing and empowering people. The NRMP experience demonstrates the need to recognize the many stakeholders associated with a national park and to develop a multi-stakeholder planning process that actively and equitably involves them in decision-making. The stakeholders represent a park's community, comprised of diverse groups often with competing interests.
- Participation in national park management is an important but vague concept. The NRMP experience achieved a consultative level of participation, which proved acceptable only for basic information gathering. For effective resources management, a much greater degree of participation, based on the reciprocity of rights and responsibilities, is required.
- Current national park management in Indonesia is weak. The stakeholder role of PHPA as participant in park planning was not as significant as it should have been. This is not entirely due to inadequate funding but rather to inadequate allocation of existing resources constrained by current organizational and institutional structures. These central allocations and mandates restrict innovative and appropriate local-level planning and implementation.

### *Institutional Strengthening and Innovation*

- Institutional strengthening requires wide support to fill institutional capacity gaps, including redefinition of existing institutions and processes to support multi-stakeholder involvement. There is little theoretical or experiential evidence to demonstrate that current institutions, which were designed to support economic growth based on natural resources exploitation, will support sustainable development. Sustainable development requires new skills, innovative approaches, and support for institutional restructuring.
- If counterparts and project stakeholders are to be provided with the skills necessary to implement project innovations, access to training must be more flexible. Increasing the provision of informal training, such as applied research programs and study tours, was a successful NRMP activity.

- Competitive resources allocation processes, using transparent decision-making criteria, provide a cost-effective means to encourage wider participation in applied research.



## References Cited

- Amal, I., and Nasikun. 1988. "Decentralization and Its Prospects: Lessons from PDP". In PDP Experience and Indonesian Rural Development Strategy. Collection of papers from the National Conference on Area Development Program. USAID collaborative effort with the Minister of the Interior, Gadjah Mada University.
- Arnstein, S.R. 1969. "A Ladder of Citizen Participation". *Journal of the American Institute of Planners*. 35: 216-224.
- Aylward, B., Echeverria, J., and Barbier, E.B. 1995. Economic Incentives for Watershed Protection: A Report on an Ongoing Study of Arenal, Costa Rica. CREED Working paper Series No. 3.
- BAPPENAS/Ministry of Forestry/NRMP/USAID 1996. Bukit Baka-Bukit Raya National Park Management Plan.
- BAPPENAS/Ministry of Forestry/NRMP/USAID. Bunaken National Park Management Plan. 1996.
- Brehm, S. and Brehm, J.W. 1981. *Psychological Reactance: A Theory of Freedom and Control*. New York: Academic Press.
- Bromley, D. 1996. Searching for Sustainability: The Poverty of Spontaneous Order. Keynote address to the International Society of Ecological Economics, Boston. July 1996.
- Caesar, H. 1996. Economic Analysis of Indonesian Coral Reefs. Work in Progress Paper. Indonesian Ministry of the Environment/The World Bank.
- Callicott, J.B., 1996. "Do Deconstructive Ecology and Sociobiology Undermine Leopold's Land Ethic?" *Journal of Environmental Ethics*, Vol. 18.
- Callicott, J.B., 1996. "Do Deconstructive Ecology and Sociobiology Undermine Leopold's Land Ethic?" *Journal of Environmental Ethics*, Vol. 18.
- Curran, L.M. 1992. *Production Forest Management and Practice: Reviews of Selected Policy Issues with West Kalimantan Case Studies*. USAID-NRMP Contract #: 497-0362-C-00-1064-00. Report to the Bureau Chief of Natural Resources & the Environment, in The Indonesian Central Bureau of Land-Use Planning & Development. Contract #: 497-0362-C-00-1064-00. December 1992. 175 pages.
- Daly, H. 1990. Towards Some Operational Principles of Sustainable Development. *Ecological Economics*, 2 (1990) 1-6.

