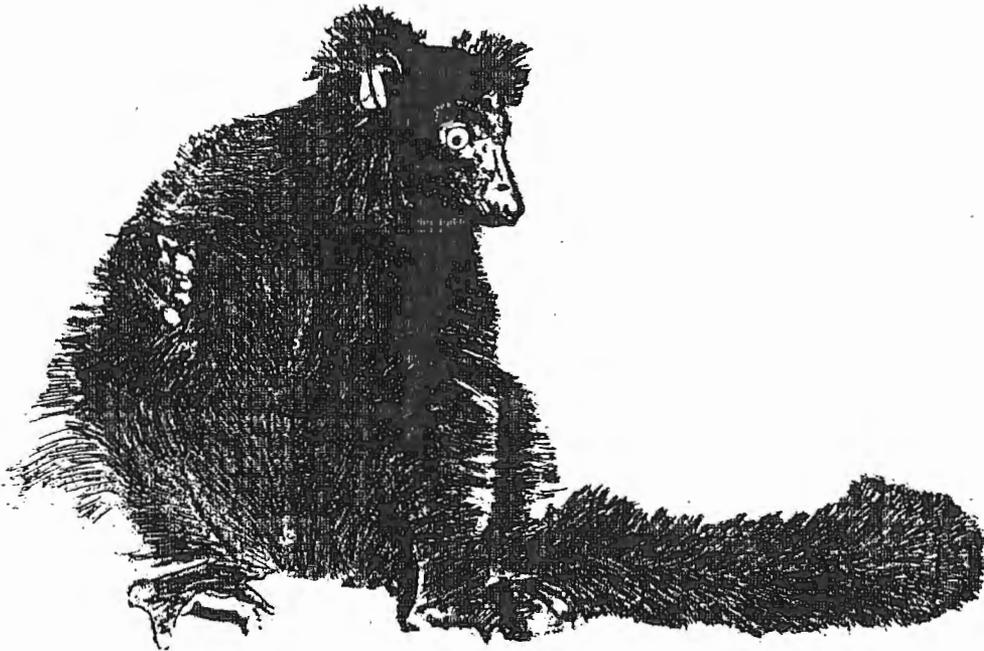

Monitoring and Evaluation System for Development Components of Integrated Conservation and Development Projects

Project No.: 687-0110



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Monitoring and Evaluation System

for

Development Components of Integrated Conservation and Development Projects

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Submitted to:

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List of abbreviations

ANGAP	Association National pour la Gestion des Aires Protégées
APN	Agents de protection de la nature (forest wardens)
ARU	Applied Research Unit
AWP	Annual Work Plan
BEPC	Brevet diploma
BPS	Biodiversity Planning Service
CARE	Cooperative for American Relief Everywhere
FMg	Malagasy francs
GIS	Geographic Information System
GMU	Grants Management Unit
ICD	Integrated Conservation Development
ICDP	Integrated Conservation Development Project
M&E	Monitoring and Evaluation
MIS	Management Information System
NGO	Nongovernment Organization
PVO	Private Voluntary Organization
RRA	Rapid Rural Appraisal
SAVEM	Sustainable Approaches to Viable Environments Management Project
UNDP	United Nations Development Programme
UNESCO	United Nations Education, Scientific and Culture Organization
USD	United States Dollars
WWF	World Wildlife Fund

Executive summary

This consultancy was the second of two visits that the monitoring and evaluation specialist made to the Association National pour la Gestion des Aires Protégées (ANGAP). (See Annex B for report of first monitoring and evaluation consultancy.) The central goal of the second consultancy was to promote installation of monitoring and evaluation (M&E) units -- applied social-research units -- in integrated conservation and development (ICD) projects. This goal was to be achieved by demonstrating to project decision makers the utility of M&E systems as management tools. This second visit was to finalize the design and to prepare materials needed for implementation of systems for socioeconomic-impact monitoring for development components of ICDPs.

Two five-day workshops were held with personnel from the 12 projects operating in protected areas. The workshops covered the following themes:

- conceptual framework and design of integrated conservation and development projects and role of the development component in achieving conservation ends;
- importance of baseline socioeconomic research in establishing benchmark measures for intra-project comparisons and impact assessments;
- use of baseline research for hypotheses and design of interventions; and
- importance of monitoring socioeconomic impacts for guiding interventions and/or implementation.

At the workshops, the monitoring and evaluation specialist proposed installation of an applied research unit or monitoring and evaluation unit in each project, and he presented a comprehensive monitoring and evaluation system.

Each workshop devoted two days to pragmatic issues: operationalization of the system and the role of the Applied Research Unit (ARU). This workshop included discussion of personnel needed, system integration into project structure and content and periodicity of reporting to ANGAP.

A two-pronged monitoring system was developed in the workshops to

- track implementation progress through a management information system and annual work plans and
- use indicators derived from focused baseline surveys to quantify through monitoring economic impacts on beneficiaries. The monitoring system directly links economic impacts or benefits to expenditures.

Project managers attending the workshops accepted the monitoring system as a viable tool for management and evaluation purposes. One possible exception was the nongovernmental organization (NGO) Cooperative for American Relief Everywhere (CARE), whose representatives insisted on using participative appraisal techniques. In the consultant's view, these techniques do not provide sufficient data for diagnostics and design; and they do not produce quantifiable measures for evaluation. CARE

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was asked by senior ANGAP and grants management unit (GMU) personnel to reconsider the monitoring system's utility.

Given the relatively short time remaining before a mid-term evaluation of the parent Sustainable Approaches to Viable Environments Management Project (SAVEM), at least two or three projects must implement the system as soon as possible.

Additional short-term technical assistance will be required to expedite implementation of the monitoring system and to assure a complete and effective transfer of the impact monitoring system to integrated conservation and development projects (ICDPs).

1. Objectives/terms of reference

The principal goals of the consultancy were to put in place a monitoring and evaluation system to accomplish the following:

- assist project implementors in designing appropriate interventions and in guiding implementation of development interventions through socioeconomic feedback and monitoring;
- assist ANGAP in estimating the impact of projects designed to provide harmonious and sustainable development in protected area peripheral zones;
- assist ANGAP in coordinating development activities so that the objective of development for conservation is attained; and
- provide ANGAP with information needed to develop appropriate policies for managing protected areas.

Specifically, the consultant was to accomplish the following:

- demonstrate to project operators the necessity of a monitoring and evaluation unit within each project by showing the advantages of such a unit as a management and planning tool useful for attaining project objectives;
- keeping in mind substantive differences between projects, the consultant was to design an appropriate monitoring and evaluation system to accomplish the following:
 - define the structure of the system at the project level;
 - define the roles and tasks of the monitoring and evaluation unit;
 - provide a job description of the M&E unit chief;
 - describe the relationship between the M&E unit and other project units; and
 - define the conditions for efficient operation of the unit.
- with reference to the logical relationship between project objectives, annual work plans and impact evaluation, establish a set of indicators by which to track quantitative and qualitative aspects of project activities;
- develop and provide tools for gathering data, presenting results and specifying the flow and periodicity of information; and
- develop and provide a monitoring and evaluation system at the ANGAP level to integrate data from the monitoring and evaluation systems in operation at the project level.

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2. Purpose of monitoring and evaluation of development components

2.1. Introduction

ICDPs are a relatively new approach to conservation. The ultimate objective of ICDPs is achievement of conservation and biodiversity protection through economic development and transformation of local and/or protected area peripheral zone economies that menace or are now diminishing protected areas of biodiversity in Madagascar.

Unlike traditional development projects directly concerned with issues of productivity and/or production and markets, development components of ICDPs focus on establishment of new, biologically and economically sustainable socioecological relationships. In ICDPs, the principal means of attaining conservation ends is through development; the final measure of success is conservation.

Economic development is achieved through market-led growth. No real economy exists without markets. The economic situation of populations within protected area peripheral zones generally is characterized by low productivity subsistence activities that have minimal interaction with markets. Subsistence producers typically have little or none of the capital needed to amplify productivity of land and labor. Not surprisingly, the natural capital stock of the environment of protected areas is appropriated by surrounding populations in order to assure their subsistence. This is seen, for example, in the proliferation of tavy rice production in forest areas. This type of itinerant agriculture converts the natural fertility of the forest into rice in a short-term but sustainable manner.

Technical solutions to the problems of subsistence systems are relatively straightforward. On the market side, assistance can develop markets, market linkages and village-level institutions that mediate market links. On the production side, development of sustainable and profitable production systems can be assisted. These production systems normally involve the use of renewable resources: agriculture, forestry, agroforestry and fisheries. Sustainable production requires capital, chiefly in the form of inputs and technology, needed to increase the flow-through of energy in the system and thus raise the quantum of production off-take. Sustained performance of improved production systems is impossible in the absence of markets.

