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NATURAL RESOURCES MANAGEMENT PROJECT

BAPPENAS – Ministry of Forestry
Assisted by
USAID

DESIGN OF A MANAGEMENT INFORMATION SYSTEM FOR THE NATURAL RESOURCES MANAGEMENT PROJECT

Associates in Rural Development
for
Office of Agro–Enterprise and Environment
USAID – Jakarta

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EXECUTIVE SUMMARY

The Indonesia Natural Resources Management Project (NRMP) links a complex set of activities which are dispersed both spatially and in their approaches, objectives, and outcomes. A Management Information System (MIS) can support operational and strategic management of this project and help track its impact on the country's resource base.

The first step in the MIS consultancy was to identify the specific purposes which the project MIS should serve. Several purposes seem to be important at this time. One is to help the project staff, USAID, and future evaluation teams get a better sense of what the project is doing, which activities are actually being carried out, and their relation to overall goals. This is referred to as the "management and compliance" function of the MIS. A second purpose is to facilitate tracking the project's impacts on several USAID interests which are not its direct objectives, particularly women, NGOs, community participation, and creating markets for U.S. technology. A third purpose is to permit the monitoring and evaluation of the project's impacts on its final goals.

In the first area, management and compliance, the MIS consultancy led to two major outcomes. The first is the creation of an automated system that manages the NRMP team's annual work plans, monthly reports, and an overall timeline of project activities. This system establishes a consistent list of project activities common to all planning, reporting and monitoring. The preliminary version of that list, prepared by the consultant with input from the chief of party and other project staff, will be refined when the team members prepare their 1993/4 annual work plans in the next month. The automated system of which it is a part provides a structured way to write monthly reports and ensure that they are linked to the overall activities list. It also produces a quarterly summary of work carried out by activity, which supplements the existing monthly reporting by person. The second output in the management and compliance area is a recommendation that the long-term experts write quarterly narratives which describe in a more qualitative way than the monthly reports their progress and problems in working towards project goals. This narrative should encourage them to think strategically about where they are headed and how much success they are having in getting there.

In the area of "incidental" impacts, we need to know where we will find monitoring and evaluation data. The report reviews the kinds of impacts which might be anticipated in each of the four key areas, and where data should be available to track each of them. The three areas of women, NGOs, and community participation are

communities should provide the bulk of the information in these area. Reports on participation in project training activities will also be important. In the area of markets for U.S. technology, impacts seem unlikely. If they do occur, they will be through implementation of new strategies recommended to logging concessionaires or polluting factories for how to reduce their impacts on the environment.

Assessment of the project's impacts on its goals poses much more complex and far-ranging problems. These impacts will not be felt for several years, often not within the life of the project. Establishing a causal relationship between project inputs and final goals is very difficult. The scope of this mission did not allow significant headway on this task. However, the report does consider the causal links between project activities and goals and discusses the information needed to establish an impact at each step. This may serve as a basis for future analysis of how to monitor the impact of the NRMP.

It is hoped that the MIS will eventually provide information to the USAID PRISM monitoring system. Because PRISM is focused on the kind of impacts which will not be observable for some years, the current report does not fully address its needs. However, if future work is undertaken to expand the system in the direction of impact monitoring, it should be possible to develop data of use to the PRISM system.

Acknowledgements

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LIST OF ACRONYMS

ARD	Associates in Rural Development
GOI	Government of Indonesia
ITTO	International Tropical Timber Association
MoFr	Ministry of Forestry
NRMP	Natural Resources Management Project
PHPA	Ministry of Forestry Sub-Office for Nature Conservation
PIL	Project Implementation Letter
TOR	Terms of reference
USAID/J	United States Agency for International Development/Jakarta
USAID/W	United States Agency for International Development/Washington
WEC	World Environment Center
WID	Women in Development

1. INTRODUCTION - WHY A MANAGEMENT INFORMATION SYSTEM?

In the preparation of the Indonesia Natural Resources Management Project (NRMP), a decision was made to develop a management information system (MIS) for the project. The first task in the development of such a system is to identify the needs which it could meet.

1.1 Possible purposes of an MIS

An MIS for a project like NRMP could serve a variety of purposes. First, it could serve as a management tool for the project staff. As an internal management tool, an MIS can be useful at various levels of detail. It could guide day-to-day operations, making it easy to access information on expenditures, where the project staff are, what they are working on, steps involved in recruiting consultants and supervising their work, etc. Or it could be more strategic, helping long-term staff keep track of their progress towards carrying out project activities and accomplishing project purposes. In this role, development of an MIS is an effort to systematize the regular filing, information flows, and reporting which are a part of any project. Such an MIS could take the form of a structured, possibly automated, system for data production and retrieval - or it could rely primarily on routine filing and reporting without any use of computer technology and automated systems.

A second general purpose for an MIS is to demonstrate to outside organizations (i.e. anyone not on the project staff) that the project is doing what it is intended to do. In the context of NRMP, such a system might be designed to meet the information needs of USAID/Jakarta, USAID/Washington, or the Government of Indonesia (GOI). It could build the information base to present an solid overview of project activities to mid-term and final evaluation teams. It could also provide the information needed for more general USAID purposes, such as the PRISM system of monitoring all field projects. This may be referred to as the "compliance" function of an MIS; it is designed to demonstrate to outside reviewers that the project staff are complying with their terms of reference (TORs), that the contractor is fulfilling the terms of its contract, etc.

The internal management and compliance functions of an MIS can be closely related. Often the information which an outside evaluator wants is the same as the information which project staff need to think strategically about their progress. Project staff will not usually need a structured system to present the information, though, since they know much of it simply from doing their jobs. On the other hand, the work involved in structuring the information in order to present it to outsiders can help

insiders think through their progress and ensure that they are heading in the desired direction.

A third purpose of an MIS is to monitor the link between project activities and goals. This is the "impact" purpose of an information system. It uses the management or compliance data, since it not possible to assess the impact of specific activities without knowing how and when (or even that) they were carried out. It goes beyond this, however, in two ways. First, it depends on collecting substantial amounts of data which go beyond the project activities to cover the realms in which the project is supposed to have an impact. In the case of NRMP, these data would be in several different areas; tracking how economic and environmental policies are made and implemented by various government ministries, observing how forest concessionaires carry out their logging activities, monitoring the evolution of key natural environments over time, etc.. Second, an impact monitoring MIS should try to establish a causal relationship between the project activities and the broader realms which on which they are intended to have an impact. Establishing causality is obviously very difficult, both for conceptual and for technical reasons. Often it will simply not be possible. However, to the extent that it is feasible to establish causality (or the lack thereof, where projects are not successful), this information will be of considerable use to future project designers who wish to learn from the experience of those who precede them. Moreover, in the area of environmental impacts, the ongoing data on the natural environment needed for an impact MIS are also likely to be of considerable use to anyone interested in resource protection and biodiversity issues in Indonesia. Thus impact monitoring system are of interest despite the difficulty in creating them.

A fourth purpose for an MIS is to trace the activities or impacts of a project in specific areas which are not its direct objectives but which are nevertheless of importance. These "incidental objectives" typically include impacts on women, for projects which are not specifically addressing women's problems, and impacts on the environment for non-environmental projects. In the case of NRMP it includes impacts on women and participation of non-governmental organizations (NGOs). It could also include participation of local communities, although this is in fact such an important element of the project that it could be addressed as a direct management or compliance issue. Another incidental impact may be purchases of U.S. equipment, technology or services as a result of the project. In the case of NRMP this may become an issue under the World Environment Center (WEC) project on pollution reduction, but it not likely to result from the Associates in Rural Development (ARD) contract activities.

A fifth purpose for an MIS, which can sometimes be distinguished from the assessment of project impacts, may be to document lessons learned which may be applicable to future

projects. To build an MIS which will provide information for the future, it is essential to know which future - for whom are you providing information, and for what purpose? Which lessons you want to learn will determine which information is stored in the system; without knowing this, such a system would simply be a random data set, whose maintenance is probably not worth the time it would take. The NRM project could probably provide valuable lessons on a variety of issues; for example, strategies for providing policy support to government agencies, problems encountered in implementing joint projects, and the feasibility of private sector collaboration. Without having defined the questions of interest, however, it is not realistic to try to create a system which will be able to answer whatever issues might be of interest in the future.

1.2 Purposes of the NRMP MIS

Because of the complexity of the NRMP and because the purposes of the MIS were not defined before the consultant came to Jakarta, a substantial amount of time on this mission had to go into scoping out the project, determining which needs are the most important, and determining how an information system could help meet them. In this nature of this kind of effort, as the project staff saw more of what an MIS could do, they developed more ideas about how this system could be of use to them. Because it takes time to set up a system which will respond to needs once they are defined, the resulting system does not meet all of the needs expressed during the mission.

The major needs which emerged most clearly deal with strategic management of the project and compliance. The NRM project is made up of several relatively independent activities spread across the country. It has eleven long-term experts on staff now, and that number will be growing in the near future. With local staff, it has twenty full-time employees, plus at least a dozen expatriate consultants coming through each year and as many local consultants. Ensuring that all of these people are in fact contributing to the accomplishment of project objectives has become an increasingly difficult task.

This issue is of concern to the project staff themselves, in trying to improve their own ability to do their jobs. It is also of concern to both the project staff and USAID/J in thinking about how to present the project to USAID/W and to upcoming evaluation teams. The GOI is also concerned about getting a more clear overview of where the project is going and how its disparate pieces are related. Thus this concern may well combine the need for better information for strategic management and the concern to ensure that project staff are fulfilling their obligations.

The major MIS components recommended in this report address this need. Two major strategies are recommended. One is the creation of a more structured list of project activities, which ties together annual work plans, monthly reports, and the joint implementation plan, and which makes it easy to summarize project accomplishments by activity on a quarterly basis. The second is the preparation of more qualitative narrative descriptions of the progress made and problems encountered in each major area of project activity, to be written quarterly.

Several other simpler and more operational needs also were mentioned by project staff in the course of this mission. These concern in particular the information available about training courses and the diffusion of simple summaries of the policy implications of project studies. Both of these issues arose before this mission began. Because they are quite clear-cut, the project staff and the GOI easily agreed on systems for ensuring that they are met. Thus aside from some minor modifications in some of the forms developed, they were ready to include in the MIS when the consultant began work.

The issue of the impacts of the project was recognized as being of substantial importance, but it was much less clear how it could be addressed in a substantive way. The park management and applied research plans in the two field sites include biodiversity surveys. They may also involve setting up ongoing resource monitoring systems in the relevant government ministries. If this occurs, it should be possible to assess the evolution of the resources and the impacts of this project over time. This will depend, however, on the establishment of reliable monitoring systems within the GOI, a task whose difficulty should not be underestimated. The impact of the project's policy and management support activities will be more difficult to trace, and less is planned within the project itself. This tasks involved in monitoring project impact are considered by this report, but this issue will require additional work if the intention is to look at this issue in a systematic way.

2. STRATEGIC MANAGEMENT AND COMPLIANCE

The strategic management and compliance functions of an MIS are not the same. However, they are sufficiently similar in the needs expressed by the NRMP staff that a single system may help approach both of them. When people think proactively about how to carry out their activities and maintain a broad perspective on where they are, the information they need and produce is, at least in part, the same as that which is needed to demonstrate that they are doing their jobs well. This allows us to treat the two issues together.

2.1 Existing information tools and their limitations

The existing tools for tracking what the NRM project is doing are essentially of four sorts.

2.1.1 Scheduled reports

A variety of regular reports are produced by NRMP staff, in response to specific requests by USAID and the GOI. These include monthly reports which are a contractual obligation of the long-term experts, quarterly reports on the project as a whole produced by the chief of party for USAID and GOI, and quarterly reports produced by the BB/BR team leader for the Ministry of Forestry sub-office for nature conservation (PHPA) in Pontianak. In addition, the annual joint implementation plan sets out a description and timeline for the work to be carried out by the overall NRM project -- including ARD's partner institutions, the ITTO, the GOI, the WEC, and so on.