- De Young, R., 1993. "Changing Behavior and Making it Stick: The Conceptualization and Management of Conservation Behavior". *Journal of Environment and Behavior*, Vol. 25 No. 4, July.
- Director General for Forest Protection and Nature Conservation (PHPA). Statistik Kehutanan, Bidang Perlindungan Hutan dan Pelestarian Alam. Tahun 1995/96.
- Director General for Forest Protection and Nature Conservation (PHPA)/Ministry of Forestry. Guidelines for the Preparation of National Park Management Plans. No. 59/Kpts/DJ-VI/1993.
- Donaldson, C. 1994. Working in Multistakeholder Processes. Report for the Evaluation and Interpretation Branch, Ecosystem Conservation Directorate, Environment Canada and Stakeholder Relations Branch, Response Assessment Branch, Response Assessment Directorate, Environment Canada.
- Garland, J. 1997. "The Players in Public Policy". *Journal of Forestry*. January
- Handy, C. 1996. "Will Your Company Become a Democracy?" In *The World In 1997*. The Economist Publications Group.
- Heinen, J.T. and Low, R.S. 1992. "Human Behavioral Ecology and Environmental Conservation". *Journal of Environmental Conservation*, Vol.19, No. 2, Summer. pp105-1116.
- Heinen, J.T. 1994. "Emerging, Diverging and Converging Paradigms on Sustainable Development". *International Journal on Sustainable Development, World Ecol.* 1, pp. 22-33.
- Heinen, J.T., 1996. Human Behavior, Incentives, and Protected Area Management. *Conservation Biology*. Vol.10, No. 2, April. Pp 681-684
- Hyde, W.F, Amacher, G.S., and Magrath, W. 1996. "Deforestation and Forest Land Use: Theory, Evidence, and Policy Implications". *The World Bank Research Observer*, vol. 11, no. .2, August pp 223-248.
- IUCN. 1996. The IUCN List of Threatened Animals. World Conservation Monitoring Centre and the Species Survival Commission. IUCN Publication. Gland, Switzerland.
- IUCN. 1994. Guidelines for Protected Areas Management Categories. IUCN Publication. Gland, Switzerland.
- Kompas, April 3. 1996. Ciliwung Tercemar Pestisida Aldrin. Kompas Daily News, Jakarta.
- Mauss, M. 1950. *The Gift. The Form and Reasons for Exchange in Archaic Societies*. Translated by W.D.Hall. Routledge, 1990.

- Merrill, R., and Davie, J. 1996. The Sustainable Use and Conservation of the Mangrove Ecosystems of Bunaken National Park. NRMP Report No. 74.
- Nowak, P. 1992. What Value in Values in Resource Management. Journal of Soil and Water Conservation. Sept-Oct.
- NRMP Report No. 4. 1992. Applied Research Recommendations for Production Forest Management: an Economic and Ecological Review of the Indonesian Selective Cutting and Replanting System (TPTI). USAID, Jakarta, Indonesia.
- NRMP Report No. 5. 1992. Balancing Forest and Marine Conservation with Local Livelihoods in Kalimantan and North Sulawesi. USAID, Jakarta, Indonesia.
- NRMP Report No. 10. 1992. Recommendations for Controlled Timber Harvesting in the SBK Forest Concession. USAID, Jakarta, Indonesia.
- NRMP Report No. 11. 1992. Cruiser Identifications at SBK and Local Uses of Trees by Local People. USAID, Jakarta, Indonesia.
- NRMP Report No. 12. 1992. Community Water Supply Feasibility Study for Bukit Baka - Bukit Raya, Kalimantan. USAID, Jakarta, Indonesia.
- NRMP Report No. 14. 1992. Livelihoods Strategies and Marine Resource among Residents of Bunaken National Park, North Sulawesi: Recommendations for Local Involvement in Park Management. USAID, Jakarta, Indonesia.
- NRMP Report No. 15. 1993. A Competitive Awards Scheme for Applied Management and Nature Conservation. USAID, Jakarta, Indonesia.
- NRMP Report No. 19. 1993. The Role of NGO's in Supporting the NRM Project in Bukit Baka - Bukit Raya National Park. USAID, Jakarta, Indonesia.
- NRMP Report No. 20. 1993. Integration of Provincial Regional Development Planning into the Bukit Baka - Bukit Raya National Park Management Plan. USAID, Jakarta, Indonesia.
- NRMP Report No. 25. 1993. Report on the Communities Living Within Reach of the Bukit Baka - Bukit Raya National Park in Kalimantan Tengah. USAID, Jakarta, Indonesia.
- NRMP Report No. 26. 1993. Effective Protection and Natural Resource Management in Indonesia. USAID, Jakarta, Indonesia.
- NRMP Report No. 27. 1993. Conservation Areas in Production Forest. USAID, Jakarta, Indonesia.