Sustaining improvements in the capacity and off-take of natural resource systems is difficult. Biodynamic improvements can provide a limited scope for raising through-put and production. Biodynamic improvements are made at the ecosystem level by increasing biodiversity and complementary feedbacks between species, thus increasing energy through-put. An example is nitrogen-fixing species used in agroforestry.

Likewise, at the social, organizational and production levels, possibilities for improvements are limited so long as producers remain oriented to meeting subsistence ends. Simple reorganization of low-productivity subsistence systems is of little use or benefit to producers unless interventions can offer more output for the same amount of work or less. Almost invariably, producers managing subsistence systems have already optimized allocation of labor and scarce capital among existing options.

2.2. Purpose of monitoring

It is important to know if years of effort and expenditure have improved the economy of a protected area peripheral beneficiary population. Economic changes and improvements are best understood through use of objectively verifiable indicators. Indicators are quantitative measures of economic development and changes in resource use patterns that occur with reference to baseline measures. These baseline measures normally are taken before or at the outset of project interventions.

It is equally as important, if not more so, to know if change and improvements can be sustained by local - and possibly new -- institutions for production and exchange. In the case of the ICDP, an additional proviso is that impacts must be clearly linked to an environmentally sound system for appropriation of natural resources. This appropriation also must be objectively verifiable -- a reduction of forest clearing for tavy, for example, or sustained operation of fuelwood lots.

Thus, establishing a set of objectively verifiable indicators is the central element of monitoring. The first task in implementing an M&E system is establishing these indicators. As noted, indicators measure changes vis-à-vis a baseline situation. The baseline situation of the target population should be established before project interventions affect the economy. Baseline surveys also are an integral part of project design, being the point of departure for the selection of interventions. Baseline surveys also provide the reference framework for subsequent measures and help identify appropriate indicators of change.

Identification of objectively verifiable indicators is based on an understanding of the manner in which a population exploits natural resources through its economy -- how it uses available factors of production, such as land or natural resources, as well as labor and capital. Monitoring economic impacts and assessing the economic sustainability of project-induced changes cannot be understood without reference to these basic components of economic behavior.

A number of baseline-type survey techniques have been developed. An example of these techniques is rapid rural appraisal (RRA) and its variants. The RRA technique was put in use by the World Bank and other donors chiefly as a means of obtaining a quick image of economic and social conditions over national or relatively large regions. While such techniques, if properly designed and professionally employed, can provide data for identifying and prioritizing geographical areas for development, RRA techniques are not designed to yield the types of data needed for monitoring economic impact. RRA-type surveys are research tools useful for identifying areas for intervention. Once areas are selected and interventions undertaken, more focused measures are needed to determine economic impact.

Other methods or techniques employed by NGO/private, voluntary organization (PVO) operators typically engage the affected population in participatory needs assessment activities. This approach is generally subjective and tends to draw participants into discussions of social welfare issues. This approach is more concerned with expressed needs rather than with objective economic measures. Participatory needs assessments create a high probability that project designers and/or operators will not establish a pragmatic and realistic common ground for collaboration.

Subsistence producers generally manage limited factors of production: land, labor and capital. Subsistence producers typically have established an optimal system for using these factors in their survival strategy. No amount of motivated and sympathetic interest on the part of operators can replace an objective understanding of how the subsistence producers' survival strategy operates. This understanding

begins with collection of relevant baseline data in collaboration with the population. Participatory needs assessment techniques alone provide neither sufficient baseline data nor adequate measures for monitoring economic impacts.

If integrated conservation and development projects are to be successful in Madagascar, objective and quantifiable measures of economic progress must be established. These measures are basic to testing the hypotheses that rationalize specific interventions and expenditures. These measures also serve to develop and test appropriate models for ICDPs and provide evaluators with sufficient information.

In addition to development outputs, economic progress must be linked to positive changes in local systems of resource use. In some cases, evaluations are undertaken through simple anecdotal procedures based on a naive assumption that what people say coincides with what people do. This approach typically uses open-ended informal techniques to solicit beneficiaries' impressions of project activities and benefits. This approach is insufficient for monitoring, for providing useful feedback to project management and for evaluators' measurements of success and sustainability at a project's conclusion.

3. Structure and content of the M&E system

3.1. Management information system (MIS)

As Figure 1 indicates, a comprehensive monitoring system must accomplish two general things:

First, as shown on the right side of Figure 1, a comprehensive system must monitor the progress and efficiency of specific development activities. This is the classic system of tracking inputs, outputs, quantities and timing of interventions designed to attain the goals of economic development and to reduce and/or eliminate unsustainable resource appropriation.

Second, as shown on the left side of Figure 1, the system must provide quantitative and qualitative measures of impact on the economy and project beneficiaries' patterns of resource appropriation. For example, although a water conveyance system for irrigation was provided on schedule, ascertaining the extent to which income has been raised and previously destructive resource use systems have been modified, reduced or eliminated would be essential in order to correct design specifications at the budgeted cost. Equally critical would be knowledge of whether interventions and new systems can be locally sustained once the project has quit the area.

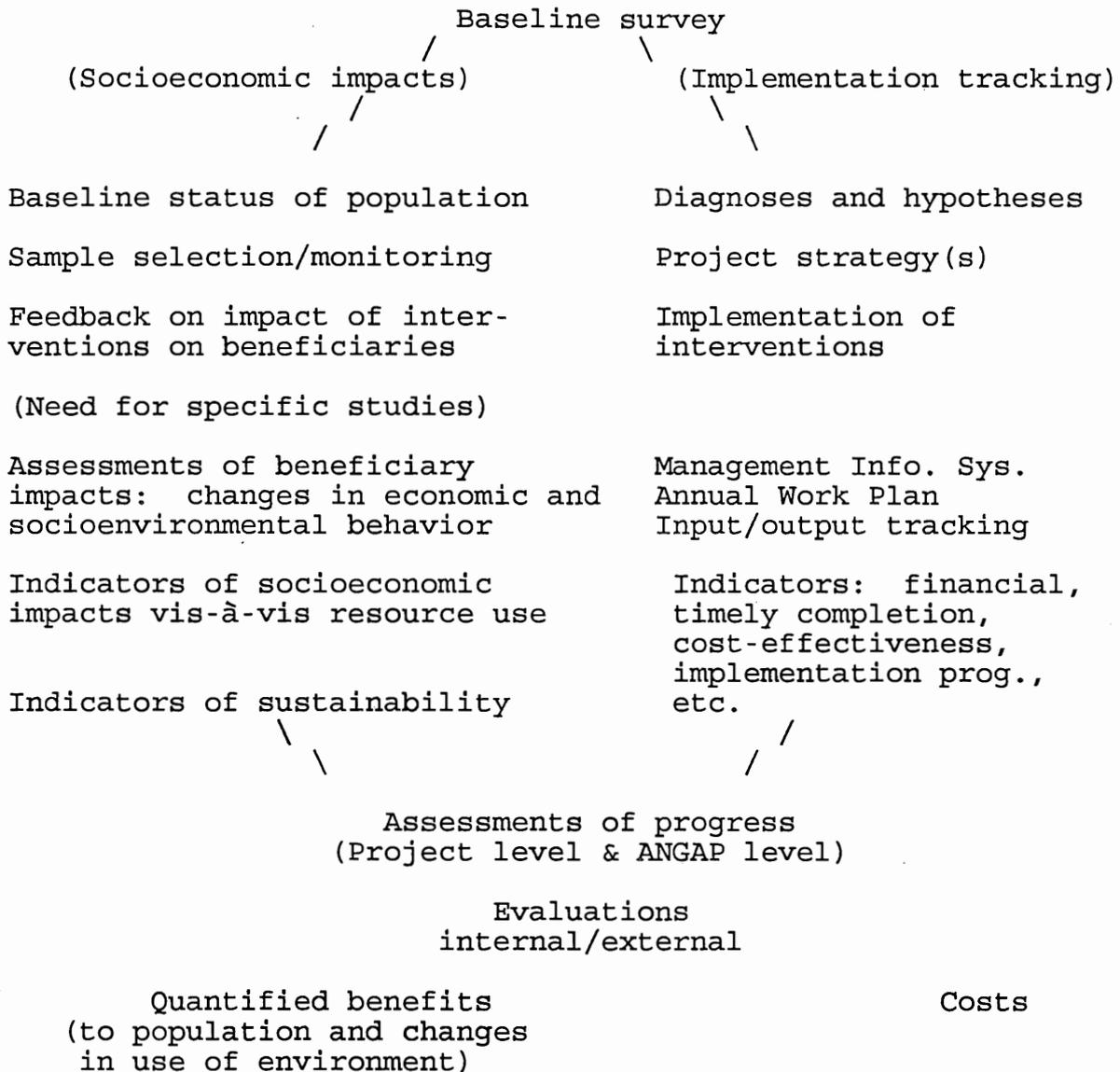
This report is chiefly concerned with impact monitoring of beneficiary populations in protected area peripheral zones. However, the role of impact monitoring within the larger structure (Figure 1) is important. Impact monitoring and implementation tracking are both essential. Used in combination, these measures provide evaluators with sufficient information for accurate cost-benefit analyses and for assessments of economic sustainability. A brief resume of the implementation-tracking element is followed by a more detailed discussion of impact monitoring.