These reports generally are factual rather than qualitative or descriptive. Increasingly they are streamlined "bullets" indicating specific activities with little or no narrative. The monthly reports began as sometimes quite lengthy narrative discussions of work undertaken and problems encountered. This has been simplified to a bullet structure, in response to both the experts' need to reduce the time spent on them and USAID's need to keep them simple and factual.

These reports do not adequately provide a clear overview of where the project is on its major activities. The annual work plans are based on the long-term experts' TORs, since they are intended primarily as a tool for evaluating how individual people are fulfilling their contractual obligations. The recent revisions of the monthly report form, first used in December 1992, are designed to establish a tight link between the monthly reports and the annual work plans. Thus in theory the monthly reports should make it possible to monitor the progress of individual staff members in carrying out the tasks in their TORs. However, in

practice only a few people have actually used the new monthly report form in this way; many of the monthly reports still are not organized according to the tasks listed in the annual work plans.

A second problem is that the text and timelines of the joint implementation plan, the main synthesis of project plans, do not match the annual work plans. In the past there has not been any link between these two documents. The latter exist to satisfy USAID contractual obligations on individual staff members. The former is prepared to meet the requirements of the Project Coordinating Committee (PCC) which links the numerous partners to the project. There has been no mechanism to ensure that the activities proposed in the two sets of documents be consistent.

A third problem with existing reporting is that it is structured entirely by person, rather than by activity. The monthly reports are designed to permit evaluation of individuals based on their TORs. They do not make it possible to assess the progress of a team in carrying out complex and interdependent activities. Thus they are not very helpful in enabling project staff or evaluators to get a strategic overview of where the project as a whole is going. This is a problem for ongoing management of progress of the project. It is also likely to hamper the mid-term and final evaluation teams in determining how effectively the project has been able to make headway on accomplishing its goals.

2.1.2 Special reports

The project staff also complete specific forms in response to precise information needs expressed by USAID or the GOI. At present there are three of these. One need expressed clearly was for more specific information about what kind of short-term training is being carried out and who is benefiting from it. With their monthly reports the long-term experts have been submitting a training form in which they provide general information about what courses have been conducted, by whom, where, how many students they have had, and so on. The information in these forms has been compiled in Jakarta each month. In January 1993, a more detailed training form was proposed by the Kalimantan team leader which includes a description of the syllabus, training materials, and the number of participants by gender. A copy of this form, slightly revised to be usable in Jakarta and Manado, is included in Appendix E.

In the past few months the project has also complied with a GOI request for summary information about the policy implications of the different studies being carried out by the project. They have created a policy bulletin, a copy of which will be prepared for each NRMP report, summarizing its contents and its implications for

the government. These bulletins are being disseminated in the GOI, particularly targeted at civil servants who will not have time to read the whole reports.

The long-term experts also list on their monthly reports any professional meetings, conferences, or technical seminars which they have attended. This information is compiled by project staff in Jakarta to provide a regular overview of contacts between this project and the larger community working in similar areas.

At present there does not seem to be a need for other specific reports. Because these needs are so precise, if they do arise in the future, it should be relatively easy to comply with them.

2.1.3 Consultant reports

Many activities undertaken by the project are the work of short-term consultants brought in to undertake specific identifiable tasks. These may be administrative activities related to the management of the project, like the library consultancy or this MIS consultancy, or they may be research activities like the assessment of possible improved logging practices or the socioeconomic survey of villages in Bunaken National Park. Either way, they involve preparation of a TOR, justification of the activity, and submission of a final report which makes it easy to see exactly what was done. As the project begins contracting with local NGOs or other organizations to carry out specific activities around Bukit Baka and Bunaken national parks, the same kind of documentation should be available to cover those activities.

These reports provide a good overview of the activities of consultants working with the project. They are all published in a standard format, with executive summaries, standard recognizable covers, and NRMP report numbers. The (growing) list of project reports is included in every report, helping interested outsiders find out what is available from the project. Obviously the quality of the reports themselves depends on their authors, but as a whole they are a good source of information. As a whole they present a good overview of the project, and their accessibility is a credit to the project.

For several reasons, the work of the long-term experts is not as thoroughly documented as that of outside consultants. First, their work is generally ongoing, and cannot be easily divided into discrete chunks about which a report is appropriate. While it is the norm for short-term consultants to document their work at the end of the contract, if only to demonstrate that they have fulfilled their TORs, the work of permanent employees does not call for such frequent reporting.

Moreover, the typical consultant spends perhaps one fourth of any mission writing his or her report. This would be excessive for long-term advisors who are available to discuss their work when the need arises, and who therefore do not need to document their activities every step of the way. However it does suggest that it may be worth considering whether additional documentation is needed about the ongoing work of the long-term experts.

2.1.4 Routine files

To a large degree the need for documentation of ongoing work is likely to be satisfied by the information in the routine files maintained in Jakarta and at the field sites. Each person keeps his or her own records on his/her work, leading to routine personal files. In addition, virtually all written documents pass through the Jakarta project office and are filed there. Any activity requiring specific funding must have USAID approval, which means that a description and justification of the activity is produced, and will be on file in Jakarta and at USAID. Whenever outsiders are brought in they must have a TOR, so there is always documentation of what they must do. The routine accounting documents should provide additional information about what was actually done, particularly as far as procurement of equipment for both project and GOI staff is concerned. Moreover any documents produced in the course of work in the field are sent to Jakarta; these include such things as the draft management plans for the Bukit Baka and Bunaken parks, proposed new forms, survey data, and so on. In fact, the nature conservation advisor in Manado said that virtually everything he puts on paper is sent to Jakarta for their information or their input.

It does not appear that access to routine information about what is happening in the field is a problem. While a thorough review of the Jakarta files was beyond the scope of this mission, project staff do not seem to have any problems putting their hands on documents, reports, and other information. The chief of party seems committed to making information easily accessible, both within the project and about it.

2.2 Strengthening management and compliance information

The problems identified with the routine scheduled reporting by project staff led to the development of a new system for presenting information about the ongoing activities of the project. This has two major components. One is an automated system which integrates the annual work plans of long-term experts, their monthly reports, and the overall timeline of project activities included in the joint implementation plan. The second is the introduction of a new report, a quarterly narrative which describes the progress and problems encountered in working on each project activity.

2.2.1 Automated activity management system

The automated system which will streamline the preparation of routine reports and will facilitate monitoring of project what the project is doing and plans to do. It links the existing annual workplans, the monthly reports, and the overall timeline from the Joint Implementation Plan in a single system, automated in dBase.¹ This system is structured around a hierarchical list of project activities. A preliminary list of activities has been developed by the MIS consultant with substantial input from project staff. It will be refined when the long-term staff prepare their 1993/4 work plans. This list must be completely consistent with the list of activities in the work plan, so that it can be used by the chief of party and other project staff to monitor overall progress of the project based on the information provided in the monthly reports.

Once it is completed with the data from the upcoming work plans, the preliminary list will be updated using a dBase program for that purpose. The dBase file to be updated specifies the institution responsible for each activity (NRMP, GOI, ITTO, WEC, SBK, NGOs, etc.). For NRMP activities, it indicates which staff members are responsible for carrying out each activity. This file will also include a projected timeline for carrying out and completing each activity, irrespective of institutional responsibility.

A second dBase program will be used by the long-term experts in writing their monthly reports. It prompts them with a list of the activities included in their work plans, and asks them to fill in what they have done on each during that month. This program prints the report, and can transfer it to a file usable in Word Perfect, so that it is easy to cut and paste from monthly reports to other documents if needed. The long-term experts will send the printed version of their report to Jakarta along with a dBase file (on diskette) which includes the information about what they have done on each activity that month.

In the project office, the automated monthly report files will be used in two ways. First, another dBase program transfers the activity data to a timeline which shows the actual work accomplished on each activity. This timeline can be printed each month to allow ongoing monitoring of the progress on different parts of the project.

Second, once a quarter (or on a different schedule if desired) the monthly report information will be aggregated and sorted out by activity (rather than by person), to produce a report which

¹ This system is described in more detail in Appendix B, which provides some technical documentation and explains how the system is to be used.

summarizes the work carried out on each activity. The production of this report relies on the coherence between the activities listed in the annual work plans, the monthly reports, and the overall project activity timeline. It will allow project staff and outside reviews to keep track of the progress of each major area of project activity, and so will give a better sense of where the project as a whole is going. All of the project staff felt that this would help them have a better sense of what is going on, what their colleagues are doing, and how effectively the project is accomplishing its objectives.

2.2.2 Quarterly narrative by activity

The monthly reports are essentially factual rather than descriptive; they are designed to provide a quick overview of activities completed, major outputs, and so on. While these reports are useful for some purposes, they are short on qualitative information about how well the project is working, what problems are being encountered, or which aspects of the project design turn out to be feasible or impossible.

To fill this gap, most of the long-term staff felt that it would be useful to write a quarterly narrative which discusses the progress made on each of the major project activities. These narratives differ from the monthly reports in several respects. First, they are intended to be a review of how a team of people is progressing on a set of interrelated activities; they are not intended to be a basis for evaluating individual performance. Second, they are explicitly designed to provide an opportunity for project staff to elaborate on the issues which they consider most important, without any pressure to reduce their comments to "sound bites" which are easily transferable into other summary reports about the project. They should serve as a catalyst to reflection, not about the conduct of specific activities, but about where those activities are leading them. They will be a "joint venture" between the different people responsible for given major activities. Thus they will allow them to consider where they think their work is going, and to review each other's perceptions of their progress and problems. However they definitely should not become a major chore; a few pages, produced in a few hours, should certainly be sufficient to express the major themes of how the work is progressing.

These narratives should be primarily an internal management tool, for use by the ARD team and USAID. While of course the ideas generated in these reports would form a basis for discussions with the GOI about the progress of the project, they should not be routinely submitted to the GOI, other institutional partners in the project, or the PCC. This will make it easier for those writing the narratives to express their views openly and make the reports a more effective management tool.

These quarterly narratives will provide one place for the long-term experts to note some of the specific indicators which are of importance to USAID in providing information for the PRISM system. This will be somewhat preliminary, and should be supplemented later by a system designed more specifically to look at the impacts of the project.

The general topics to be covered and the people responsible are included in the table below. These topics should probably be integrated into a single report of three to five pages each for Kalimantan and Manado.

Report Topic:	Individuals Responsible:
<p>1. Policy Secretariat</p> <p>Macroeconomic policy analysis and support</p>	<p>Erik Scarsborough, Macroeconomist Clive Hamilton, Resource Economist Forestry Advisor</p>
<p>2. Ministry of Forestry</p> <p>Applied Research/Competitive Award System</p>	<p>Forest Economist/Research Advisor</p>
<p>3. Kalimantan Field Site</p> <ul style="list-style-type: none"> - Applied research - Production Forest Management - Natural Forest Conservation - Community Participation in Forestry 	<p>Roy Voss, Team Leader/Research Forest Advisor</p> <p>Elmo Drilling, Natural Forest Management Advisor</p> <p>Fernando Potess, Nature Conservation Advisor</p> <p>Mering Ngo, Social Forestry Advisor</p>

<p>4. North Sulawesi Field Site</p> <ul style="list-style-type: none"> - Park Management - Community Participation - Applied Research 	<p>Graham Usher, Nature Conservation Advisor Rizald Rompas, Marine Conservation Advisor</p> <p>Community Development Expert</p> <p>Graham Usher, Nature Conservation Advisor</p>
<p>5. Training</p>	<p>Colin MacAndrews, Chief of Party</p>
<p>6. Contract Management/Administration</p>	<p>Colin MacAndrews, Chief of Party</p>
<p>7. World Environment Center Pollution Reduction Project</p>	<p>World Environment Center</p>

Appendix D includes suggested guidelines to the long-term experts on the preparation of this quarterly narrative.