- NRMP Report No. 28. 1993. Economic Issues Associated With the Indonesian Selective Cutting and Replanting System (TPTI). USAID, Jakarta, Indonesia.
- NRMP Report No. 29. 1993. A Review of Planning Arrangements for Sustainable Management of Natural Production Forest in Forest Concessions in Indonesia. USAID, Jakarta, Indonesia.
- NRMP Report No. 30. 1993. Ecotourism Development in Bunaken National Park and North Sulawesi. USAID, Jakarta, Indonesia.
- NRMP Report No. 31. 1993. Environment and Development in Indonesia: an Input-output Analysis of Natural Resource Issues. USAID, Jakarta, Indonesia.
- NRMP Report No. 32. 1993. Use of Medicinal Plants in Nanga Juoi, Menukung Regency, West Kalimantan. USAID, Jakarta, Indonesia.
- NRMP Report No. 34. 1993. Village Sketch Mapping at Bukit Baka - Bukit Raya National Park, West Kalimantan. USAID, Jakarta, Indonesia.
- NRMP Report No. 37. 1994. Avoidable Logging Waste. USAID, Jakarta, Indonesia.
- NRMP Report No. 38. 1994. Policy Towards Protected Areas in Indonesia: Final Report. USAID, Jakarta, Indonesia.
- NRMP Report No. 39. 1994. Traditional Forest Areas: Concept and Principles. USAID, Jakarta, Indonesia.
- NRMP Report No. 40. 1994. A Strategy Towards Sustainability in Natural Production Forest Management. USAID, Jakarta, Indonesia.
- NRMP Report No. 42. 1994. A Review of Planning Arrangements for Sustainable Management of Natural Production Forest on Forest Concessions in Indonesia. USAID, Jakarta, Indonesia.
- NRMP Report No. 43. 1994. Sketch Mapping of Traditional Forest Areas. USAID, Jakarta, Indonesia.
- NRMP Report No. 44. 1994. Economic Parameters of Logging Waste. USAID, Jakarta, Indonesia.
- NRMP Report No. 45. 1994. Suatu Kajian Kelembagaan untuk Pengembangan Kawasan Hutan Tradisional: Masukan untuk Konsep TFA. USAID, Jakarta, Indonesia.
- NRMP Report No. 47A. 1995. Improved Planning for Marine National Parks. USAID, Jakarta, Indonesia.

- NRMP Report No. 47B. 1995. Sustainable Mangrove Management Study. USAID, Jakarta, Indonesia.
- NRMP Report No. 48. 1995. Participatory Tools for Conservation Management: Training Course for Bunaken national Park Staff. USAID, Jakarta, Indonesia.
- NRMP Report No. 49. 1995. Community-Based Natural Resources Management in Bunaken National Park: Participatory Planning for Agroforestry & Soil Conservation on Manado Tua Island. USAID, Jakarta, Indonesia.
- NRMP Report No. 52. 1995. Sketch Mapping of Enclave Villages in a Forest Concession in Kalimantan: Input for a TFA Proposal. USAID, Jakarta, Indonesia.
- NRMP Report No. 53. 1995. Institutional Challenges to Developing TFA: Input for a TFA Proposal. USAID, Jakarta, Indonesia.
- NRMP Report No. 54. 1995. The Importance of Forest Resources to Villagers in Potential Traditional Forest Area Sites: Input for a TFA Proposal. USAID, Jakarta, Indonesia.
- NRMP Report No. 55. 1995. A Study of the Natural Resources Impacts of Export Marketing Boards in Indonesia. USAID, Jakarta, Indonesia.
- NRMP Report No. 56. 1995. Community Water Supply Program in Bukit Baka - Bukit Raya, Kalimantan: Phase IV. USAID, Jakarta, Indonesia.
- NRMP Report No. 57. 1995. A Study of the Natural Resource Impacts of Foreign Direct Investment in Indonesia. USAID, Jakarta, Indonesia
- NRMP Report No. 58. 1995. A Proposal for an Operational Trial in Improved Logging Utilization and Impact Reduction in the Natural Production Forest. USAID, Jakarta, Indonesia
- NRMP Report No. 59. 1995. Program Penyehatan Lingkungan Masyarakat di Bukit Baka - Bukit Raya, Kalimantan : Laporan Akhir. USAID, Jakarta, Indonesia.
- NRMP Report No. 60. 1995. Evaluation of Agricultural Strategies for a Bina Desa Program in Central and West Kalimantan. Usaid, Jakarta, Indonesia
- NRMP Report No. 61. 1995. GIS Feasibility: Bunaken National Park: Final Report. USAID, Jakarta, Indonesia.
- NRMP Report No. 62. 1996. Economic Value of Fisheries to the Residents of Bunaken National Marine Park. USAID, Jakarta, Indonesia