The implementation-tracking element of the monitoring system is defined by the MIS; the implementation-tracking element usually is formalized as an annual work plan (AWP). The AWP lists a summary of activities and supporting actions. These activities are the concrete products of hypotheses and strategies derived from baseline surveys.

AWPs are prepared for ICDP's implementation units -- the development and the conservation components. Actions provided by support units such as the education and training unit are found in the AWP as supporting actions for specific activities undertaken by implementation units. Implementation activities are the reference points for AWP. A sample AWP is provided in Appendix A.

Figure 1

Outline of monitoring and evaluation system
ICDP development for conservation components



As is shown in Figure 1, a comprehensive monitoring system can be divided into two parts or subsystems: monitoring or tracking implementation and monitoring impact. Outputs from the two subsystems are used in combination for purposes of evaluation and progress assessment by comparing costs and benefits, or impacts. The first subsystem is essentially a tracking activity in which interventions are followed with respect to financial and personnel allocations and other quantitative and qualitative measures. This tracking activity is the core component of project management information systems. This component normally is formalized in annual work plans.

3.2. Baseline surveys and impact monitoring

The second subsystem, impact monitoring, is operationalized through socioeconomic tracking of positive and/or negative effects upon the target population from project interventions. Impact monitoring focuses on two levels: first, impact monitoring measures change in the economic behavior of the social unit of production, the household or family; second, impact monitoring analyzes resource appropriation patterns in target zones, which are defined geographically.

The household is the social unit that makes decisions concerning application of available production factors for its survival. The visible impact of these strategies and subsequent changes can be represented spatially at the village or community territory level through mapping. Delineation of target zones is based on the community's radius of action vis-à-vis its resource base. Target zones are spatial representations of a community's resource use. A target zone is defined as a community or village and its surrounding natural resource base.

Monitoring data are obtained from sample households in target zones. Target zones normally are established in those areas where project interventions take place. Intervention areas usually are delineated by combined teams of conservation and development personnel. These teams assess pressures and pressure points on the protected area and select intervention areas. Samples within target zones represent characteristics of the larger population. Changes in sample household economies are representative of other nonsample households in project areas. For this reason, samples must be carefully derived.

Sampling is undertaken on the basis of data from baseline surveys. Baseline surveys are the starting point for project activities and provide at least four important outputs:

- first, baseline surveys provide data on population, resources and economic status -- data needed to select samples for impact monitoring;
- second, baseline surveys give quantitative measures of economic status -- or level of subsistence - - at the outset; these indicators serve as benchmarks for gauging economic impacts;
- third, baseline surveys expose the initial decision-making matrix of producers vis-à-vis resource use and options at the start of a project; implementors are thus helped to design appropriate and locally relevant interventions; and
- fourth, measures of impact and economic status provide data needed to assess local and/or household capacity to sustain production improvements in the post-project period.

Baseline surveys cover two principal areas: population and resources. Field questionnaires, shown in Annex A, can be accumulated in two computer-based modules. These modules are easily installed in spreadsheet programs, such as Lotus 123 or Quatro.

The population module lists the following inputs:

- village/locale
- household code number

Monitoring and evaluation system:

- household head
- sex and age of household members
- nonresident members
- number of producers
- number of consumers

All household census data must be coded; in order to assure confidentiality, no names are used.

Outputs from the population module include statistical data on the size and composition of families. A dependency ratio can be established: the number of producers to the number of consumers. Labor capacity can be ascertained, as can the annual need for rice based on a per capita estimate. Other important outputs are gender differentiation or the position of women in the workforce and the importance of children in production. The population module provides important data needed to ascertain average family size and to determine the characteristics of a typical family in the target area. These data, combined with resource data in the second module, provide information needed to derive a monitoring sample.

The second module is essentially a resource inventory that ties resources to family or household units. Units of measure for this module typically include hectares of rain-fed land, irrigated land, tavy plots inside and outside protected areas, livestock, available pasture lands, woodlots and the like. Where and if possible land tenure status is recorded. Ownership of resources implies different management and a different position in decision-making about use of resources. This module also lists salaried employment and other occupations, such as wood-cutting, charcoal production and hunting. It is important as well to list family members living outside the household or community who may remit sums of money from time to time. The resource module also lists other sources that bring income into the household unit, such as rice mills and other means of transforming or supporting production.

Cross-referencing the population and resource modules on a household-by-household basis provides information needed to select a sample for impact monitoring. Using quantitative information from the two modules, the process of analyzing baseline characteristics is relatively straightforward. The population module provides data needed to estimate labor supply and consumption; the resource module lists available quantities of resources for production, which can be related to subsistence and/or consumption needs.

Although more detailed data on contributions to household revenue from all sources will not be available until one full year of monitoring has been completed, sufficient information is on hand from the baseline to determine household needs for rice or basic staples. This information can be compared to the estimated output of agricultural production using retrospective techniques and estimates of yields. Households can be ranked by the degree to which production meets subsistence needs. To provide a comprehensive assessment of baseline economic status, data gathered through monitoring less visible uses of labor can be integrated retrospectively into the household income portfolio. These less visible uses of labor include logging and hunting.

Another use for baseline data is analyzing characteristics of households that rely most heavily on nonsustainable tavy rice production. Such households may resort to tavy because the households consist of young families short of labor. To meet subsistence, these households must resort to labor-