3. INCIDENTAL IMPACTS

USAID is interested in the impact of the NRM project in several areas which are not its primary goals or objectives. In all USAID projects, it is important to understand whether there will be a gender differential in the impacts of the project, and whether the project can, should, or does have a specific impact on the ability of women to improve their positions. Therefore the MIS needs to be able to distinguish the roles of women in project implementation and to distinguish project impacts on women wherever there is likely to be a gender differential.

Several other issues are also of particular concern. One is the to encourage the development of local NGOs; therefore the MIS must make it possible to identify how NGOs are participating in or benefitting from the project. Another issue of concern is community participation in project design and the role of local communities in natural resource use and management. Community participation is such an integral part of the planned implementation of the NRM project's field components that it probably is not even appropriate to consider it an "incidental" impact. Nevertheless, it will be discussed in this section to ensure that it is possible to identify where the information about this issue may be found. A fourth incidental issue of concern is whether or how the project will create markets for U.S. technology.

The MIS does not include special data collection efforts to deal with these issues. Rather, the information needed to track each of them is incorporated into the ongoing reporting and filing systems of the project. This section reviews where the information needed to track each of these issues can be found.

3.1 Women

Several aspects of the NRM project may be targeted specifically at women, or might have different impacts on women from men:

- In the long-term training area, the participation of women is of particular interest. Eight of the twenty-two slots have been reserved for women; the use of these slots can be monitored through the ongoing information maintained in Jakarta about long-term training. The management of long-term overseas training responsibility of the Institute for International Education (IIE), and ARD subcontractor. Therefore further detail about the progress of the students in the United States and their activities on return to Indonesia will be available from IIE.

- Participation in short-term training is also an area in which the project can have a specific impact on women. The new training form (Appendix E) includes the number of men and women in each course. Trainers may also fill in the gender of each participant on the attendance lists for each course if needed.
- In both Kalimantan and North Sulawesi the development of national park management plans includes detailed study of the economic and social structure of local communities. These studies include assessment of the differential roles of men and women, the impact which the national parks may be expected to have on people of each gender, and the role of people of each gender in activities which may endanger park resources. The studies will lead to the design of projects designed to bring local communities into park management and to minimize or mitigate the impacts of traditional practices on the survival of the natural resource base. The design of these projects will take into consideration any differences between the roles of men and women which are important in either protecting the resource base or ensuring that it is used as effectively as possible by local communities.
- Similarly, the analysis of local community structures will also make it possible for the field team in Kalimantan to design other activities which take into consideration the differential roles of men and women. In the design of agroforestry activities and the reporting on their implementation and effectiveness it will be possible to determine which members of the community are affected by the new practices introduced, and which genders participate in their introduction. It should be borne in mind, however, that the purpose of these activities is to facilitate sustainable management of the forests and to mitigate the impact of local villages on the forest resources - it is not specifically to improve the position of women in village society. Therefore while both the project and the MIS will ensure that it is possible to track the roles of each gender in these activities, the activities should not be redesigned to take on WID objectives unless these do not detract from the primary objective of sustainable resource management.

3.2 NGO Development

The NRM project seeks to involve NGOs actively in the design and implementation of activities in the communities surrounding the national parks. In order to make this possible, project staff are meeting with the relevant organizations, and are inviting their participation in training courses as appropriate. As the community-based projects are designed, the NGOs will become more

active project participants, with contracts awarded to them to carry out specific activities. Project work with NGOs may therefore be tracked through several sources of information:

- The monthly reports include lists of significant meetings held with outside organizations, etc. These lists indicate when meetings are held between project staff and NGOs, and the major topic of discussion. This makes it possible to track NGO participation in the design of the park management plans, the development of community based projects, and so on.
- The new training forms will provide information about training courses which have been targeted specifically at NGOs. Where courses are targeted at a broader audience, the attendance lists will make it possible to determine who has attended from the NGOs.
- As the community-based projects are developed, the NGOs will play an active role in implementing them. The NRMP will contract with them to carry out specific activities, and they will be required to report regularly on their progress. When their work is completed, they should be submitting a full report, as do other consultants. Thus the role played by the NGOs will be fully documented and the results should be available as NRMP reports.

3.3 Community participation

The implementation of the management plans for the Bukit Baka and Bunaken national parks depends very heavily on the participation of the adjacent villages. Thus community participation really is not properly considered an incidental impact of the project; it is one of the major strategies for carrying out the project. The details about how local communities are participating will be available from a number of sources:

- A number of the routine project activities in the overall activities list concern community participation; building information about local village structure, identifying how local groups use park resources, introducing new agroforestry practices, investigating new tenure systems, designing economic incentives to encourage sustainable resource use, and so on. These can be identified by looking at the activities list, and can be tracked through the monthly reports and the new quarterly summary of work undertaken by activity.
- The meeting lists in the monthly reports include meetings with village members, held to seek their input into park and concession management, the design of community-based activities, and so on.

- Two long-term advisors are specifically responsible for community development; Mering Ngo in Kalimantan, and a community development expert soon to be hired in North Sulawesi. The work plans, monthly reports, and all other output of these two individuals will provide information about how local villages are being included in the project.
- A number of short-term consultants are working on community related activities; Jill Belsky surveying communities in Kalimantan and North Sulawesi, Nancy Bergau designing village educational programs in Kalimantan, and so on. The reports of these consultants provide further information about project work with local communities.
- As community-based activities are designed, contracts will be awarded to carry them out. The TORs and reports on these contracts will make it possible to track what is planned and what is implemented in specific villages.

3.4 Marketing U.S. Technology

The NRM project is not expected to create significant markets for U.S. technology. There are two areas where U.S. equipment might be purchased as a result of the project, though neither is highly likely in the short- to mid-term:

- The introduction of new practices in the logging concessions could lead to concessionaire purchases of U.S.-made equipment for transporting logs or carrying out other tasks. For this to occur, the concessionaires with whom the project is working (and perhaps others) must introduce new practices which are best carried out using U.S. equipment. If this occurs, it could be picked up by monthly reports or quarterly narratives well in the future. It is more likely, however, that information about this kind of outcome would be identified by a future information system looking more specifically at the impacts of the project on GOI regulations and logging practices rather than by a system focused on tracking the activities of long-term experts.
- In the implementation of strategies recommended by the WEC pollution reduction project, Indonesian industries may choose to purchase U.S.-made pollution reduction equipment. Again, if this occurs it will be a long-run impact of the WEC activities. If such purchases are made during the life of the WEC project they should be picked up in routine WEC reporting to USAID. It is more likely, however, that they would show up in a system focused on project impacts.

4. PROJECT IMPACTS

In monitoring the impact of the NRM project, we are confronted with the basic difficulty of most impact monitoring, that the links between the project's activities and its long-run goals are difficult to trace, and causality is virtually impossible to prove. Designing a system to actually build data on project impacts is not within the scope of this assignment, because the magnitude and complexity of this task do not allow it to be completed within a short time period. However, it is useful to think through what will be involved, so that the project can develop a strategy for monitoring its impact over the next few years. Moreover, development of such a strategy will be important in order to eventually provide the indicators required for USAID's PRISM monitoring system.

An approach which can prove helpful in dealing with the causality problem is to start by tracing the mechanisms through which each major project activity is expected to have an impact on the ultimate (and intermediate) goals. Then it will be possible to identify how far the project activities actually go towards reaching the goals, and how much is left to others to carry out, building on the inputs of the project. Usually it will be possible to establish some initial causal links between project activities and intermediate objectives. Usually it will not be possible to take the clear establishment of causal relationships all the way to the project's final goals.

The overall goal of the NRM project, as expressed in the logframe, is "to sustain income and employment opportunities for a growing population by adjusting policies and management practices regarding key natural resources". Several different kinds of activities will be used to work towards this end:

- support for economic and natural resource policy analysis in Bappenas and the Ministry of Forestry.
- support for the development of management strategies for two national parks (conservation forest areas) geared both towards improving the management of those parks and towards strengthening GOI capacity to design effective park management strategies elsewhere;
- development and introduction of strategies for sustainable resource use by commercial logging concessionaires and by traditional users of forest resources (management of natural production forests);
- improved research into strategies for sustainable management of natural resources.

The links between project inputs and final goals in each of these four areas of activity are somewhat different, and must be traced separately. This relies in part on the project logframe, which is, of course, designed to establish exactly this relationship between project inputs, outputs, and goals. However, the logframe in the NRM project paper is focused largely on the impacts of policy support, with relatively little consideration of the other aspects of the project's activity. Therefore this sketch of the causal relationships covers a number of issues not fully addressed by the logframe.

4.1 Support for Policy Analysis

The logic of the NRM project's support for policy analysis in both Bappenas and the Ministry of Forestry may be described through the following chain of events:

	Links in causal chain:	Project inputs:
1.	Project presents techniques and benefits of policy analysis to GOI.	<ul style="list-style-type: none"> ■ Project staff do analysis. ■ Project staff disseminate info on the application of policy analysis results.
2.	GOI puts additional resources into policy analysis; designation of policy secretariat employees, awarding host country contracts, etc.	<ul style="list-style-type: none"> ■ Project staff work with policy secretariat staff - on-the-job and formal training. ■ Project provides long-term overseas training to GOI staff.
3.	GOI staff do more rigorous policy analysis.	
4.	GOI decisions made differently as a result of increased reliance on analysis.	
5.	Institutional framework (rules, regs. and organizations) of resource use changes for villagers and commercial users.	
6.	Practices regarding resource use change.	

7.	Villagers and commercial resource users following sustainable practices.	
8.	Resources are sustainably used, not depleted.	

As the table shows, the project inputs occur only at the start of the chain of events; many steps must occur without direct project support if the NRMP is to accomplish its goals. Moreover, the time frame on the provision of inputs and the realization of project objectives is such that the final result is not likely to be observed (if at all) until after the donor support has ended. In order to think about monitoring impact, therefore, we must focus on two things.

- First, have the project inputs been provided? This issue is essentially addressed by the management and compliance section of the MIS, which builds a framework for tracking whether the project activities have been carried out according to plan.
- Second, to what extent can we observe the initial causal links and establish that they have occurred as a result of project activities? And to what extent are the subsequent causal links likely to occur? These questions requires further consideration.

The link between steps 1 and 2 can be observed clearly, since it is to occur during the life of the project. Several specific government actions could indicate that this link has been made; these include the appointment of personnel to the Policy Secretariat and the awarding of contracts for and completion of fifteen policy studies funded by the project.

The link between steps 2 and 3 should be also observable during the life of the project, at least to some extent. One indicator may be that people who receive long-term training return to Jakarta to work as policy analysts in Bappenas or the Ministry of Forestry. Another will be that the policy secretariat carries out additional policy studies in response to GOI needs, with funding from sources other than NRMP.

The link between steps 3 and 4 will be harder to observe. Two agencies are the immediate target of the policy work supported by the project, Bappenas and the Ministry of Forestry. Bappenas is responsible for preparing five-year and long-term development plans; therefore the logframe suggests that these two documents should show the influence of the increased impact on policy analysis as a result of this project. This should be observable, at least hypothetically, by looking at those documents. However, key policy decisions on taxes, government expenditures, donor

investments, etc., are made by other organizations which are not obliged to follow the five-year and long-term development plans. Project staff or evaluation team members might be able to identify an impact of the project on these plans, but the chain of causality may be broken if in fact those plans do not have any significant impact on policy decisions.

There may be a more indirect relationship between the analytical studies carried out as a result of the project and eventual policy decisions. The project staff are disseminating their results to government ministries and other donor agencies. Other agencies may pick up on the results and incorporate them into their work - for example, the World Bank might incorporate policy recommendations generated through this project into its requirements for structural adjustment loans -without the link to NRMP being visible. We may believe this kind of influence to be likely, but we won't be able to show that it is occurred except under exceptional circumstances.