- NRMP Report No. 63. 1996. A Proposed Project to Develop the Potential of Traditional Forest Areas (TFA) to Produce Enhanced Sources of Income for Communities Located Close to Forest Areas. USAID, Jakarta, Indonesia.
- NRMP Report No. 64. 1996. Values of Preserving Forest Near BB-BR, Kalimantan. USAID, Jakarta, Indonesia.
- NRMP Report No. 65. 1996. Values of Preserving the Bunaken Coral Reef Ecosystem, North Sulawesi. USAID, Jakarta, Indonesia.
- NRMP Report No. 66. 1996. Recreation Values of Tourists for Bunaken National Marine Park, North Sulawesi. USAID, Jakarta, Indonesia.
- NRMP Report No. 67. 1996. Economic Value of Forest and Marine Resources: Applications of Market and Non Market Valuation Techniques to Indonesian Natural Resources.
- NRMP Report No. 68. 1996. Economic Benefits of Improved Water Quality in the Ciliwung River, Jakarta. USAID, Jakarta, Indonesia
- NRMP Report No. 69. 1996. Strategic Economic Analysis for Regional Investment Planning: a Review, Evaluation, and Strategy for Regional and Interregional Modeling in Indonesia. USAID, Jakarta, Indonesia
- NRMP Report No. 70. 1996. Report on an Operational Logging Trial and the Evaluation of the Harvested Stand. USAID, Jakarta, Indonesia
- NRMP Report No. 71. 1996. Further Examination of Logging Waste in the Context of Price Distortions. USAID, Jakarta, Indonesia.
- NRMP Report No. 72. 1996. Wood Processing Industrial Efficiency Links to and Impacts on Avoidable Logging Waste. USAID, Jakarta, Indonesia
- NRMP Report No. 73. 1996. Studi Budidaya Rumput Laut di Taman Nasional Bunaken. USAID, Jakarta, Indonesia
- NRMP Report No. 74. 1996. The Sustainable Use and Conservation of the Mangrove Ecosystems of Bunaken National Park. USAID, Jakarta, Indonesia
- NRMP Report No. 75. 1996. Participatory Assessment of Crested Black Macaque (Yaki) Population on Manado Tua Island. USAID, Jakarta, Indonesia
- NRMP Report No. 76. 1996. Implikasi Hukum Adat Tertentu dalam Pengelolaan Sumberdaya Alam pada Taman Nasional Bukit Baka - Bukit Raya. USAID, Jakarta, Indonesia.
- NRMP Report No. 77. 1997. Forest Certification and Ecolabelling of Indonesian Forest Products: Prospects and Policy Challenges. USAID, Jakarta, Indonesia