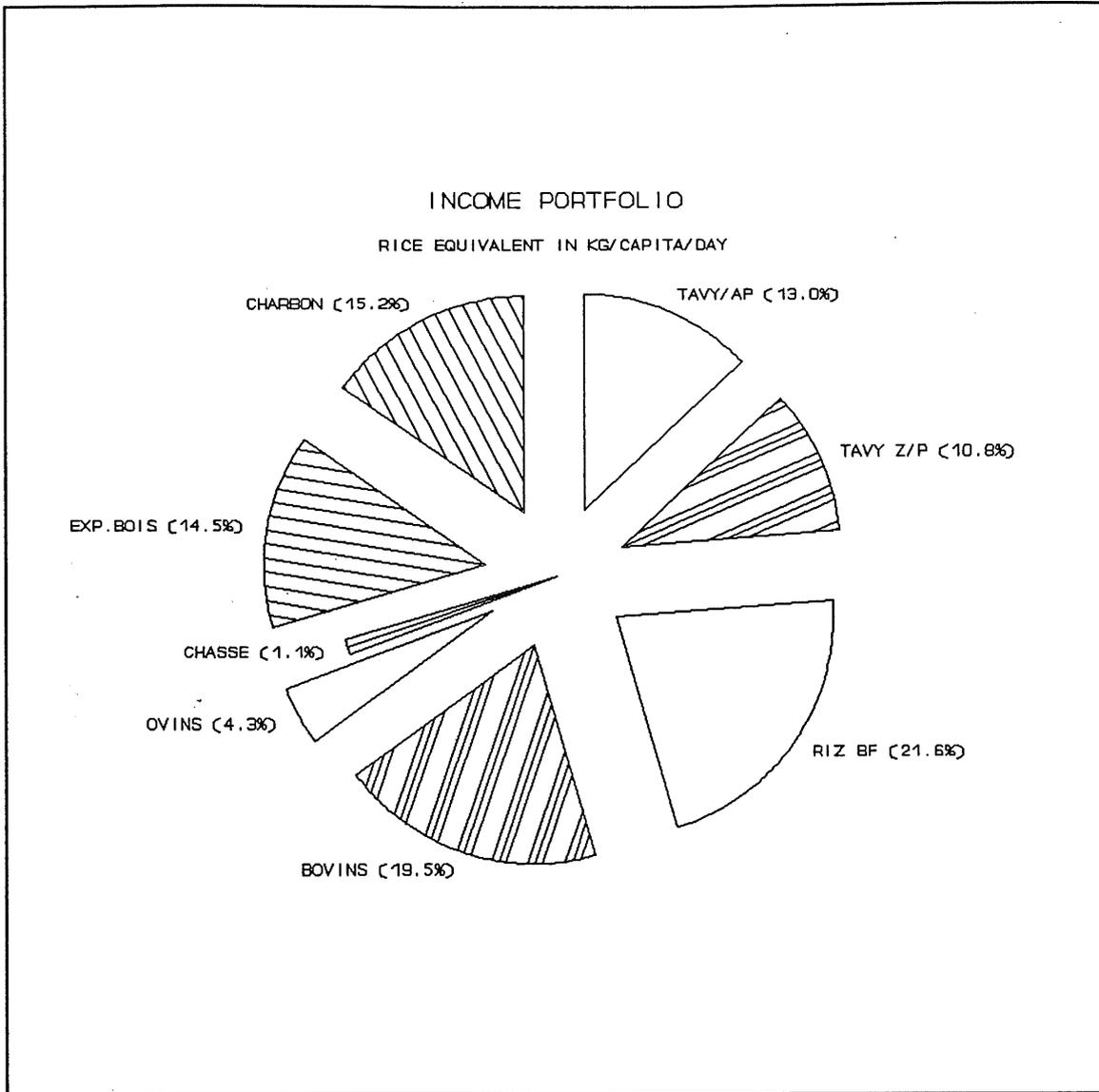


Figure 1

saving means. Tavy production may be an option at one point in the developmental cycle of the family, necessitating direct intervention and design.

Baseline surveys thus help expose the social and economic characteristics of family units using various mixes of resources in their subsistence strategies. Baseline data also produce key quantifiable indicators, the most important of which is the subsistence index. This index shows the estimated amount of rice per capita per day for each household. This amount is a concrete measure that converts all household revenues into their equivalent grams of rice on the basis of prevailing prices.

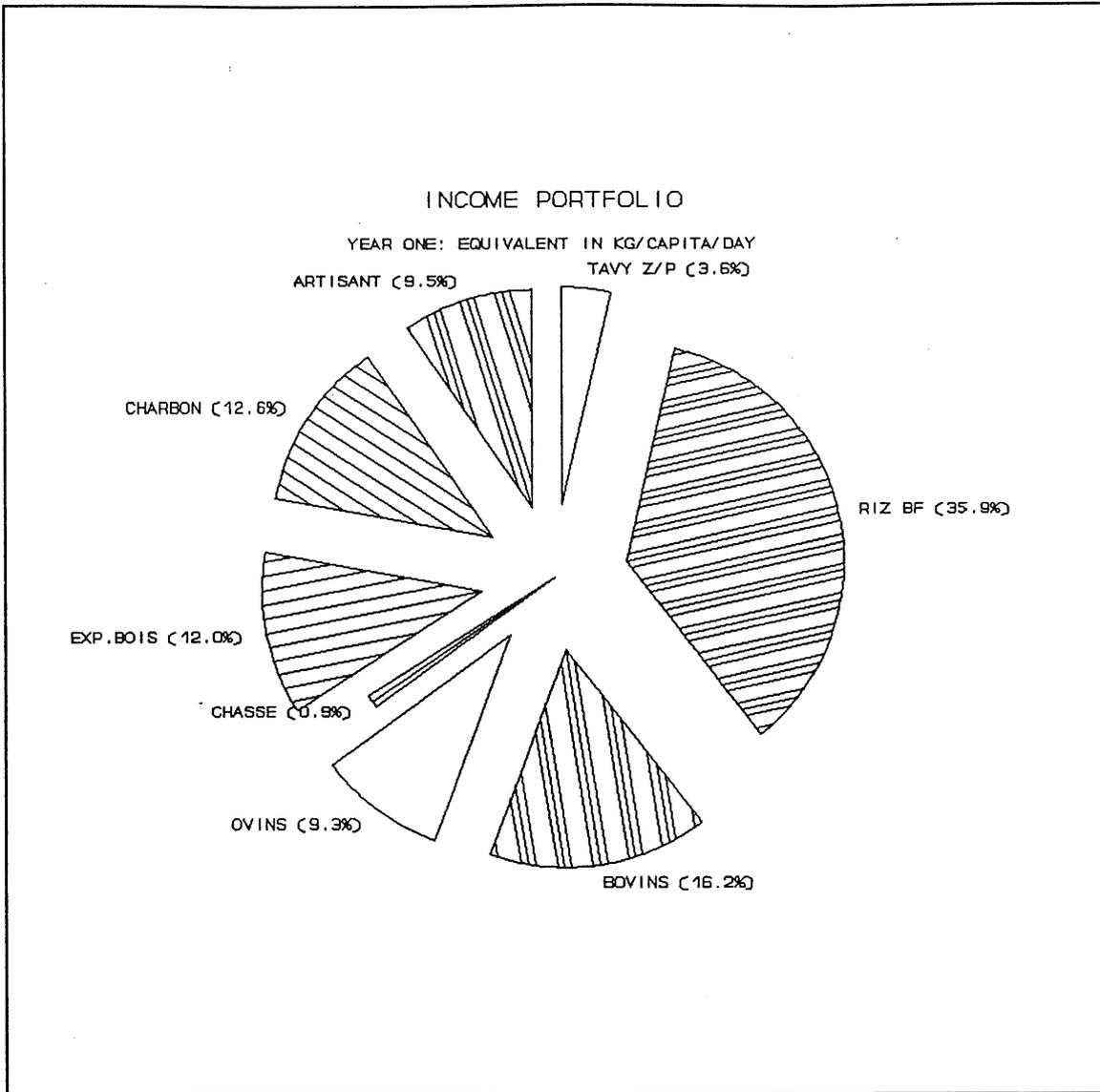


Figure 2

Initially, the baseline will provide an index of rice requirement satisfaction from known sources of production. The baseline index may be adjusted retrospectively, at the end of a yearly cycle, when additional data on other income sources are available. Such sources may be other informal economic activities, such as hunting or gathering products from the protected area.

A graphic representation of some key information from the baseline survey is shown in Figure 2.

Monitoring uses the same measurements and estimates that are used to construct the baseline household income portfolio by tracking household-level activities. Production and exchange are monitored to discern changes in economic behavior and quantify impacts of project interventions.

In addition to keeping resource inventories and demographic information up to date, the monitoring process tracks the allocation of labor to production and records sources of income flowing into the household. This process typically monitors the following:

- person-days of labor allocated to resource use options;
- net in-flow from agricultural production options to the household portfolio;
- revenues from other production options;
- revenues from wages; and
- money remitted by family members living elsewhere.

Where applicable, these in-flows are linked to systems of natural resource production, such as the following: rice from tavy in the protected area; rice from tavy in the peripheral zone; irrigated low-land rice; and charcoal from the protected area. Furthermore, nonsustainable systems -- where off-take exceeds biological capacity in the peripheral zone -- must be identified. Tracking in-flows to the household portfolio is aided by monitoring expenditures and by linking expenditures to revenue sources.

Income portfolios are reconstructed annually on the basis of new data accumulated through monitoring. Since implementation will be slow, changes may be slight at the end of the first year. Nevertheless, impacts will be apparent, and a full comprehension of the baseline situation will be available.

Figure 3 gives a hypothetical example of an income portfolio at a later date following interventions.

A comparison of the two hypothetical situations shows a number of changes. The total size of the portfolio rice equivalent has increased by 16 percent -- from 2.3 tons to 2.7 tons. The daily rice per capita equivalent for a family of 11 consumers has risen from 575 grams to 669 grams. Tavy production, which previously accounted for almost one-quarter of rice equivalent, now accounts for less than 4 percent because of rehabilitation of irrigated rice land. No tavy rice was produced in the protected area. A project intervention for improved sheep rearing has more than doubled off-take, bringing another 40 grams per capital per day (*g/c/day*) equivalent into the portfolio. Hunting has remained the same, as have logging, charcoal production and cattle raising although their relative importance has declined. New activities are planned to develop a sustainable charcoal production system for the community; studies are being designed for sustainable logging and milling operations in the peripheral zone.