If specific changes in the institutional framework for resource use occur (step 4. or 5.), then monitoring their impact on local-level resource use will depend on well-designed research projects. Such studies are likely to be of considerable interest for the design of future natural resource management policies or projects. However, they may be both lengthy and costly. Their utility both to management of NRMP and to the design of future projects should weighed carefully in deciding whether they are justified.

4.2 Management of Protected Areas

The NRMP support to the Ministry of Forestry is designed in part to investigate new strategies for managing conservation forest areas. The mechanisms for project impact in this area may be understood as follows:

	Links in causal chain:	Project inputs:
1.	GOI prepares management plans for Bukit Baka and Bunaken parks.	<ul style="list-style-type: none"> ■ Project advisors work with GOI giving guidance on how to do management plans. ■ Project advisors provide guidance on specific management options.

2.	<ul style="list-style-type: none"> ■ GOI begins implementation of the activities and institutional structures in the management plan. ■ GOI develops a stronger understanding of the process for development management plans. 	<ul style="list-style-type: none"> ■ Project advisors assist in implementing plan ■ Project advisors assist in elaborating general strategy for developing management plans.
3.	<ul style="list-style-type: none"> ■ Two pilot parks are managed more sustainably through implementation of the plans. ■ MoFr in Jakarta recommends implementation of plan development process in other parks. 	
4.	<ul style="list-style-type: none"> ■ Better management strategies devised for other parks. 	
5.	<ul style="list-style-type: none"> ■ Through use of better planning strategies, better plans are produced for other parks. 	
6.	<ul style="list-style-type: none"> ■ Plans implemented in other parks. 	
7.	<ul style="list-style-type: none"> ■ Resources managed more sustainably in other parks. 	

The link between 1. and 2. should be observable during the life of the project, especially with respect to the management of Bukit Baka/Bukit Raya and Bunaken national parks. Whether GOI officials actually develop a better understanding of park management may not be apparent. However, by working closely with the Ministry of Forestry it may be possible to assess the extent to which management strategies used by the project's long-term experts have been adopted for use elsewhere in the country, steps 3. and 4. The more the project's strategies are clear-cut and discrete, the most likely it is that, if introduced elsewhere, they will be observable. This is likely to occur, if at all, relatively late in the life of the project or after its completion. It would be identifiable from other park management plans, interviews with Ministry of Forestry officials, and so on.

The actual sustainability of the management of park resources will be assessed not based on management systems, but based on the evolution of the resource base itself. At least in theory, it should be possible empirically to measure the quality or extent of the forest or marine resources. The project will be carrying out biodiversity surveys in both Kalimantan and North Sulawesi to establish base data about park resources. In Manado, ongoing resource inventories are planned, to build systematic time series data to monitor evolution of the reefs over time. However, building and maintaining reliable time series data is institutionally quite difficult. It relies on rigorous sustained attention to detail on the part of researchers and statisticians creating the database. The amount of work involved in setting up and, more particularly, maintaining such systems consistently over time, should not be underestimated. It may be feasible, however, if the GOI is indeed interested in monitoring its resource base over time.

4.3 Management of Natural Production Forests

This part of the project is designed to encourage more sustainable use of forest resources both by commercial logging concessionaires and by local villagers living near valuable natural resources. The logic of these activity may be understood in the following way:

	Links in causal chain:	Project inputs:
1.	<ul style="list-style-type: none"> ■ Project advisors study logging techniques in SBK concession. ■ Advisors analyze forest resource use by adjoining villages in BB/BR and Bunaken. 	<ul style="list-style-type: none"> ■ Project advisors working in the concession on commercial logging. ■ Project advisors studying local community use of park resources in the concession and park.
2.	<ul style="list-style-type: none"> ■ Suggestions to SBK on improved commercial logging ■ Suggestions to local villages on how they could use forest or marine resources differently ■ Recommendations to MoFr on changes in regulatory framework for commercial and non-commercial forest use and marine resource use. 	<ul style="list-style-type: none"> ■ Recommendations offered. ■ Training of concessionaires, local villages, GOI officials

3.	<ul style="list-style-type: none"> ■ SBK tests suggested practices ■ Villages change resource use practices. ■ MoFr considers policy recommendations 	
4.	<ul style="list-style-type: none"> ■ Recommendations evaluated favorably by SBK, villages, or MoFr 	
5.	<ul style="list-style-type: none"> ■ Policy and regulatory framework for forest activity changed ■ SBK commercial logging practices changed. ■ BB/BR or Bunaken villages practices changed. 	
6.	<ul style="list-style-type: none"> ■ Other logging concessionaires convinced to try new practices based on SBK success. ■ Other logging concessionaires required to use new practices by MoFr ■ Other villages convinced to try new strategies by example. ■ Other villages permitted new access to resources by MoFr. 	
7.	<ul style="list-style-type: none"> ■ Resources managed more sustainably in areas not covered by the project. 	

A number of different causal links are important in this area. The links between 1. and 2. will be easy to establish; the advisors in the field are already developing recommendations for how resources could be used more sustainably by both commercial and "traditional" users. This is slightly less clear as it concerns recommendations for regulatory policy, since the field advisors seem to focus more on the natural resources themselves than on their regulation. However when the forest advisor slot is filled this should also be relatively easy to observe.

Going from 2. to 3. depends on the willingness of actors not under direct project control to test new approaches to resource use. Convincing either SBK or local villagers to use resources differently is likely to be difficult. The ability of the

project's long-term experts to persuade them may depend on how fully they consider not only the physical and biological potential of the resources, but also the institutional and regulatory environment influencing their use. The Ministry of Forestry seems quite interested in recommendations for regulatory reform which may come out of this project, which bodes well for its willingness to consider changing forest practices. Change in concessionaire practices could result more from MoFr requirements than from persuasion. Similarly, changes in village practices could result more from GOI changes in tenure system and rights of access to resources than from either project persuasion or government policing.

The link between 3. and 4. depends on whether the practices recommended by the project staff are, in fact, better for those who use them. While the project staff analysis may show that their recommendations *should* be better, it is easy to overlook key variables in doing hypothetical analysis. Once the strategies are actually tested by the would-be users, it will be seen whether they turn out to be better in practice.

Links between 4. and 5. are more subtle. If new approaches turn out to be better in practice, then it is possible that they will be routinely adopted by the Kalimantan concessionaires and by villages near BB/BR or Bunaken. Understanding why apparently preferable approaches are or are not adopted is quite important. It would require detailed understanding of the working environments of both the logging concessionaires and the villages, probably obtainable through interviews, monitoring over time, and winning the confidence of those institutions so they will be willing to share information.

Transferring improved practices from the groups targeted by the project to other groups - the link between 5. and 6. - may depend on activities to publicize the success of the recommended strategies and train people in their use. It may also depend on the GOI to permit or require changes in how commercial and traditional groups use resources. Assessing the success or failure of such efforts may also require understanding the differences between the environment and constraint faced by groups working with the project and other resource users.

The link between the introduction of new practices and the actual sustainability of the resource base depends, as for conservation forests, on whether the new practices actually turn out to benefit the environment. Again, this will be assessed from time series data on the environment, rather than by analyzing the behavior of people using that environment.

4.4 Applied Research

The project's applied research component essentially provides inputs into the preceding tables for conservation and production forests. Through better research, Indonesians will know more about how they could manage their resources sustainably. The causal links could look like this:

	Links in causal chain:	Project inputs:
1.	<ul style="list-style-type: none"> ■ Criteria established for selecting research needs ■ Research is carried out with project funds. 	<ul style="list-style-type: none"> ■ Grants for student and scientist research projects. ■ Advice to GOI on how to awards research grants ■ Advice to GOI on forest and marine research needs ■ Management support for management of BB/BR research station
2.	<ul style="list-style-type: none"> ■ Results from specific research projects. ■ GOI learns about how to manage a more effective research system. 	
3.	<ul style="list-style-type: none"> ■ Specific research results lead to resource management or regulatory strategy recommendations. [These may be inputs into the conservation and production forest tables above, at about step 2.] ■ GOI is able to get additional research funding because its system is stronger. 	
4.	Ongoing better research provides continuing better recommendations on resource management, which input into the previous tables and then follow those causal links to the final impact on the forests.	

Establishing and monitoring the causal links between steps 1. and 2. will depend in part on the quality of the actual work carried out with project funds. This might be evaluated based on reports produced, PhDs awarded to student researchers, publications which result, and other indicators which are defined by the scientific community. In terms of practical application of the research results, this link might be evaluated based on how far the research recommendations go in the chains of causality discussed for conservation and production forest management; are the new ideas being tested, introduced, disseminated? Assessment of whether the GOI has learned to manage a more effective research system will be more difficult. Useful indicators might include whether they have objective peer-review systems for awarding research funds, whether research needs are clearly identified and prioritized, and whether funds are awarded in accordance with those needs.

The link between 2. and 3. may depend on the existence of an effective mechanism for disseminating research results, so that they will feed into the causal chains of the previous tables. It should be possible to observe these mechanisms, which might include journal publication, more popular publicity, presentations at conferences and professional meetings, and specific targeted outreach to resource users. It should also be feasible to determine what other research funding has been received, although establishing a link between it and the project activities may be more difficult.

4.5 Conclusion

Assessing the impacts of the NRM project is likely to be quite difficult, as this chapter suggests. However, with additional thought and discussion about these causal links, it should be possible to develop at least some mechanisms for tracking them. To the extent that it is possible to actually implement these systems, they should provide valuable information both for the management of this project and for the design of future natural resource management projects.

5. MONITORING THE WEC WASTE MINIMIZATION PILOT ACTIVITIES

The World Environment Center's Industrial Waste Minimization Pilot Activities will be implemented under the Natural Resources Management Project, although they are not under the responsibility of the prime contractor, ARD. The contractors will be reporting directly to USAID about their activities. However, it will be useful for their activities to be covered under the automated system for managing information about progress on project activities, so that the reports and timelines produced by the ARD staff present an overview of WEC activities as well.

This element of the MIS will have to be implemented once the WEC activities are actually underway. At present there exists a draft work plan, which presents timelines of the proposed activities. Those activities and timelines can be included in the file prepared for the automated system; however it is already expected that they will be revised before the project is implemented.

USAID will have to work out what kind of reporting it wants on the WEC activities. Most of the work under the WEC project will be carried out by short-term consultants, without the large group of long-term experts as under the ARD contract. Therefore the notion of annual work plans and monthly reports for individual staff members is probably inappropriate to WEC activities. WEC will refine an overall list of activities and timeline, and the Indonesian project coordinator will report regularly on the progress in implementing them.

This reporting scheme could be implemented fairly easily within the automated system prepared during this consultancy. All WEC activities would be treated as if they were an individual's work plan. The Indonesian coordinator would then use the monthly reporting program to report on progress in implementing them. His printed reports would be submitted to USAID and the dBase file would be given to the ARD system manager. The overall timeline would be updated each month as with the report of the ARD long-term experts. Progress in implementing the WEC project would be reported on the quarterly summary of progress by activity, along with ARD progress and that of other partners.

The logistics of implementing this system will have to be worked out between USAID, the Jakarta-based WEC project coordinator and the ARD system manager once the WEC activities are operational. The dBase software is written to make this easily implementable once the workplan and activities timelines are finalized.

6. PROVIDING DATA FOR THE PRISM MONITORING SYSTEM

The data required by USAID's PRISM monitoring system will come three sources:

- Indicators pertaining to the inclusion of specific policy items in the next five-year or long-term plan will be observable from GOI documents.
- The new quarterly narratives will provide limited information on changes in GOI regulations or policies, to the extent that the long-term experts are aware of them or that such changes become important in their work.
- To a larger extent, PRISM indicators will be provided from an expansion of the MIS which focuses primarily on project impacts.