- NRMP Report No. 78. 1997. Raising the Value of Rattan Exports: Policy Changes to Achieving Improvements in Efficiency, Equity, and Ecosystem Management (vol.1 & 2). USAID, Jakarta, Indonesia
- NRMP Report No. 79. 1997. A Competitive Awards System for Applied Forestry Research: Design and Implementation. USAID, Jakarta, Indonesia
- Ostrom, E. 1990. Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge: Cambridge University Press.
- Pet, J. and Djohanni, 1996. A Management Framework for Komodo National Park. TNC Jakarta.
- PROKASIH. 1993. Program Kali Bersih, KLH and CIBA GEIGY. Propinsi DT. I Jawa Barat, Laporan Tahap IV (1992-1993).
- Prugh, T. with Constanza, R., Cumberland, J.H., Daly, H., Goodland, R., and Nordgaard. 1995. Natural Capital and Human Economic Survival. ISEE Press. Pp198.
- Ramelan, R., 1996. Achievement in Public Private partnerships in Indonesia's Infrastructure Developments and Measures Towards Sustainable Growth. Keynote Address, BOT Workshop. Jakarta, Indonesia.
- Rees, W.E., and Wackernagel, M. 1994. Ecological Footprints and Appropriated Carrying Capacity: Measuring the Natural Capital requirements of the Human Economy. In Jansson, A. Hammer, M.; Folke, C.; and Constanza, R., eds. Investing in Natural Capital: The Ecological Economics Approach to Sustainability. Washington, DC: Island Press.
- Resosudarmo, B. P., 1997. Modelling the impacts of Fiscal Decentralisation - A case study for using existing models. Mimeo. NRM Project USAID funded, Jakarta Indonesia.
- Saunders, L. and Weber, 1996. J. Proc. Conference Soc. Ecol. Econ., Boston.
- Scarsborough, E. A Study of Natural Resource Impacts of Export Marketing Boards in Indonesia. NRMP Report No.55
- Shindler, B., and Neburka, J. 1997. "Public Participation in Forest Planning: Attributes of Success". Journal of Forestry. Vol. 1. pp January.
- Solomon, J. 1997. What Political Risk? Economic Monitor Indonesia. Far East Economic Review. February 20, 1997.
- Stern, P., Dietz, T., and Guagnano, G.A.. 1995. "The New Ecological Paradigm in Social-Psychological Context". Environment and Behavior, Vol. 27., No. 6, Nov., pp723-743.

Sualang, O. 1996. Studi Budidaya Rumput Laut di Taman Nasional Bunaken. NRMP Report No. 73.

Taylor, D. 1996. Draft Recommendations to Improve Guidelines for Writing Park Management Plans. NRMP Report to the Indonesian Directorate General of Forest Protection and Nature Conservation (PHPA).

The Indonesian Ministry of Forestry. 1995. Indonesian Forestry Action Plan (IFAP), Table 4.2.

Wahyudi, W. 1996. The Need for Partnerships in Managing Indonesia's Protected Areas. Experiences in Mt. Gede Pangrango and Mt Halimun National Parks. Paper presented to Commission on National Parks and Protected Areas for Southeast Asia. 12-19 May 1996, Cisarua- Bogor, Indonesia.

Wang, T.H., and Katzev, R.D. 1990. "Group Commitment and Resource Conservation: Two Field Experiments on Promoting Recycling". *Journal of Applied Social Psychology*, 20, 265-275.

Weber, J. and Saunders, L. 1996. *Managing a Coral Reef Ecosystem in Indonesia*.

Young, M.D. 1992. "Sustainable Investment and Resource Use". *Equity, Environmental Integrity and Economic Efficiency*. Vol. 9. *Man and The Biosphere Series*. The Parthenon Publishing Group.

## ANNEX A: Accessing the NRMP Database

The Natural Resources Management Project (NRMP) produced many briefing papers, policy studies, policy briefs, and project reports. More information, including these reports can be accessed through the NRM Program's current web site <http://www.nrm.or.id>. A list of NRMP Reports (called the "blue cover reports") follows in Annex B.