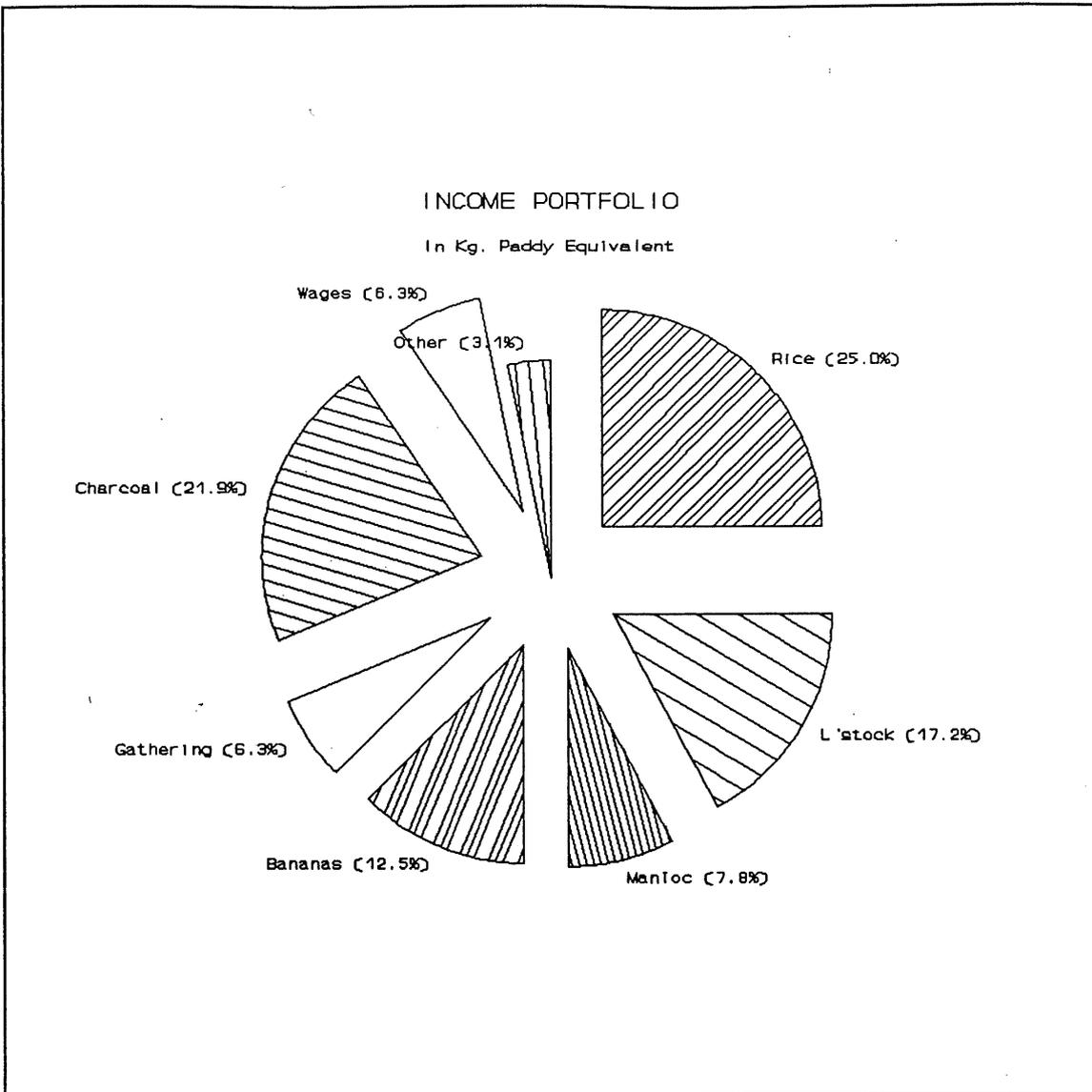


Figure 3

Use of the rice-based portfolio provides project decision-makers with essential information, including the following:

- a subsistence indicator -- this key household-level measure, in g/c/day, shows the amount and degree or percentage to which household production meets subsistence needs; annual updates of this indicator are a basic measure of economic change and development;
- an indicator of market integration and/or market dependency -- income portfolios are analyzed statistically to reveal the quantity and percentage of rice equivalent in-flows from production that are exchanged through markets;

- indicators of nonsustainable resource appropriation in protected areas and peripheral zones are derived by linking portfolio components to specific resources; data on the appropriation of each resource option, for example, fuelwood off-take, are related to the biological system's capacity; rates of resource depletion are established, and sustainable off-take rates are ascertained;
- indicators of project intervention impacts are seen in the size and percentage of new or improved production systems and in employment and other project-related options vis-à-vis the household income portfolio;
- productivity indicators for labor are easily derived by relating person-days allocated to each production option, or resource option, in the portfolio to its in-flow in grams of rice/c/day. At the baseline stage, this measure, based on returns per person-day of labor, gives a clear picture of household strategies for labor allocation among options. At the monitoring stage, this measurement can be used to measure impacts and probable sustainability of new, project-related options;
- remittance indicators may be important in some cases; the significance of family members' contributions to the household economy can be tracked through monitoring in-flows and expenditures, and, in some cases, remittances can account for a significant percentage of the portfolio; In some societies, this source of scarce capital may be crucial at key points in production; and
- if needed, indicators of household economic status can be developed using Malagasy franc (FMg) equivalents by sector in analyzing income portfolios.

A number of useful indicators can be derived for designing interventions, for project management and for evaluation. These measures are quantitative and permit operators and evaluators to gauge real progress in economic development. Furthermore, this development can be linked to resource use and/or resource options put into operation by the population. An understanding of the logic of resource option selection, chiefly determined through an analysis of returns to labor, gives project operators an important advantage and a mutually understood framework for discussions with beneficiaries.

At the evaluation stage, these quantitative measures can be related to expenditures and investments in projects. Evaluations will focus on three principal factors: progress of economic development, biological and financial sustainability and links between development actions and a lessening of human pressure on the protected environment.

- The degree to which economic development has progressed is seen in the size of income portfolios and individual shares in g/c/day.
- The degree to which these improvements are sustainable biologically and financially is determined by a measure of the natural system's through-put and/or off-take capacity versus off-take rates and in the presence of markets that sustain the household's capacity to generate capital required for improved production systems.

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- Links between development actions and the elimination or reduction of human pressure on the protected environment are expressed quantitatively in income portfolios of sample populations; they are shown geographically in maps depicting target zone resource use. Geographical information systems (GIS) software eventually should be employed in spatially related monitoring. Such systems as SPANs can be adapted to incorporate into the database and use data from household level monitoring. Final empirical verification of such links is obtained through ground-level reconnaissance surveys and teledetection techniques.

In addition to the above benefits to operators, a number of important outputs exist for ANGAP, the government and donors. Comparisons and analyses of expenditures against impacts provide solid information for ICDP assessments. Central among these outputs are cost-benefit ratios linking protected areas with expenditures. In short, a cost can be assigned to each square kilometer of a protected area. Perhaps more significant is identifying cost-effective models for development in peripheral areas.

Application of project implementation costs to quantitative measures of protection and development give ANGAP critical data needed for planning, policy analysis and ranking of projects under its mandate. Effective use of this system for combined monitoring of impact and implementation provides ANGAP a common national system for intraproject comparisons and measures of progress toward development for conservation goals.

4. System implementation

This section reviews a number of practical items in the terms of reference related to making the system operational.

The general structure and the content of the system were widely appreciated by project operators as a management and implementation tool that covers both economic impacts on beneficiaries and tracks implementation activities. The system also provides ANGAP with a system for intra- or cross-project tracking and evaluation. This system uses a commonly understood framework and a set of methods that take into account and are adaptable to substantive differences between projects.

Implementation at the ICDP level will require an M&E unit mandated to monitor socioeconomic impacts on sample households and to track resource use among target populations. The roles and tasks of this unit are presented in the preceding section of this report.

In summary, the unit's responsibilities are as follows:

- design and execute baseline surveys;
- perform required analyses of baseline survey data and recommend appropriate development interventions and/or concrete actions;
- monitor the progress of development interventions set forth in annual work plans;
- using income portfolio techniques, deploy and manage a field team to monitor household economies and resource use in target zone communities;
- maintain spatial monitoring instruments, such as maps or GIS, for representations and analyses of resource use in target zones;
- analyze monitoring and baseline data and advise project management of impacts and/or corrective measures that may be needed;
- advise project management of appropriate development approaches and specific intervention designs;
- initiate, or as requested by the project manager, perform various punctual studies as needed to better facilitate project activities and impacts; and
- every three months prepare implementation progress reports and comprehensive annual monitoring reports for project management.

The structure of the M&E unit is hierarchical and simple, with a unit chief at the top, an assistant who assures the flow and quality of data from the field and a team of field workers who monitor households and collect field data.

The position of the M&E unit within the project structure was discussed in working sessions with senior managers of all projects. A wide variety of organizational structures was presented, and no single structural position could be agreed upon as the ideal situation for all cases. However, three general rules or recommendations were derived from the discussion:

- first, the unit should be structurally situated at the same level as other departments;
- second, the unit should be recognized for its support role and should not be used as a policing unit; and
- third, the unit must operate in concert with other departments in order to fulfill its function as a management tool and an implementation support unit.