For the most part, the kinds of indicators suggested by the preliminary PRISM documents will be identifiable towards the end of the project or after its completion, when it may be possible to trace causal links between the project's activities and its goals. This is particularly the case for policy changes occurring as a result of NRMP analysis, where the link between recommendations made to Bappenas and changes made by other ministries may be tenuous at best. In the case of natural production forest and conservation forest management, the links may be somewhat easier to establish, since only one national ministry is involved. However we may still expect that it will be several years before any of these indicators are likely to be observable; therefore there is time to prepare an addition to the MIS which focuses specifically on impact monitoring. Because of the length of time involved in observing the indicators suggested for the PRISM system, and because of the difficulty in relating them to the NRM project, one useful element in the design of an impact monitoring system may be to look for simpler PRISM indicators which are more likely to be observable during the life of the project.

Although we do not expect these impacts to be observable in the near future, the long-term experts should still be aware if they do occur, and should mention them in their quarterly narratives. The guidelines for writing the quarterly narratives discuss this issue, and should help to ensure that the long-term advisors will be alert to changes in policy which may be attributable to the project.

APPENDIX A. Summary of MIS Elements

All of the elements listed below are properly considered as elements in a management information system on the NRM project. The starred items are new or their documentation and storage in Jakarta so as to be easily accessible is new. This list includes both items managed through the new automated system and extensive information stored in paper files in Jakarta.

1. Reporting materials

Joint Implementation Plan

Annual work plans

Monthly reports

* Quarterly report on progress by activity

Quarterly reports to USAID and GOI (by Colin and Roy)

Annual reports to USAID and GOI (by Colin)

* Quarterly narratives (by the various long-term advisors)

2. Materials regularly filed in Jakarta

Consultant reports and TORs (generally published as NRMP reports)

Park management plans

Training forms and participant lists

Details on long-term training - who, where, what subjects, etc.

* Research data - on diskette - e.g. results of biodiversity surveys, socioeconomic surveys, etc.

Plans or project descriptions (when not already covered by consultant reports) - e.g. elaboration of community development activities for communities around parks, plans for how to manage ongoing monitoring of park areas, etc.

Policy analysis reports or papers (when not published as NRMP reports)

Formal (written) agreements with other organizations involved with the project's activities, e.g. SBK, government agencies, NGOs, etc.

APPENDIX B. Documentation on Activity Reporting System

1. Introduction

The activity reporting MIS will streamline the preparation of routine reports and will facilitate monitoring of project activities and plans. It links the existing annual workplans, the monthly reports, and the overall timeline from the Joint Implementation Plan in a single system, automated in dBase. This system is structured around a hierarchical list of project activities. A preliminary list of activities has been developed by the MIS consultant with substantial input from project staff. It will be refined when the long-term staff prepare their 1993/4 work plans. This list must be completely consistent with the lists of activities in the work plans, so that it can be used by the chief of party and other project staff to monitor overall progress of the project based on the information provided in the monthly reports.

Once it is completed with the data from the upcoming work plans, the preliminary list will be updated using a dBase program for that purpose (newact.prg). The dBase file to be updated specifies the institution responsible for each activity (NRMP, GOI, ITTO, WEC, SBK, NGOs, etc.). For NRMP activities, it indicates all the staff members who have some responsibility for carrying out each activity. This file also includes an anticipated timeline for carrying out and completing each activity, irrespective of institutional responsibility.

A second dBase program will be used by the long-term experts in writing their monthly reports. It accesses a list of the activities included in their work plans, and asks them to fill in what they have done on each during that month. This program prints the report, and can transfer it to a file usable in Word Perfect, so that it is easy to cut and paste from monthly reports to other documents if needed. The long-term experts will send the printed version of their report to Jakarta along with a dBase file (on diskette) which includes the information about what they have done on each activity that month.

In the project office, the automated monthly report files will be used in two ways. First, another dBase program transfers the activity status data to a timeline which shows not the expected dates for completion of each activity, but the actual work accomplished. This timeline will be printed each month to allow an ongoing monitoring of the progress on different parts of the project.

Second, once a quarter (or on a different schedule if desired) the monthly report information will be aggregated and sorted out by activity (rather than by person), to produce a report which summarizes the work carried out on each activity. The production

of this report relies on the hierarchical activity list in the timeline, and on the coherence between the activities listed in the annual work plans, the monthly reports, and the overall project activity timeline. It will allow project staff and outside reviewers to keep track of the progress of each major area of project activity, and so will give a better sense of where the project as a whole is going. All of the project staff felt that this would give them a better sense of what is going on, what their colleagues are doing, and how effectively the project is accomplishing its objectives.

2. Tables structure

The NRMP activities information system is structured into four tables or reports. The overall table is a timeline which lists all project activities, the institutions responsible for each (NRMP, ITTO, GOI, NGOs, etc.), the individuals responsible for NRMP activities, and the timeline for carrying out each activity. There will be several versions of this table. Each annual joint implementation plan will have an overall timeline which indicates the projected timing of project activities. Each month the data in the monthly reports will be used to create a timeline of activities actually carried out; there will be only one of these for the project, updated monthly.

The annual work plans of the long-term experts are the second activity table in the system. They are created from the timeline using a dBase program. Based on the preliminary activities list, individual activities lists are generated. These are given to the long-term experts, who will use them as a starting point for preparing their 1993/4 work plans. If the preliminary listings accurately describe their general activities, then they will simply provide the additional detail which describes what exactly they do on each activity. If the preliminary listing is incorrect, the long-term advisors will change it, describing their activities in a way which is consistent with the overall hierarchical format of the activities listing (see section 3 below for more detail on the structure of activities). Their changes will then be integrated into the overall timeline so that it is consistent with the personal work plans.

The monthly reports of the long-term advisors are the third "table" in the system. They will follow the same structure as the work plans, reporting each month on the progress in carrying out each activity listed in the work plan. (See section 7 below for more detail on work plans.)

The fourth "table" in the system will be a quarterly re-sort of the information in the monthly reports which summarizes what has happened over the quarter on each project activity. This will be produced by project staff in Jakarta and Pontianak, using a dBase program for that purpose.

3. Activity structure

The system is structured around a hierarchical listing of the activities carried out under the NRM project. The hierarchical nature of this listing establishes the link between the personal monthly reports and annual work plans and the activity-structured format needed in order to track the progress of the project.

At the top level of the hierarchy, the project has seven activities:

Activity Code (level 1)	Activity Area
1.	Policy Secretariat
2.	Ministry of Forestry
3.	Kalimantan Field Site
4.	North Sulawesi Field Site
5.	Training
6.	Contract Management/Administration
7.	World Environment Center Pollution Reduction Project

Each of these activities is further subdivided, with a total of about 300 activities in the whole system. Although there are four levels in the hierarchy, where the activities are not complex only two or three are used.

Each activity is assigned a code which indicates where it fits in the hierarchy. Thus, for example, all activities within the Ministry of Forestry begin with a 2. Within that overall category, 2.1 refers to applied research activities, 2.2 to forest policy position papers, and 2.3 to institutional support to the Ministry of Forestry. Activity 2.1 is further broken down into more detailed codes, which specify what kinds of steps the project will take within the applied research area:

- 2. MINISTRY OF FORESTRY
- 2.1 Applied research
 - 2.1.1 Advise on results of NRM research
 - 2.1.2 M&E of MOFr research
 - 2.1.3 Competitive awards system
- 2.2 Position papers
- 2.3 Institutional support to MoFR

In their annual work plans, the long-term experts will describe the steps involved in carrying out each activity in the timeline. They may add additional levels in the hierarchy as needed in order adequately to explain the steps they will take in carrying out their work. However, once they have agreed on the four-level general activity structure for the overall timeline, they cannot change it; they can only add detail within the overall timeline hierarchy.

4. Production of annual work plans

The production of annual work plans by the long-term experts will involve a review and possible modification of the activities breakdown in the overall timeline. The version of these activities prepared by the MIS consultant is not accurate; only the long-term experts themselves are in a position to adequately describe their own activities. Therefore in the production of their 1993/4 work plans they will have to review what the consultant has suggested and change the structure as needed.

It is essential that the overall timeline be revised to reflect their revisions, so that the activities structure of the timeline and of the work plans will be the same. The activities codes will also have to be modified to reflect the changes made by the long-term experts. New codes should be assigned which are consistent with the hierarchical spirit of the classification system, so that it will be possible to aggregate information and monitor the progress of the project using those codes.

Once the long-term experts are satisfied with the hierarchical structure and codes for their activities, they will prepare their annual work plans by filling in more detail about their activities. For example, the forest advisor may have a role to play in the following activities:

Forestry Advisor - summary of activities:

Activity code (all levels)	Activity
1.2.4	Policy study number 4
1.2.6	Policy study number 6
2.	Ministry of Forestry
2.1	Applied research
2.1.1	Advise on results of NRM research.
2.1.2	M&E of MOFr research

2.1.3	Competitive awards system
2.2	Position papers
2.3	Institutional support to MoFR
6.2.1	Monthly reports
6.2.3	Annual Work Plans
6.2.4	Annual Reports
6.2.5	Joint Implementation Plan

Note that in this example, as in most cases, the forestry advisor will have responsibilities that fall outside of his basic activity area. Note also that the activity codes for the tasks of the forestry advisor are not consecutive. Thus the activities in his work plan are not numbered in a straightforward way in his work plan - 1(a), 1(b), 2(a), 2(b), etc. Instead they will jump around, according to the hierarchical codes assigned to each activity in the overall timeline. While this may look somewhat silly from the perspective of an individual work plan, it is essential in order to establish the logical link between the individual work plans and the activity-based overall timeline.

Each of the activities listed above for the forestry advisor is included in the overall timeline as shown above. However, this does not specify what his role is on those activities. On his own work plan, he will spell them out in more detail. Thus his work plan might look like this:

Activity code (all levels)	Activity
1.2.4	Policy study number 4 Review work of consultants conducting study number 4, related to forest policy.
1.2.6	Policy study number 6 Review work of policy secretariat staff conducting study number 6, related to forest policy.
2.	Ministry of Forestry
2.1	Applied research

2.1.1	Advise on results of NRM research.
2.1.1.1	Review reports on NRM research activities
2.1.1.2	Write up summaries of forest policy implications of relevant NRM research activities
2.1.1.3	Circulate summaries to interested MoFr officials.
2.1.2	M&E of MOFr research
2.1.3	Competitive awards system
2.2	Position papers
2.3	Institutional support to MoFR
6.2.1	Monthly reports
6.2.3	Annual Work Plans
6.2.4	Annual Reports
6.2.5	Joint Implementation Plan

If it is useful to the forest advisor to actually structure the detailed activity descriptions using the hierarchical coding structure (as shown here in points 2.1.1.1 through 2.1.1.3), then he may do so. If it is more useful to simply provide some description of the activity, as shown under 1.2.4 and 1.2.6, that is fine as well. The essential point is that the integrity of the hierarchical activity coding system of the overall timeline be maintained.

5. Using the software

The activity report MIS is written in non-compiled dBase III+ programming language. All of the necessary files are stored in a single directory on the computer, and they will fit on a single high-density disk. This includes the dBase III+ software, the data files, and the programs. When in the program directory (which may have any name the user prefers), the user types:

```
dbase          <enter>
```

to enter dBase. At the dBase prompt (a dot at the bottom of the screen) the user types:

```
do reports     <enter>
```

"Reports" is the main menu used to access all of the other programs. It offers the user the following choices:

What would you like to do today?

Enter or modify an activity in the main timetable [E]
Create the files that store annual workplan info (should be done once a year for each person's workplan, or redone if the workplan is updated) [W]
Write your monthly report [M]
Produce and print a summary report on progress by activity [A]
Update the 'historical' timeline for activities carried out [U]
Print timelines or activities lists [T]

Quit this program before another moment passes [Q]

Please make your choice: _

The first option, [E], runs the program to update the overall activities timeline. It is not menu-driven, since this is not necessary. See section 6 for a discussion of this option.

The second option, [W], is used to create the files used by the software when entering monthly reports. This is essentially a utility program. Unless the workplans are changed during the year, this program will be run only once for each person. It will be run by the system manager in Jakarta once all of the updates to the timeline are complete.