The database was developed so that it could be used to summarize substantive qualitative information about the outputs and achievements of the Natural Resources Management Project (NRMP). A number of guiding assumptions were made in choosing how to establish the structure of that database, how to organize and consolidate project information that would be selected to enter that database, and the means for displaying in the most effective manner the results of data manipulations that would occur within that database. The most important of those assumptions include the following:

1. The primary end-users of the database will be individuals associated with a variety of organizations including, but not restricted to, BAPPENAS (The National Planning Agency), the Ministry of Forestry (MoFr), NRMP (the Government of Indonesia and USAID's second collaborative Natural Resources Management Project), other donor groups, and the academic community;
2. End-users will be at least somewhat familiar with the Microsoft Windows 95 Access operating environment where the database resides, but will expect the system to be as user-friendly as possible;
3. The Blue Cover NRMP Reports are considered to be the most general source of information about the project. Although a number of topics that were originally introduced in Blue Cover Reports, such as forest management planning, have been further refined and developed in other forums, such as the Consultative Group on Indonesian Forestry (CGIF), or *Tim Kajian* gatherings, those developments are expected at some point to be reflected in Blue Cover Reports, even though the reports may merely consist of summary abstracts and chronological consolidations of the papers; and
4. The database will primarily be used to convey summary information about the project. Database references will be made to original source documents on which the summaries are based. These documents, which will reside on a master zip-drive cassette, will include: i) Blue Cover Reports; ii) the participatory management plans for Bukit Baka-Bukit Raya and Bunaken National Parks, which were developed under the project and formed the basis for many of the field studies that were commissioned under the project (the diskette provides the plans in both English and Bahasa Indonesia); iii) policy papers presented at meetings of the Consultative Group on Indonesian Forestry and *Tim Kajian*; iv) forestry regulations, forestry statistics, plywood statistics, and non-timber statistics databases developed in the project's Policy Secretariat; v) training programs provided under the project; and vi) selected theses abstracts of Indonesian graduate students funded under the project.

A list of file names linked to this information, as well as the programming languages contained in the files, will be provided to users who may want to access specific source documents.

## ANNEX B: List of NRMP Reports (1991-1997)

Report No.	Title	Author(s)
1.	Procurement Plan for Research Equipment at Bukit Baka and Equipment Installation at Samarinda Forestry Research Station	- Roy Voss
2.	Agroforestry in Bukit Baka-Bukit Raya	- William Granet
3.	Pengukuran dan Pemetaan Topografi Sebagian Daerah Taman Nasional Bukit Baka-Bukit Raya (Topographic Survey for Research Station Site at Bukit Baka-Bukit Raya National Park)	- Syahri Deni
4.	Applied Research Recommendations for Production Forest Management: An Economic and Ecological review of the Indonesian Selective Cutting and Replanting System (TPTI)	- Lisa Curran and Kusneti
5.	Balancing Forest and Marine Conservation with Local Livelihoods in Kalimantan and North Sulawesi	- Jill M. Belsky
6.	Proposal to the GOI and USAID for the Development of Comprehensive Environmental and Natural Resources Accounts (CENRA) for Economic Planning and Management	- Henry Peskins & Joy Hecht
7.	Bukit Baka Mini-hydraulic System Implementation Plan	- Michael Johnson
8.	Final Report: Bukit Baka-Bukit Raya (1992)	- Roy Voss
	Station Protocol: Bukit Baka-Bukit Raya	- Roy Voss
	Research Protocol: Bukit Baka-Bukit Raya	- Roy Voss
9.	Environmental Education and Awareness in Bukit Baka (Volume 1)	- Nancy Bergau
	Guide to Environment and Fire Campaign (Volume 2)	- Nancy Bergau
10.	Recommendations for Controlled Timber Harvesting in the SBK Forest Concession	- John Hendrison
11.	Cruiser Identification at SBK and Local Uses of Trees by Local people	- Jim Jarvie
12.	Community Water Supply Feasibility Study for Bukit-Baka/Raya, Kalimantan	- Rick McGowan & Alfonso Rieuwpassa
13.	Recommendation for Reorganizing NRM Library	- Dachlan Cartwright
14.	Livelihood Strategies and Marine Resource Use among Residents of Bunaken National Park, North Sulawesi	- Jill M. Belsky
15.	A Competitive Awards Scheme for Applied Forest Management and Nature Conservation	-Peter R. Burbridge
16.	Design of a Management Information System for the Natural Resources Management Project	- Joy Hecht
17.	Environmental Education and Awareness Strategy for Bukit Baka-Bukit Raya National Park	- Nancy Bergau
17B	NGO Training for a Local Environmental Education and Awareness Strategy	- Nancy Bergau
18.	Water Supply and Sanitation(WS&S) Program in Bukit Baka-Bukit Raya, Kalimantan: Program Status Report	- Rick McGowan & Alfonso Rieuwpassa