Profiles of the unit chief and support staff were discussed by participants. The unit chief ideally will be an expert with professional training in applied social sciences. Workshop participants recommended an agro-socioeconomist with experience in forest zones. Other important characteristics of this individual would be as follows:

- an ability to reside in a remote area and function under difficult and/or rural conditions;
- good diplomatic skills and leadership capabilities;
- computer literacy; and
- good writing skills in French.

Such an individual would likely be 30 to 45 years old.

Discussion of the profile of the M&E unit assistant identified an individual with a background in agro-statistics. This individual should be computer literate; should be able to manage and provide periodic training to a dispersed team of field workers; and thus should be willing to undertake frequent local travel. The recommended age for the assistant is 25 to 45 years old.

The assistant will perform most essential liaison functions between the M&E unit and field workers based in target communities. The assistant also will assist the unit chief with data management.

Field-worker positions will be open to men and women from the project area or similar areas. A minimum of a *brevet* diploma (BEPC) and literacy in French are required. Field workers will be encouraged and recognized for professionalism and for the ability to work with the local population. Dynamic, motivated individuals will be sought.

Field workers will be dispersed to target zone communities. The principal task of this team will be to collect monitoring data. Team members also may assist with other project activities and may serve as conduits for feedback between beneficiaries and the project. However, collecting data will be the team members' chief function. The team should consist of an equal number of men and women from each community.

Workshop participants also discussed budgets. An adequate budget will be required. Salaries for the unit head, assistant and eight field workers will be approximately FMg 28.4 million, or about United States dollars (USD) \$16,000 per year. Salaries represent less than 3 percent of a USD \$2-million project over three years. Additional initial costs will include a computer system, a motorcycle and fuel for the assistant and field materials. These initial costs, totalling approximately USD \$10,000 to USD \$15,000, would bring the first year cost of the unit to the range of USD \$26,000 to USD \$31,000. In light of the benefits to be gained in project management and implementation, this budget is a modest investment vis-à-vis total ICDP expenditures in most cases.

Information flows and reporting also were discussed at workshop sessions and meetings with colleagues at ANGAP. Implementation-tracking reports -- taken from annual work plans -- will be provided to ANGAP every three months. If necessary, these reports will be accompanied by written comments that explain problems in implementation.

An important document will be the annual project report to ANGAP. This document should contain four sections on the project's development for conservation component.

- The first section should review the reasoning behind the diagnostics, hypotheses and concrete interventions implemented over the past 12-month period. This section should succinctly restate the logical framework of interventions undertaken and link them to the effects and impacts anticipated at the outset of the year's work.
- The second section should be a comprehensive review of the annual work plan, to be presented in a form essentially the same as that of quarterly reports. This section should cover progress in attaining physical realizations and project activities with reference to timing and/or schedules and expenditures and budget.
- The third section should discuss economic impacts and resource use patterns among project beneficiaries. This section should review the project's effects and impacts in terms of economic development and change indicators defined above. At the end of one year, this section should also refine the baseline portfolio on the basis of retrospective data collected after the baseline survey. This section should construct a new income portfolio for the sample group, indicating and analyzing changes at the end of each yearly cycle. Using income and activity data and field surveys, this section also should include spatial resource use maps, representing and analyzing changes in target zones.
- A fourth, concluding section should review economic impacts of development actions undertaken in the annual work plan. Hypotheses and diagnostics should be reviewed and revised if necessary. This section should be a synthetic, reflective section that ends with recommendations, hypotheses and concrete actions to be implemented in the next annual work plan.

Efficient and effective operation of the unit will rely on an adequate budget, the technical and human relations skills of the unit chief and support staff and a commitment by project managers to use the unit as a key support element in project undertakings. These three factors were widely recognized by workshop participants, who generally concurred and expressed their willingness to move forward.

5. Conclusions and recommendations

This second monitoring and evaluation consultancy for ANGAP effectively demonstrated to project operators the necessity and utility of an M&E unit for purposes of management, planning, implementation and evaluation.

A comprehensive system for impact monitoring and implementation tracking has been outlined and defined. Two central instruments and related sets of indicators have been presented for impact monitoring: the income portfolio and resource use mapping of the village and/or target zone. The ANGAP monitoring and evaluation unit has developed a set of instruments to be used for implementation monitoring. These instruments will provide ANGAP with sufficient data to make informed and accurate estimates of progress for all ICDPs operating under the Association's aegis. Ranking and identification of successful projects or project components will be made possible. ANGAP also will be able to provide accurate statements of costs, benefits and sustainability for internal needs and for the needs of the Malagasy government and donors.

This comprehensive monitoring system is designed to reinforce ANGAP's role and institutional capacity as the coordinating organization for protected areas in Madagascar. This monitoring system is an important step toward fulfillment of the Agency's goal of becoming a center of excellence and expertise in design and implementation of ICDPs. The monitoring system employs objective, quantitative data to measure changes in economic behavior, impacts and progress at the population level. The system links development to conservation ends and is an indispensable component in the process of hypothesis testing and identification of workable and cost-effective models for ICDPs.

In order to realize ANGAP's goal to become an expert source for ICDP design and implementation, a number of steps remain. These steps define the context of the following recommendations.

- GMU agreements for Phase I financing of new projects should clearly indicate to prospective implementing agencies that baseline studies described above should be used as a basic tool in preparation of Phase II proposals. Phase II proposals should include a clearly defined plan for inclusion and operationalization of an M&E unit.
- Phase I grants, both that are already awarded and those recently awarded, are likely to require revision and modifications to assure that baseline surveys and the groundwork for M&E systems are incorporated into new ICDP proposals as soon as possible.
- ANGAP's coordinating role in design and approaches to ICDPs depends largely on smooth collaboration with the GMU. It is the opinion of the monitoring and evaluation specialist that separating the GMU from ANGAP is an inherent structural weak point in the design of the Sustainable Approaches to Viable Environmental Management Project (SAVEM) project. GMU financial support for M&E units in some projects may be needed. ANGAP and the GMU must have clear, mutually defined policies and integrated operational plans for ICDPs.
- As stated, ANGAP's success as an institution will be largely based on successful ICDPs and identification of models and approaches that may be replicated locally and internationally. This success depends upon a systematic and objective approach. This approach can be aided

significantly by a review and assessment of the status of current projects, M&E technical assistance needs and financial support for projects that have a reasonable probability of success. A comprehensive review of all protected area projects thus is suggested. This review will examine all current projects and rank them according to the criteria stated below.

- Degree to which projects are integrated conservation and development projects. Some projects appear to be principally conservation or ecological research projects with limited production support or welfare activities for the population; others appear to be more oriented toward undertaking development for conservation;
- Scale and/or importance of the project or the protected area in terms of biodiversity;
- Geographic location of the project vis-à-vis other projects and donor efforts for general economic development in Madagascar;
- Probability of success as ICDPs; and
- Assessment of monitoring and evaluation needs for each project to be supported technically and/or financially.

Considerable gains already have been made. With the possible exception of CARE project managers, all other project managers concur with ANGAP that M&E units are basic to success. A comprehensive M&E system has been defined. Practical questions concerning M&E implementation have been aired and largely resolved. The objectives remaining to be accomplished are stated below.

- Financial support must be provided for some projects that cannot afford an M&E unit. Discussions with GMU and, eventually with the Biodiversity Planning Service (BPS), are recommended concerning financial support for such projects;
- Technical assistance will be needed for some projects. ANGAP should review its technical assistance capabilities and consider the possibility of additional, punctual, short-term expertise to collaborate in the actual transfer of methods and techniques to the project level;
- The possibility of training local socioeconomic consultants merits discussion. If this procedure is selected, ANGAP M&E methods and techniques must be transferred to local consultants;
- In anticipation of the installation of the BPS early in 1993, ANGAP should consider consolidating all socioeconomic research and/or monitoring functions within the Agency's M&E unit in order to focus on and optimize use of limited expertise in this critical field; and
- Support for and use of M&E units should stress the constructive, contributive and collegial role of M&Es as a type of social research applied to project ends. The use or conception of M&E units as policing units is inappropriate and should be discouraged.

Annexes

Annex A: Contents of socioeconomic surveys

SCHEMA GENERAL
du
SYSTEME SUIVI-EVALUATION
(Niveau : actions de développement
des projets CDI)

ENQUETE DE BASE

(Côté Impacts Socio-
économiques)

(Côté Suivi du progrès
des actions concrètes)

Situation du départ / Situation Zero

Diagnostic

Éléction échantillon à être suivi

Hypothèses et stratégies

Feedback sur l'efficacité des actions
(besoin d' études ponctuelles)

Actions concrètes

Évaluations d'impacts sur le comporte-
ment socio-écologique et économique de
la population (motivation, durabilité).