The third option, [M], will be used by the long-term experts to write their monthly reports. This is discussed in detail in the section on writing monthly reports.

The fourth option, [A], is the program used to produce the quarterly summary of progress by activity. It asks the user to specify the start and end months of the summary (it doesn't actually have to be quarterly) and whose monthly reports are being summarized. It then automatically merges the files, sorts them by activity, and prints a report. Since the user specifies both the months and whose reports are included, it can be used by both Jakarta and Pontianak staff to produce reports.

The fifth option, [U], takes the information in the monthly report and updates the "historical" timeline file with information about what was actually done. It prompts the user to enter the date and the month of the report being entered and then does the updates automatically.

The sixth option, [T], does various output functions. It offers the user a second menu:

What would you like to do?

[P]rojections timetable - the one which indicates when
you EXPECT things to be done in the future - convert to Lotus
[H]istorical timetable - the one that shows when things
really WERE done, from the monthly reports - convert to Lotus
[F]ull activities list - print it out for reference
[L]ong-term expert workplan activities list - print
[Q]uit this program right away, please.

Please indicate your choice here: _

The first two choices, [P] and [H], transfer the timelines from dBase to Lotus, aggregating to a less detailed level in the activities code hierarchy if desired. DBase cannot print timelines in an attractive fashion; this transfer lets the users modify the presentation in Lotus and print nicer documents for project reports. This is discussed further in the section below on updating and producing timelines.

The third and fourth choices, [F] and [L], print out activity lists. [F] prints the entire list, along with the information about who is responsible for which activities. [L] prompts the user to specify whose activities list is to be printed, and then prints that one alone. This is likely to be of use to the long-term experts as they are developing their work plans.

6. Updating the overall timeline to reflect new workplans

After the 1993/4 workplans have been completed and approved, it will be necessary to update the general timeline to reflect the activities as structured in the workplans, and to enter the projected schedules. This is done with a dBase program accessed from the main menu by choosing option [E]. The program prompts for the activity code to be entered, and then looks it up in the existing timetable data. If it doesn't exist yet, the program asks the user to provide a brief description of the activity, who is responsible, and the dates when it will be carried out. If the code already exists, the program shows the information already in the system and asks the user to enter the changes. Where appropriate, this program simultaneously modifies both the timeline of projected work and the historical timeline of work actually carried out.

7. Monthly reports

Monthly reports will now be written using a dBase program accessible from the main menu of the system. The user enters his name and the month and year for which he is writing a report. The program opens a reference file which contains a list of the

activities in that person's work plan. It then offers the following choices:

What do you want to do?

Enter information for the first activity [F]
Specify an activity code [S]
Enter non-workplan activity [X]
Print out the work plan [W]
Transfer your report to a text file [T]
Not write a report! Quit this program instead... [Q]

The user can specify the activity for which he wants to enter information, by selecting [S]. The program then asks for a description of what was done on that activity during the month, and the user types in whatever he wants. If he prefers, the user may simply start with the first activity in the list, by choosing [F] at the starting menu.

Non-workplan activities are entered through a separate menu option, [X]. In this case the program asks whether an activity code exists in the general timeline for that activity. If it exists, it finds it and enters the code along with the description of work carried out.. Otherwise the description is simply entered in a category called "non-workplan activity". Either way, activities not in the workplan are distinguished from those which are in the workplan. This allows the user and the project manager to consider whether the user should modify his workplan to reflect what he is actually doing.

After each item is entered, this program offers a separate menu at the bottom of the screen, which looks like this:

What next? Options are: [H]elp!! [S] [F] [N] [P] [W] [T] [X] [Q] _

Further information about the different choices available in this menu are available by typing option [H]. This will print the following assistance on the screen:

[H] prints this [H]elp information on the screen
[S] allows you to [S]pecify which activity you want, by code.
[F] enters information for the [F]irst activity in your workplan
[N] enters information for the [N]ext activity in your workplan (after what you just entered"
[P] enters information for the [P]revious activity in your workplan (previous to what you just entered)
[R] [R]epeats the activity you just did.
[W] prints your report. [W] stands for "write", since "p" for "print" was already taken by "previous."
[T] prints your report to a [T]ext file for use in Word Perfect.
[X] enters information for a non-workplan activity.
[Q] [Q]uit this program, in a big hurry

When the user is done entering all of his activities for the month, he selects option [W] to print out his report. This routine prints out the information in a format similar to the one in the old workplans. Workplan activities are listed in order of activity code. Non-workplan activities then appear at the end of the report. The program also offers menu option [T], which copies the contents of the report into a text file which accessible from Word Perfect. This will allow the users to transfer the contents of their monthly reports to other documents if needed.

The structure of this program makes it possible for the user to start and stop at any time. He may enter information about a few activities, exit the program, go to lunch, come back later, and pick up where he left off. He may also enter the whole report, but then print it out later when he has access to a printer.

Once the report is produced for a given month, the user must submit both the printed output and the file (on diskette). The file will have a name of the following type:

IN_MO9X.EXT'

where:

IN corresponds to the initials of the users (ES=Erik, CH=Clive, MN=Mering, and so on.) As this report was in process there was no forest advisor and the choice of a community development advisor for Manado had not been finalized. Consequently, those two individuals appear in the system as "FA" and "CD". Also, Pak Rompas appears in the system as "MR" rather than "RR".

MO is the initials for the month. The initials used in this system are JA, FE, MR, AP, MY, JN, JL, AU, SE, OC, NO, and DE.

9X indicates the year - 93, 94, etc.

EXT is the file extension. For the dBase data file, this has the value "dbf". The "dbf" file is the one to submit with your report. For the text file accessible in Word Perfect, the extension will be "txt", which is a convention for all ascii text files.

Thus Erik's June 1994 report will be named "ES_JN94.DBF". The "dbf" file will be used by project staff in Jakarta and Pontianak to produce the quarterly summary of progress by activity.

8. Preparing the summary report by activity

The system will be used to prepare summary reports which list the work carried out undertaken on each activity. This will be

done by merging the different monthly reports so that all activity under a specific activity code will appear together rather than appearing separately according to who carried it out. This whole process is automated, and is accessed through option [A] from the main menu of the MIS software. The program asks the user to indicate the starting month for the report, the ending month, and whose reports are to be merged. It then generates the new report automatically. This program must be run while connected to a printer.

9. Preparing the timeline of activities accomplished

This is done in two stages. First, the [U] option from the main program is used to update the historical timeline with information from the monthly reports. This is a simple program which prompts the user to specify whose report is being entered, and for what month. It then does the updates automatically, entering dashes in the appropriate fields for each activity and month when there is work carried out.

When all monthly report information has been entered, the [T] option to transfer timelines to Lotus is selected from the main menu. This presents a second menu:

What would you like to do?

- [P]rojections timetable - the one which indicates when you EXPECT things to be done in the future - convert to Lotus
- [H]istorical timetable - the one that shows when things really WERE done, from the monthly reports - convert to Lotus
- [F]ull activities list - print it out for reference
- [L]ong-term expert workplan activities list - print
- [Q]uit this program right away, please.

Please indicate your choice here: _

When the user selects a timeline (projections or historical), the program asks whether he would like to aggregate the information to a less detailed form or transfer the full timeline. This makes it possible to take advantage of the hierarchical structure of the activities codes. Suppose the four-level activity data are to be aggregated to three levels in the hierarchy. Then any activity carried out on more detailed level activities is entered on the higher level. For example, if work was undertaken on 2.1.3.1, 2.1.3.2, or 2.1.3.3, the new aggregate timeline will simply show that work was undertaken on 2.1.3, without showing further detail. This option may be useful when the full four-level timeline is too long and more detailed than needed to show an overall picture of the project. It is, of course, always possible to transfer the full four-level timelines.

Once the timelines are transferred, the user exits the dBase system, exits dBase, enters Lotus, and retrieves the timeline. It can then be formatted, made more presentable, and printed for inclusion in the Joint Implementation Plan or other reports.

10. Files list

This system depends on 19 permanent reference files, plus others created to store workplan and monthly report data. All of these files are stored in the directory C:\MIS. The program files are as follows:

reports.prg	Main program which presents the initial menu on the screen and then runs the other programs.
newact.prg	Program to enter or modify activities in the overall timetable (timetabl.dbf). Accessed with option [E] in reports.prg.
mkrpt.prg	Program to create an activities file for each long-term expert, based on the data in timetabl.dbf. Accessed with option [W] in reports.prg.
monthlap.prg	Program to write monthly reports. Accessed with option [M] in reports.prg.
quartrpt.prg	Program to merge monthly reports in a summary report by activity. Accessed with option [A] in reports.prg.
update.prg	Program to put monthly report information into the historical timeline. Accessed with option [U] in reports.prg.
print-tt.prg	Program to transfer timelines to Lotus, print the full activities list, or print the activities list for an individual person. Accessed with option [T] in reports.prg.

The data and index files are as follows:

timetabl.dbf	Main timeline file with all activities and projections for when work will be carried out in the future.
actcode.ndx	Index file for organizing timetabl.dbf according to activity code.

histtabl.dbf	Timeline file for storing historical information about when activities were carried out.
histcode.ndx	Index file for organizing histtabl.dbf according to activity code.
people.dbf	Reference file which lists project staff and titles.
initials.ndx	Index file for organizing people.dbf according to 2-letter initials.
datefile.dbf	Reference file which contains date information.
date.ndx	Index file for organizing datefile according to 4-character dates.
monthfrm.dbf	File accessed by mkrpt.prg which stores the structure for the workplan activity files and monthly report files. It should always be empty.
lotform.dbf	File accessed by print-tt.prg in transferring data to Lotus. It should always be empty.
textfrm.dbf	File accessed by monthlap.prg in transferring monthly report data to a text file for use in Word Perfect. It should always be empty.
helpfile.txt	File containing the help screen used in monthlap.prg.

In addition to these beginning files, the programs create additional "dbf" files:

"inform.dbf"	There is one of these for each person, with "in" replaced by the initials. They are created by mkrpt.prg using the structured stored in monthfrm.dbf. They contain the workplan activity list of each individual.
"in_mo9x.dbf"	There is one of these for each monthly report, with "in" replaced by the person's initials, "mo" by the month, and "x" by the last digit of the year. These store the monthly reports of the different long-term experts.

"in_mo9x.txt" One for each monthly report, containing the text file version of the report. Usually only the person who wrote the report will have this file.

"m19xm29y.dbf" Reports containing the data for the quarterly sort of work carried out by activity code. "m1" is replaced by the first month included in the report. "x" is replaced by the last digit of the year for the first month. "m2" is replaced by the last month included in the report, and "y" by the last digit of the year for the last month. ("x" and "y" would be different if the report goes from December to February.)