19. The Role of NGO's in Supporting the NRM Project in Bukit Baka-Bukit Raya National Park - Marcel de Brune
20. Integration of Provincial Regional Development Planning into the Bukit Baka-Bukit Raya National Park Management Plan - E. Edwards McKinnon
21. Communications, Information, and Education Strategy for Bunaken National Park - Nancy Bergau
22. Report on the Preparation of a Design for a Study of the Natural Resource Impacts of Marine Sector Policy During the Second Long-Term Development Plan - Andrea Katz
- 23A Management Information System for the Natural Resources Management Project: Report on the Second Mission to Jakarta (Volume 1) - Joy Hecht
- 23B Management Information System for the Natural Resources Management Project: User Manual and Technical Documentation (Volume2) - Joy Hecht
24. Water Supply and Sanitation Program in Bukit Baka-Bukit Raya, Kalimantan: Status Report No.2 - Jonathan Hodgkin
25. Report on Communities Living Within Reach of the Bukit Raya National Park in Kalimantan Tengah - Michael Heppell
26. Effective Protection and Natural Resource Management in Indonesia - Janis Togashi
27. Biological Conservation in the Sustainable Management of Production Forest - Jim Jarvie
28. Economic Issues Associated with the TPTI Management System - Steven E. Dennison
29. A Review of Planning Arrangements for Sustainable Management of Natural Production Forest on Forest Concessions in Indonesia - Ian Armitage
30. Ecotourism Development in Bunaken National Park and North Sulawesi - Richard Sandler
31. Environment and Development in Indonesia: An Input-Output Analysis of Natural Resource Issues - Clive Hamilton
32. Survey: Use of Medicinal Plants in Nanga Juoi, Menukung Regency, West Kalimantan (report in Bahasa Indonesia) - Izeфри Chaniago
33. Mid Term Report: Guidelines and Implementation Issues Concerning Natural Production Forest Management - Art W. Klassen
34. Village Sketch-Mapping at Bukit Baka-Bukit Raya National Park, West Kalimantan - Alix Flavelle
35. Study of Selected West Kalimantan Non-Governmental Organizations (NGOs) to Strengthen the Natural Resources Management Project (NRMP) (report in Bahasa Indonesia) - Sih Yuniati & Harjono
36. Planning and Production of a Media Production Strategy for Public Awareness in Bunaken National Park: Priorities 1 and 2 (report in Bahasa Indonesia) - Harijanto Suwarno
37. Avoidable Logging Waste - Art W. Klassen
38. Policy Towards Protected Areas in Indonesia: Final Report - Joachim Metzner
39. Traditional Forest Areas: Concepts and Principles - Michael Heppell
40. A Strategy Towards Sustainability in Natural Production Forest Management - Art W. Klassen
41. Community Water Supply Program in Bukit Baka-Bukit Raya, Kalimantan - Alfonso Rieuwpassa