Systeme de Gestion
d'Information
Inputs - Outputs
indicateurs : financiers,
main d'oeuvre
progrès des actions
réalisations
Résultats attendues

Indicateurs de impacts socio-économiques
sur les ménages de la zone cible.

Indicateurs de durabilité des actions
vis-à-vis l'économie de la zone.

Appréciation du progrès
niveau projets / niveau ANGAP

EVALUATIONS
internes / externes

Bénéfices

PUT #1, Price\$

Monitoring and evaluation system:

Tropical Research & Development, Inc.

Annex B: Report of first ANGAP monitoring and evaluation consultancy

MONITORING AND EVALUATION SYSTEM

for the

Association National de Gestion des Aires Protégées

(ANGAP)

By:

**Frederick E. Brusberg, Ph.D.
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For:

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Submitted to:

**United States Agency for International Development/Madagascar
under contract number PDC-1406-I-00-0073-00**

July 15, 1992

Executive summary

This report is the product of a six-week assignment with ANGAP from June - July 1992. This mission was the first of two. Its purpose was to develop a basis for ANGAP's monitoring and evaluation system. A second mission is programmed for October 1992. That later effort will put the system into operation.

In collaboration with colleagues from ANGAP, the consultant visited three protected-area projects: Amber Mountain, sponsored by World Wildlife Fund (WWF); Bemaraha, sponsored by UNESCO/United Nations Development Programme (UNDP); and Ranomafana, sponsored by Duke University. Project personnel at each location expressed a keen interest in establishing monitoring and evaluation systems. Likewise, the need for socioeconomic expertise on project teams was generally recognized and appreciated.

ICD projects are based on a triangular strategy: protection; economic development; and education. This strategy is put into operation on the assumption that the removal of protected-area resources from the local economy necessitates provision of new or better alternatives through economic development. It is also assumed that sustained conservation over the long-term will depend on economic development.

Three project types or potential directions can be identified for future development components of ICDPs. These types help to assist ANGAP and the GMU with policy development and the establishment of guidelines for new projects. These project types are described below.

- Sustainable Indigenous Natural Resource Management Projects.
These projects would involve an operational definition of buffer zones and would strive to link bio-diverse, multiple-option production systems with markets.
- Classic Rural Development Projects.
This project type has had a mixed record but may serve ICDPs if objectives are well defined and focused.
- Welfare Projects.
This project type is difficult to link to conservation and is better included as a parallel activity to be executed by specialized agencies such as UNICEF or other contractors mandated to implement health and education components of USAID's country strategy.

Monitoring is divided into two administratively-linked but functionally separate domains: conservation and development.

Monitoring and evaluation system:

Monitoring in the conservation domain covers four indicators:

- protected-area integrity;
- biodiversity;
- financial and economic sustainability of protected-area and park enterprises;
- progress in development of a database for bio-inventories.

Monitoring of development in peripheral zones takes place through three stages:

- Stage 1 examines the structure and content of project design.
This stage includes establishment of a logical framework and the implementation of baseline surveys to define and contextualize the population economically and socially and to provide a basis for progress measurement.
- Stage 2, monitoring interventions, employs an income portfolio indicator (IP) which allows quantitative tracking of project progress and links household income to resource use.
- Stage 3, evaluation.
Outputs of this stage include the following:
 - changes in household subsistence levels and economies;
 - changes in the size and composition of household income portfolios showing links to protected areas and resource use;
 - determination of the relative share / importance of project interventions to household subsistence / economy;
 - number of direct and indirect beneficiaries and expenditure per beneficiary; and,
 - the value of production per dollar invested.

This system gives ANGAP the ability to track progress of a range of projects. It provides a common system for all projects, enhancing communication between them and better orienting interventions and actions within projects. It also gives donors an assessment of benefits gained with funds invested.

A second, follow-up mission is planned for October. This mission will be used for workshops with project monitoring and evaluation personnel. These workshops will cover baseline-survey techniques, resource surveys and construction and use of the IP indicator.

Workshops will be undertaken with ANGAP personnel, including an ANGAP specialist in financial monitoring. The financial components of project management-information systems must coincide as much as possible with the monitoring system.

1. Introduction

In order to carry out its role as the oversight institution for protected areas, ANGAP has been mandated to review the designs and monitor the implementation of projects that incorporate two distinctly different components: (1) the conservation of protected areas / biodiversity reserves and (2) monitoring and tracking of development activities in zones peripheral to protected areas.

A great deal of discussion and other intellectual effort has been directed to clarifying the links between conservation and development. It is not immediately evident that development activities necessarily lead to the satisfaction of the goals of conservation and biodiversity preservation. However, it is clear that efforts to preserve biodiversity do, indeed, have direct impacts on the economies and subsistence strategies of populations living within the vicinity of protected areas.

A fundamental assumption of integrated conservation and development projects (ICDPs) is the hypothesis that economic development linked to conservation objectives will produce benefits that attract and focus the productive forces of the local population into sustainable and environmentally sound activities. If biodiversity reserves eliminate or diminish existing repertoires of productive resources, subsequent development efforts must provide new options. Development interventions must not only remove economic incentives for nonsustainable natural-resource exploitation, but should go one step farther and transform low-productivity subsistence economies into growing, viable systems. These will, in turn, contribute to national economic development through markets. Economic development cannot occur without markets. Likewise without economic development, it is unreasonable to assume that a given group or population will change its strategy for survival.

The relationship between the population and the environments in and around protected areas is obvious in terms of agricultural encroachment, hunting, gathering, logging and similar resource uses. Less visible, however, are the processes which produce these impacts. These processes are best understood through an analysis of the survival strategies of subsistence producers. Typically, such producers have no capital; they may not have secure usufruct or land-tenure arrangements, and institutions linking their production to the market may be absent or characterized by exploitative, one-way commercial arrangements.

The subsistence producers' lack of capital encourages investment in production through reproduction. Subsistence economies are labor-driven: a big family produces more than a small one because the marginal utility of an added unit of labor is usually positive. Without capital needed to raise and sustain productivity, the producer logically turns to extensive types of land use, which necessitate an ample supply of labor. In the context of Madagascar, the producer's reserve "capital" is the biomass of forest areas; once harvested, new areas must be opened.

Development activities must focus first and foremost on these relationships that can be largely defined in terms of social institutions which manage land, labor and capital. A clear definition of the logical framework of producers' decision making is fundamental to the design of appropriate and realistic development interventions. These considerations have up-stream implications into the domain of policy, as well as down-stream effects for project design and implementation.

ANGAP must further develop and refine its policies so that the concepts of conservation and development are clearly and pragmatically connected. The practical utility of monitoring and evaluation is best demonstrated through the provision of feedback needed to identify appropriate interventions and keep them on track. Post-hoc evaluations of impact, no matter how well informed, are necessary and important but take a secondary position to this essential guidance function.

The effectiveness of monitoring and evaluation is directly related to project design, and design should clearly reflect policy articulated to reality on the ground. Projects that seek to develop the economies of zones peripheral to protected areas should not be conceived of as an itinerant series of measures to palliate a disadvantaged population or as a token or trade-off against benefits gained from preserving natural laboratories for biodiversity research. On the contrary, the development components of ICD projects must work towards sustainable economic development in order to attain the goal of improved conservation. This process begins with undertaking sufficient baseline research necessary to comprehend the economic and social organization of existing, indigenous systems of natural resource management. Once this organization is known, project formulation continues in the context of identified opportunities and constraints. Implementation follows, based on collaboration with local, social institutions.

2. Monitoring and project design.

ANGAP's monitoring and evaluation system must satisfy a number of ends.

- First, the M&E system will help ANGAP advise and assist in project designs and enable ANGAP to track the progress of a wide range of projects and permit comparisons among them;
- Second, the system will help ANGAP inform, coordinate and guide projects. The system must thus be flexible and take into account substantive differences between projects while retaining a basis for comparison.
- Third, the system should contribute to policy development for better conservation and provide sufficient information to inform donors in accordance with their criteria for evaluating the results of their investments.

In terms of the selection and obligations of project operators or implementing agencies operating on the ground, each operator must clearly define a logical framework. This framework should include project objectives and outputs along with a clear rationale linking inputs / interventions with goals. The logical framework should identify objectively verifiable indicators. Operators / implementors must within the project establish a unit that is charged with monitoring and evaluation. Ideally, each project, in its management information system (MIS), should include both substantive tracking of interventions as well as financial tracking. A well-designed and comprehensive MIS permits evaluators to map expenditures onto specific interventions. Such tracking is of special interest to ANGAP and donors and should, thus, figure importantly in the selection of implementors.

ANGAP's role begins at the stage of project formulation, well before activities are initiated. The first step is to review the project's logic and conceptual approach. This review has direct implications for policy and, with respect to the GMU, for project-selection criteria.