11. Information from partners other than ARD

The automated system includes substantial detail about activities not covered under the ARD contract - work which is the responsibility of the GOI, ITTO, WEC, and other organizations. In some cases, especially GOI and ITTO tasks, information about what has been carried out will be important in monitoring the relation between the ARD contract and other project partners. This system can also be used to record and track GOI performance on the activities for which it is receiving funding under the AID Project Implementation Letters (PILs). However, while the software can be used to track this information once it is available, the ARD project staff must establish the necessary connections to partner organizations in order to receive the information on a regular basis.

c1c2 c3 c4 ACTIVITY:

Person Responsible
 Inst1 Inst2 CM ES CH FA RV ED FP MN GU MR NP OC

c1c2	c3	c4	ACTIVITY:	Person Responsible	Inst1	Inst2	CM	ES	CH	FA	RV	ED	FP	MN	GU	MR	NP	OC
1	3	9	Protected Areas - 2nd LT plan						x	x								
1	3	9	1 TOR prepared	NRMP						x								
1	3	9	2 TOR approved	PCC						x								
1	3	9	3 Consultant recruited	NRMP					x									
1	3	9	4 Study carried out	NRMP														x
1	3	9	5 Draft evaluated	PCC														
1	3	9	6 Final report distributed	NRMP					x									
1	3	10	1-0 Analysis of NR & the Env.						x	x								
1	3	10	1 TOR prepared	NRMP						x	x							
1	3	10	2 TOR approved	PCC						x	x							
1	3	10	3 Consultant recruited	NRMP					x									
1	3	10	4 Study carried out	NRMP							x							x
1	3	10	5 Draft evaluated	PCC														
1	3	10	6 Final report distributed	NRMP						x								
1	3	11	TPTI							x								x
1	3	11	1 TOR prepared	NRMP														
1	3	11	2 TOR approved	PCC														
1	3	11	3 Consultant recruited	NRMP														
1	3	11	4 Study carried out	NRMP														
1	3	11	5 Draft evaluated	PCC														
1	3	11	6 Final report distributed	NRMP														
1	3	12	Kalimantan Forestry Sector							x		x	x					
1	3	12	1 TOR prepared	NRMP														
1	3	12	2 TOR approved	PCC														
1	3	12	3 Consultant recruited	NRMP														
1	3	12	4 Study carried out	NRMP														
1	3	12	5 Draft evaluated	PCC														
1	3	12	6 Final report distributed	NRMP														
1	4		Analytical Studies HCC	GOI														
1	4	1	1 TOR prepared year 1	NRMP						x	x	x						
1	4	1	2 Contracting carried out year 1	GOI	NRMP				x									
1	4	1	3 Award made year 1	GOI														
1	4	1	4 Study carried out 1	GOI														
1	4	1	5 Draft submitted	GOI														
1	4	1	6 Final report approved	GOI														
1	4	1	7 Study carried out 2	GOI														
1	4	1	8 Draft submitted	GOI														
1	4	1	9 Final report approved	GOI														
1	4	1	10 Study carried out 3	GOI														
1	4	1	11 Draft submitted	GOI														
1	4	1	12 Final report approved	GOI														
1	4	1	13 Study carried out 4	GOI														
1	4	1	14 Draft submitted	GOI														
1	4	1	15 Final report approved	GOI														
1	4	1	16 Study carried out 5	GOI														
1	4	1	17 Draft submitted	GOI														
1	4	1	18 Final report approved	GOI														
1	4	2	1 TOR prepared year 2	NRMP							x	x	x					
1	4	2	2 Contracting carried out year 2	GOI	NRMP				x									
1	4	2	3 Award made year 2	GOI														
1	4	2	4 Study carried out 1	GOI														
1	4	2	5 Draft submitted	GOI														
1	4	2	6 Final report approved	GOI														
1	4	2	7 Study carried out 2	GOI														
1	4	2	8 Draft submitted	GOI														
1	4	2	9 Final report approved	GOI														
1	4	2	10 Study carried out 3	GOI														
1	4	2	11 Draft submitted	GOI														
1	4	2	12 Final report approved	GOI														
1	4	2	13 Study carried out 4	GOI														
1	4	2	14 Draft submitted	GOI														
1	4	2	15 Final report approved	GOI														
1	4	2	16 Study carried out 5	GOI														
1	4	2	17 Draft submitted	GOI														

Person Responsible

c1c2 c3 c4 ACTIVITY:

Inst1 Inst2 CM ES CH FA RV ED FP MN GU MR NP OC

1	4	2	18	Final report approved	GOI														
1	4	3	1	TOR prepared year 3	NRMP			x	x	x									
1	4	3	2	Contracting carried out year 3	GOI	NRMP	x												
1	4	3	3	Award made year 3	GOI														
1	4	3	4	Study carried out 1	GOI														
1	4	3	5	Draft submitted	GOI														
1	4	3	6	Final report approved	GOI														
1	4	3	7	Study carried out 2	GOI														
1	4	3	8	Draft submitted	GOI														
1	4	3	9	Final report approved	GOI														
1	4	3	10	Study carried out 3	GOI														
1	4	3	11	Draft submitted	GOI														
1	4	3	12	Final report approved	GOI														
1	4	3	13	Study carried out 4	GOI														
1	4	3	14	Draft submitted	GOI														
1	4	3	15	Final report approved	GOI														
1	4	3	16	Study carried out 5	GOI														
1	4	3	17	Draft submitted	GOI														
1	4	3	18	Final report approved	GOI														
1	5			Other studies	NRMP														
1	5	1		Commissioned special studies	NRMP			x											x
1	5	2		Position papers	NRMP				x	x	x								
1	6			Institutional Support to Bappenas	NRMP			x											
1	7			Bappenas seminars	NRMP				x	x									
1	8			Training	NRMP			x											
1	8	1		On-the-job training of P.S.	NRMP				x	x	x								
1	8	2		Short courses	NRMP				x	x	x								
1	9			Policy Outreach	NRMP														
1	9	1		Report dissemination	NRMP			x											
1	9	2		Policy Bulletins	NRMP			x	x	x	x								x
1	9	3		Policy newsletter	NRMP			x	x	x									
2				MINISTRY OF FORESTRY															
2	1			Applied research							x								
2	1	1		Advise on results of NRM research							x								
2	1	2		M&E of MOFr research							x								
2	1	3		Competitive awards system							x								
2	2			Position papers							x								
2	3			Institutional support to MoFR							x								
3				KALIMANTAN FIELD SITE															
3	1			Applied research								x							
3	1	1		Biodiversity Survey	GOI														
3	1	2		Establishment of Field Station	ITTO														
3	1	2	1	Contract awarded	ITTO														
3	1	2	2	Station construction carried out	ITTO														
3	1	2	3	Station operating proc. finalized	ITTO														
3	1	2	4	MoFr staff assigned to station	GOI														
3	1	2	5	Plan for field research prepared	ITTO	NRMP					x	x							
3	1	2	6	Applied research ongoing	ITTO	NRMP					x	x							
3	1	2	7	Researcher training	ITTO	NRMP					x	x							
3	1	2	8	Results reviewed/revised	ITTO	NRMP					x	x							
3	1	2	9	Research plan reviewed/revised	ITTO	NRMP					x	x							
3	2			Community Activities	NRMP						x	x	x	x					
3	2	1		Traditional Forestry Areas	NRMP							x	x	x					
3	2	2		Village mapping	NRMP	NGO						x	x	x					
3	2	3		Agroforestry & gardening activities	NRMP								x						
3	2	3	1	Soil cons. strategy & activities	NRMP								x						
3	2	3	2	Garden activities	NRMP								x						
3	2	4		Accelerated natural regeneration	NRMP								x						
3	2	5		Non-timber forest products									x						
3	2	6		fire prevention	NRMP	NGO							x						

c1c2	c3	c4	ACTIVITY:	Person Responsible																
				Inst1	Inst2	CM	ES	CH	FA	RV	ED	FP	MN	GU	MR	NP	OC			
5	3	2	Rank candidates	IIE																
5	4		Enroll in English training	IIE																
5	5		Application preparation	IIE																
5	6		TOEFL Registration	IIE																
5	7		GRE Registration	IIE																
5	8		IIE University placement submissions	IIE																
5	9		Admissions decisions																	
5	10		Candidates depart																	
5	10	1	Advanced Group	IIE																
5	10	2	Second Group	IIE																
5	11		U.S. monitoring	IIE																
5	11	1	Progress reports (semester/annual)	IIE																
5	11	2	Financial reports	IIE																
5	12		Indonesia field work	IIE	GOI															
5	13		Reentry	GOI																
5	14		Post-training monitoring	IIE	GOI															
5	15		Other l-t training PHD Support	NRMP	GOI															
6			CONTRACT MGMT/ADMINISTRATION																	
6	1		Meetings																	
6	1	1	PWG	GOI																
6	1	2	PCC	GOI																
6	2		Reporting & Planning																	
6	2	1	Monthly reports	NRMP		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	2	2	Quarterly Reports	NRMP		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	2	3	Annual Work Plans	NRMP		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	2	4	Annual Reports	NRMP		x														
6	2	5	Joint Implementation Plan	NRMP		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	3		Reviews																	
6	3	1	Environmental Assessment	NRMP		x														
6	3	2	Mid-term evaluation	NRMP																
6	4		Personnel recruitment																	
6	4	1	Long-term advisors	NRMP		x														
6	4	2	Short-term consultants	NRMP		x														
6	4	3	Local staff	NRMP		x														
6	5		Procurement	NRMP																
6	5	1	Phase I	NRMP		x														
6	5	1	1 Plan prepared	NRMP		x														
6	5	1	2 Communities approved	NRMP		x														
6	5	1	3 Commodities delivered	NRMP		x														
6	5	2	Phase II	NRMP		x														
6	5	2	1 Plan prepared	NRMP		x														
6	5	2	2 Communities approved	NRMP		x														
6	5	2	3 Commodities delivered	NRMP		x														
6	6		Subcontract Monitoring	NRMP		x														
6	6	1	PT Intersys	NRMP		x														
6	6	2	IIE	NRMP		x														
6	7		Information management	NRMP		x														
6	7	1	MIS system	NRMP		x														
6	7	2	Library	NRMP		x														
6	7	3	Report dissemination	NRMP		x														
7			WEC WASTE MINIMIZATION PROJECT																	

APPENDIX D. Guidelines for Preparing Quarterly Narratives

The quarterly narrative is intended to provide a descriptive overview of the progress of work in each major area of the NRMP project. It is intended to supplement the more factual personal monthly reports with a more reflective evaluation of how things are progressing on each major activity. It is not a tool for evaluating personal activity; it is for reviewing how the project is advancing as a whole.

The quarterly narratives are likely to touch on the following issues:

- What progress has the team made on each important activity of its part of the project?
- What progress has been made on major complementary activities by other project partners (e.g. GOI, ITTO, etc.)? These will be activities on which the NRM team is dependent for its work to progress, so their completion will be significant in documenting the advancement of the NRM project. (This is not intended to get anyone bogged down in producing progress reports on other peoples' work.)
- What problems have been encountered in carrying out the activities as planned? These might include such difficulties as other project partners (forest concessionaires, ITTO, subcontractors, USAID, GOI, etc.) not providing complementary inputs on the anticipated schedule (or at all), planned activities which turn out not to be feasible, practical problems like bad weather or broken equipment or vehicles, etc.
- Will you be able to overcome these problems, and if so, how? If not, how will you change the project plans in order to adapt to these difficulties? (This section is important in order to inform future evaluation teams. In particular, if it turns out not to be possible to do what was originally planned, the reasons for this should be clearly documented.)
- What indicators can you observe which show whether the project is having an impact on its primary objectives? These may include adoption of policies recommended by project studies, inclusion of project recommendations in five-year or long-term development plans, decisions to pilot-test park management or logging techniques recommended by the project, etc. (See the MIS report section on project impact for more discussion of the kinds of information which will show the impact of project activities.) It is very important to flag any such impacts when you observe them, as this is a key element in the evaluation of USAID projects.

- How are women being involved in the activities of the project? This is of particular importance in the development of the community-based activities around the national parks and logging concessions, where the differential roles of men and women in village society create an opportunity for developing activities specifically targeted at women.
- Are there useful lessons that can be learned by this project or others in the future from these problems? E.g. regarding the feasibility of collaborating with other partners, the kinds of equipment which are reliable in remote areas, or better project design strategies?