42. A Review of Planning for Arrangements for Sustainable Management of Natural Production Forest on Forest Concessions in Indonesia - Ian Armitage
43. Sketch Mapping of Traditional Forest Area - Alix Flavelle
44. Economic Parameters of Logging Waste - Darius Teter
45. A Study of the Development of a Traditional Forest Area: Implementing the TFA Concept (report in Bahasa Indonesia) - Tri Nugroho
46. NRMP Training Report System - David Prettyman
- 47A Improved Planning for Marine National Parks - Peter R. Burbridge
- 47B Sustainable Mangrove Management Strategy - Peter R. Burbridge
48. Participatory Tools for Conservation Management: Training Course for Bunaken National Park Staff (report in Bahasa Indonesia) - Frank Momberg
49. Community-Based Natural Resource Management in Bunaken National Park: Participatory Planning for Agroforestry and Soil Conservation on Manado Tua Island - Reed Merrill
50. Development of Agricultural Conservation Techniques in Bunaken National Park: A Case Study of Sloping Land Agriculture on Manado Tua Island (report in Bahasa Indonesia) - Adi Loekito
51. Community Environmental Health Training Program in Bukit Baka-Bukit Raya, Kalimantan (report in Bahasa Indonesia) - Martini Soufyan
52. Sketch Mapping of Enclave Villages in a Forest Concession in Kalimantan: Input for a TFA Proposal - Alix Flavelle
53. Institutional Challenges to Developing Traditional Forest Areas (TFAs): Input for a TFA Proposal - Don Flickinger
54. The Importance of Forest Resources to Villagers in Potential Traditional Forest Area Sites: Input for a TFA Proposal - Ria Gondowarsito
55. A Study of the Natural Resource Impacts of Export Marketing Boards in Indonesia - Erik Scarsborough
56. Community Water Supply Program in Bukit Baka-Bukit Raya, Kalimantan: Phase IV - Alfonso Rieuwpassa
57. A Study of the Natural Resource Impacts of Foreign Direct Investment in Indonesia - Erik Scarsborough
58. A Proposal for an Operational Trial in Improved Logging Utilization and Impact Reduction in the Natural Production Forest - Art W. Klassen
59. Community Environmental Health Program In Bukit Baka-Bukit Raya, Kalimantan: Final Report (report in Bahasa Indonesia) - M. Soufyan and M. Lodo
60. Evaluation of Agricultural Strategies for a Bina Desa Program in Central and West Kalimantan - John Wicks
61. GIS Feasibility: Bunaken National Park - Final Report - Bill Hegman
62. Economic Value of Fisheries to the Residents of Bunaken National Marine Park - J. Mark Riopelle
63. A Proposed Project to Develop the Potential of Traditional Forest Areas (TFA) to Produce Enhanced Sources of Income for Communities - Mike Heppell
64. Values of Preserving Forest Near Bukit Baka-Bukit Raya, Kalimantan - Jeff Weber
65. Values of Preserving the Bunaken Coral Reef Ecosystem, North Sulawesi - Jeff Weber
66. Recreation Values of Tourists for Bunaken National Marine Park - Jeff Weber

67. Economic Value of Forest and Marine Resources: Applications of Market and Non-Market Valuation Techniques to Indonesian Natural Resources - Lindsay Saunders
68. Economic Benefits of Improved Water Quality in the Ciliwung River, Jakarta - Lindsay Saunders
69. Strategic Economic Analysis for Regional Investment Planning: A Review, Evaluation, and Strategy for Regional and Interregional Modelling in Indonesia - Geoffrey Hewings
70. Report on an Operational Logging Trial and the Evaluation of the Harvested Stand - Art W. Klassen
71. Further Examination of Logging Waste in the Context of Price Distortions - Darius Teter
72. Wood Processing Industrial Efficiency Links to and Impacts on Avoidable Logging Waste - Lindsay Saunders
73. Study of Seaweed Cultivation in Bunaken National Park (report in Bahasa Indonesia) - Obrin Sualang
74. The Sustainable Use and Conservation of the Mangrove Ecosystems of Bunaken National Park - Reed Merrill and Jim Davie
75. Participatory Assessment of the Crested Black Macaque (Yaki) Population on Manado Tua Island - Robert Lee
76. Implication of Selected Customary Law in the Natural Resources Management of Bukit Baka-Bukit Raya National Park - Tadeus Yus
77. Forest Certification and Eco-labeling of Indonesia Forest Products: Prospects and Policy Challenges - Chris Bennett and Joanna Elliott
78. Raising the Value of Rattan Exports: Policy Changes to Achieving Improvements in Efficiency, Equity and Ecosystem Management (Volumes 1 and 2) - Chris Bennett
79. A Competitive Awards System for Applied Forestry Research: Design and implementation - Chris Bennett