APPENDIX E. Form for Reporting on Training Courses

NATURAL RESOURCES MANAGEMENT PROJECT
Report of In-Country Training Completed

Today's Date: _____ Reported by: _____

Date(s) and time(s) of training, number of person-days: _____

Location: _____

Topics covered (attach syllabus if appropriate): _____

Names and affiliations of instructor(s): _____

Training materials used (please provide a brief description and file a copy with this form if feasible): _____

Participants: (also please attach the list of participants and their affiliations, page 2 of this form)

Number of participants: Total _____
Men: _____ Women: _____

Age groups: HS or University: _____ Adults: _____

Costs: Supplies _____
Travel _____
Honoraria _____
Misc. (specify) _____

TOTAL: _____

Participant List

No.	Name	Origin (village or institutional affiliation)	office use
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			

APPENDIX F. List of Documents Consulted

- Bappenas-Ministry of Forestry assisted by USAID and ITTO, "Joint Implementation Plan for the Natural Resources Management (NRM) and the Sustainable Forest Management (SFM) Projects 1991/1992 to 1994/1995" March 1992
- Bappenas-Ministry of Forestry assisted by USAID and ITTO, "Joint Implementation Plan for the Natural Resources Management (NRM) and the Sustainable Forest Management (SFM) Projects 1992/1992 (sic) to 1994/1995" December 1993 (sic) Revised for 1993/1994.
- Belsky, Jill, "Balancing Forest and Marine Conservation with Local Livelihoods in Kalimantan and North Sulawesi" Report No. 5, Natural Resources Management Project, May 1992. (Associates in Rural Development for Office of Agro-Enterprise and Environment, USAID-Jakarta. AID Contract No. 497-0362)
- Bergau, Nancy, "Environmental Education and Awareness in Bukit Baka" Vols 1 and 2 (Guide to Environment and Fire Campaign) Report No. 9, Natural Resources Management Project, July 1992. (Associates in Rural Development for Office of Agro-Enterprise and Environment, USAID-Jakarta. AID Contract No. 497-0362)
- Granert, William G., "Agroforestry in Bukit Baka - Bukit Raya" Report No. 2, Natural Resources Management Project, March 1992. (Associates in Rural Development for Office of Agro-Enterprise and Environment, USAID-Jakarta. AID Contract No. 497-0362)
- Hecht, Joy and Henry Peskin, "Proposal to the Government of Indonesia and USAID for the Development of Comprehensive Environmental and Natural Resource Accounts (CENRA) for Economic Planning and Environmental Management" Report No. 6, Natural Resources Management Project, May 1992. (Associates in Rural Development for Office of Agro-Enterprise and Environment, USAID-Jakarta. AID Contract No. 497-0362)
- Hendrison, John, "Recommendations for Controlled Timber Harvesting in the SBK Forest Concessions" Report No. 10, Natural Resources Management Project, August 1992. (Associates in Rural Development for Office of Agro-Enterprise and Environment, USAID-Jakarta. AID Contract No. 497-0362)
- Jarvie, Jim, "Cruiser Identifications at SBK and Local Uses of Trees by Local People" Report No. 11, Natural Resources Management Project, December 1992. (Associates in Rural Development for Office of Agro-Enterprise and Environment, USAID-Jakarta. AID Contract No. 497-0362)
- Johnson, Michael, "Bukit Baka Mini-Hydroelectric System Implementation Plan" Report No. 7, Natural Resources Management

Plan, June 1992. (Associates in Rural Development for Office of Agro-Enterprise and Environment, USAID-Jakarta. AID Contract No. 497-0362)

McAndrews, Colin, COP/Implementation Advisor "1992/1993 Work Plan" October 1992

McGowan, Rick and Alfonso C.B. Rieuwpassa, "Community Water Supply Feasibility Study for Bukit Baka-Bukit Raya, Kalimantan" Report No. 12, Natural Resources Management Project, December 1992. (Associates in Rural Development for Office of Agro-Enterprise and Environment, USAID-Jakarta. AID Contract No. 497-0362)

"Natural Resources Management Project Paper" USAID Project number 497-0362. (no further references on the version used)

Voss, Roy, "Procurement Plan for Research Equipment at Bukit Baka and Equipment Installation at Samarinda Forestry Research Station" Report No. 1, Natural Resources Management Project, January 1992. (Associates in Rural Development for Office of Agro-Enterprise and Environment, USAID-Jakarta. AID Contract No. 497-0362)

Voss, Roy, "Station Protocol: Bukit Baka - Bukit Raya, 1992" Report No. 8, Natural Resources Management Project, June 1992. (Associates in Rural Development for Office of Agro-Enterprise and Environment, USAID-Jakarta. AID Contract No. 497-0362)

Zulkarnain, Iskandar, "Field Observations on *Pembinaan Hutan*: Management and Practice by Selected Kalbar Forest Concessionaires" , Natural Resources Management Project, September 1992. (Associates in Rural Development for Office of Agro-Enterprise and Environment, USAID-Jakarta. AID Contract No. 497-0362)

APPENDIX G. List of People Contacted

GOI

Pak Bambang Soekartiko	Director, Bureau of International Cooperation and Investment, MoFr
Pak Herman Haeruman	Chairman, Project Coordinating Committee, Bappenas
Pak Tonny Suhartono	Head, SBKSDA (Suboffice, Conservation of Natural Resources) - Pontianak
Pak Romon Palete	Head, SBKSDA (Suboffice, Conservation of Natural Resources) - Manado

USAID

Jerry Bisson	Program Officer, NRM Office of Agro-Enterprise and Environment
Adiwiwana	Office of Agro-Enterprise and Environment
Juanita Darmono	Office of Program and Project Support
Nancy Langworthy	Institutional Monitoring and Evaluation Specialist

NRM Project Staff and Consultants

Colin MacAndrews	Chief of Party
Erik Scarsborough	Macroeconomist
Clive Hamilton	Resource Economist
Roy Voss	Team Leader/Research Forestry Advisor
Elmo Drilling	Natural Forest Management Advisor
Fernando Potess	Nature Conservation Advisor
Mering Ngo	Social Forestry Advisor
Ali Hayat	Field Technician, Nature Conservation
Izefri Chaniago	Field Technician, Forestry Management
Graham Usher	Nature Conservation Advisor
Rizald M. Rompas	Marine Conservation Advisor
H. Achmad Ansori Mattjik	Information Management Specialist

APPENDIX H. Consultant's Terms of Reference

Scope of Work Management Information System Specialist

1. Background

The Government of Indonesia (the National Planning Agency (Bappenas) and the Ministry of Forestry (MoFr)) are conducting research and pilot activities in the fields of sustainable forest management, protected area management, sustainable economic development and urban environment. The Government of Indonesia (GOI) counterparts in Bappenas and MoFr are assisted by a technical assistance team (Associates in Rural Development (ARD)) funded by USAID to achieve project goals, and to coordinate and implement research, data collection and analysis, and improved policy analysis. This team of NRM/ARD advisors are working with GOI counterparts on policy issues in Jakarta; natural forest management, protected area management, and research station development in West and Central Kalimantan; and marine protected area management in North Sulawesi. The World Environment Center (WEC) provides technical experts and training to support the implementation of pilot activities in industrial pollution reduction.

Implementation of a project with the scope and breadth of the NRMP requires a system of data collection and organization that will assist with sound project management as well as provide the basis for monitoring and evaluating the progress of the project as well as direct and indirect impacts of project activities. This will ensure that project resources are used in a cost-effective and efficient manner, that proposed activities meet the objectives of the project, and that the large amount of data generated by the project is utilized effectively.

To assist the GOI agencies (Bappenas and MoFr) to fully monitor all aspects of the project a project-based Management Information System (MIS) is required. The precise parameters of the MIS are the subject of discussion between the GOI, the NRM/ARD advisors and USAID, and this statement of work is for short-term consultants to assist with this process.

2. Tasks

1. The consultants will work with the GOI agencies (Bappenas and MoFr), the NRM/ARD technical assistance advisors and USAID to assess the projects MIS requirements. The main user of the MIS system will be the NRM project Policy Working Group (PWG) and the Project Coordinating Committee (PCC) although the system will ensure that all aspects of

the project including any monitoring requirements of USAID are included. The system will be as simple as possible and computerization will be utilized only to the extent it improves the efficiency and cost effectiveness of the system. This assessment of requirements and the following design of the MIS will form the basis of the consultancy.

2. The consultants will review existing data sources and collection and reporting methods, which will include aspects of both project management and technical analysis. Utilizing the project outputs and activities from the logical framework and the major components of the project the consultant will construct a timeline or pert chart of the project activities, benchmarks, etc. The MIS will be designed to provide project management with the information required to make sound decisions regarding all aspects of the project activities/outputs and be assembled in a manner that will allow for ease of reporting. The system will also be keyed to the appropriate criteria coming out of the recent PRISM exercise at USAID.
3. Based on the above needs assessment and criteria, the consultants will propose a system to meet these needs. The design will include both graphic as well as written explanatory description of the MIS design. This may include specifications on reporting formats, data, filing system formats or headings, computer hardware and software equipment required for the proposed MIS.
4. The consultants will review and make recommendations regarding other related staff training needs for the proposed MIS. This will include an assessment and recommendations on proposed roles and responsibilities for MIS development, maintenance, and management;
5. The consultants will make specific recommendations for preparing information for inclusion in the MIS and on the requirement of regular reporting; and
6. The consultants will prepare a detailed report to include aspects of tasks 1-5 above. This report will be due in draft several days before the end of the consultancy in order to allow for distribution and feedback from GOI, the NRM/ARD advisors and USAID. He/she will also prepare an oral debriefing for relevant GOI, NRM/ARD advisors and USAID.

3. Outputs

1. A final report will be submitted to the GOI through the NRM/ARD COP for distribution to GOI and USAID by the end of

the consultancy. The contents of this report will include the information specified in the above tasks with recommendations on implementation. A draft report is due at least five days before the end of the consultancy.

2. The consultants will hold a debriefing on the results of the consultancy for GOI officials, NRM/ARD advisors and USAID.

4. Reporting

1. The consultants will work with the PCC and other committees associated with the project through the NRM/ARD Chief-of-Party working closely with the GOI counterparts and the NRM/ARD project personnel.

5. Logistics

1. The NRMP will provide travel and per diem expenses where necessary and previously agreed-upon. These will be subject to USAID rates and regulations.
2. The NRMP will provide office space and production support for the consultant.

6. Duration

The consultancy will require to consultants, one for approximately one month and one for up to five days. Most of the work will take place in Jakarta. The preferred start-up date is 1 December 1992.

7. Qualifications

1. Each consultant should have formal training in management information systems or a related discipline, be knowledgeable in AID project management and evaluation requirements and have experience in designing MIS for AID projects.
2. Each consultant will have extensive experience conducting data needs assessments for organizations. Experience with natural resource data management is desirable.
3. Knowledge of Indonesia and spoken Bahasa Indonesian is highly desirable.

RM/ARD CONSULTANCY REPORTS

NO.	TITLE	AUTHOR
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	W.G. Granert
3.	Pengukuran dan Pemetaan Topografi Sebagian Daerah Taman Nasional Bukit Baka/Bukit Raya	Sahri Denny, cs
4.	Applied Research Recommendations for Production Forest Management An Economic and Ecological Review of the Indonesian Selective Cutting and Replanting System (TPTI)	Lisa Curran & Monica 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 Peskin & 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 1992	Roy Voss
	Research Protocol: Bukit Baka – Bukit Raya 1992	Roy Voss

NO.	TITLE	AUTHOR
9.	Environmental Education and Awareness in Bukit Baka (vol.1)	Nancy Bergau
	Environmental Education and Awareness in Bukit Baka Guide to Environment and Fire Campaign (vol.2)	Nancy Bergau
10.	Recommendations for Controlled Timber Harvesting in the SBK Forest Concession	John Hendrison
11.	Cruiser Identifications at SBK and Local Uses of Trees by Local People	Jim Jarvie
12.	Community Water Supply Feasibility Study for Bukit Baka – Bukit Raya, Kalimantan	Rick McGowan & Alfonso Rieuwpassa
13.	Report on NRM Library Consultancy September – December 1992	Dachlan Cartwright
14.	Livelihoods Strategies and Marine Resource Among Residents of Bunaken National Park, North Sulawesi: Recommendations for Local Involvement in Park Management	Jill M. Belsky
15.	A Competitive Awards Scheme for Applied Forest Management and Nature Conservation	Peter R. Burbridge