Typically, an ICD project has two parts. The first is a conservation component concerned with the preservation of a protected area. Actions taken in this domain will likely include delimitation of the protected area and development of the park / protected area as a viable tourism, educational and research site that, ideally, will produce sufficient revenues to sustain or substantially contribute to the park's developmental and recurrent needs. Measures of progress in the conservation domain are straightforward and include financial statements of park revenues and investment / development activities as well as the establishment of scientifically recognized systems for assessing the biodiversity status of the reserve over time. The reserve-area component is functionally (although not administratively or analytically) separate from development activities outside the park. The central objective of the conservation component is the recognized definition of the protected area and conservation of biodiversity. The component's chief goal is to implement a sustainable financial system for management, maintenance and protection of the reserve.

The second component, the economic development of buffer or peripheral zones, is linked to the first in two interconnected ways: first, through pressure exerted on protected-area resources by the population and second, by the necessity to provide alternative economic opportunities to those formerly available in the park.

Monitoring and evaluation in this second domain is more complex. Nevertheless, it is central to achieving a sustained and stable relationship between the population and the park.

ICD projects operate on the basis of a triangular strategy: protection, education (animation / sensibilisation) and development. Protection is essentially negative; no matter how it is conceived and applied, it functions through sanctions. Protection is fundamental to the definition and sustained integrity of the protected area. In order for protection to play a balanced and nonrepressive role, economic development that offers viable and sustainable income opportunities is needed. Education is also essential in helping the population make the transition to a new system of natural resource management. All three components of this triangular strategy must be present to attain project objectives and goals.

The first task confronting ANGAP in monitoring and evaluation of protected area / ICD projects is a review of the logical framework. Projects should clearly specify objectives and goals in the domains of conservation and development, describe analyses needed and paths toward their attainment and establish commonly recognized objectively verifiable indicators. In short, ANGAP's work begins with a review of the strategic and process-related aspects of the project. Ideally, monitoring should begin before interventions and concrete actions have been initiated. The success of ANGAP's monitoring and evaluation unit is directly related to its capacity to ascertain the relevance, appropriateness and feasibility of proposed interventions for the economic development of peripheral zones.

Assessment of the validity of interventions is fundamental and is directly linked to the project's capacity to understand the way in which target populations are organized socially and economically. This assessment indicates that the project structure will include socioeconomic expertise with direct input into decision making. This expert will direct baseline studies and manage the project's tracking system.

Baseline studies serve three purposes.

- First, these studies provide a quantitative and qualitative résumé of the economic situation of the target population. This information can be used as a standard for the measurement of progress.
- Second, the studies identify social institutions that manage production, the use and allocation of resources and trade.
- Third, as a result of the former, the baseline studies identify opportunities for and constraints to project interventions.

Success depends largely on the project's ability to identify and work with existing social institutions. Identification of needs, diagnoses of problems and design of interventions should be undertaken in collaboration with beneficiaries. Ideally, the result of dialogue between beneficiaries and project staff is a new structure or plan for economic development. The poor inhabit a universe characterized by a plethora of problems. Through discussion, these problems may be exposed, interrelated and ranked in a hierarchy. However, the perspective of the subsistence producer will most frequently rank problems in a context very different from that of the outside expert. If, for example, the local economy is largely dependent on low-yield, subsistence rice cultivation, problems related to rice production will likely figure in the dialogue. Should the development expert propose an effort to increase the productivity of rice, given the low returns to producers and questionable potential for sustainability vis-à-vis credit and inputs? Or should another approach be taken to increase income and include new, more profitable agricultural commodities that may ultimately capitalize higher productivity of staple rice?

These questions are best answered in the context of a clear strategy or approach to development, which implementing agents bring to the people in peripheral or buffer zones. One of the most important products of ANGAP's monitoring system is the identification of models and strategies that succeed in establishing locally sustainable results from integrated conservation and development projects. In order for this to be realized, ANGAP must commence monitoring and evaluation at the conceptual stage.

On the basis of field visits and past experience, three generic project types can be identified. These general types are presented as forward-looking observations, which will describe the possible directions and evolution of future interventions supported by ANGAP and the GMU.

Type 1: Sustainable Indigenous Natural Resource Management Projects.

This project type is perhaps the most appealing because it builds on an understanding of existing resource-management practices and strives towards the institutionalization of new, sustainable management practices for buffer-zone resources, practices that conform with local, social realities. This type of project necessitates some formal or commonly understood definition of a buffer zone. It operates with the participation of local people in taking inventories of resources, assessing their sustainable off-take potential and, where such resources are renewable, assessing measures for the resources' enrichment and enlargement.

Type 1 projects may well include investment in processing facilities to optimize resource use and increase value-added benefits to the zone's population. Some analyses of markets and arrangements, both logistical and institutional, might be necessary in order to develop and sustain market linkages. Products from biodiverse protected areas may be produced in the buffer zone; new items may be introduced. The goal of this type project is to put in place a diverse, multi-option and mutually reinforcing package of commodities and products that are managed locally. Buffer zones characterized by such relatively rich and diverse economies are inhabited by better collaborators in protecting and conserving biodiversity than are areas inhabited by debt-ridden, subsistence-based populations.

This type project is a relatively new approach, initiated by USAID in Jamaica (Hillside Agriculture Project) and in Haiti in the production-side component of AGLINK. It holds promise as a viable model, chiefly because of its pragmatic approach linking sustainable, bio-diverse production systems to markets.

Type 2. Classic Integrated Rural Development Projects

This approach may have elements and techniques in common with Type 1. The principal difference between the two is that Type 1 projects focus on indigenous resource management and may replicate some of the practices and integrate some of the commodities formerly used in a nonsustainable way in the protected area.

The Type 2 project may or may not be conceptually linked to past systems of resource management, and it may or may not build upon existing social institutions. Such projects generally focus on production and are especially well represented in Africa. They frequently develop dependencies that cannot be sustained after funds are expended. This classic approach has a mixed record of success, frequently failing because of inappropriate definitions and ranking of problems, meandering interventions and amateur management skills. Nevertheless, Type 2 projects may well be an appropriate development approach if targets are well defined, interventions are focused and critical paths established.

Type 3. Welfare Projects.

This approach is undesirable to the degree that it is not directly linked with development and conservation. It is essentially a quick response to perceived needs on the part of the population. Such projects may be initiated as part of a pay-back for exploitation of biodiversity reserve areas by research institutions abroad. They may also be rationalized as an introductory, confidence-building mechanism leading into a development project. These projects usually evolve into a loosely connected series of interventions, problems, narrow punctual studies and more interventions. At the end of this process, viable linkage between "development" and conservation is difficult to establish.

Welfare projects have no development pay offs in the long- or short-term and are usually an itinerant series of palliative measures for the neighboring poor. Such projects are frequently characterized by unsustainable installations of clinics or schools, preventative health programs and/or sporadic efforts to reorganize subsistence agriculture. This approach has no sustainable, long-lasting economic benefits and no clear, overarching strategy linking actions to development and conservation objectives.

Health and education are central to national development. ICD projects should accordingly encourage specialized institutions (such as UNICEF or other agencies charged with implementation of other elements in USAID's country strategy) to collaborate in this aspect of improving the living conditions of populations within buffer zones or peripheral zones.

As noted above, these project types refer to the directions that ICD project's development components will likely follow. Policy decisions must be made and guidelines established to orient ICDPs. Accordingly, there is a need for discussion within ANGAP and the DEF at this early stage to further develop a policy framework and establish criteria for grants to implementors of protected-area ICD projects. This being achieved, ANGAP will be able to fully define strategies and project types with clear goals and objectives in order to satisfy the goal of identifying worthy models, strategies and techniques for implementation of ICDPs.

A time-based strategy has been proposed in which the conservation goal is to stabilize the relationship between population and protected area. Should projects with this perspective be funded by ANGAP / GMU? Should Type 1 projects be given top priority? Ideally, these projects would enrich the through-put and off-take capacity of sustainable resource use in buffer zones, include value-added components to increase employment and work pragmatically to connect production with markets. One could assert that, at worst, they would achieve the goals of the time-based strategy. In areas where ICD efforts appear ineffective, should welfare activities be included as a palliative measure? If so, they could be undertaken with direct cash payments from research entities and earnings from tourism in exchange for use of the park. These and other questions require discussion and formulation into policies and project-selection criteria. Long-term strategies are needed and are preferable to short-term, "time-based" holding actions.

3. What is to be monitored?

Monitoring takes place at two stages. The first, and most critical, is at the initial stage of conceptualization and design. The second stage is one of monitoring and tracking implementation. The first stage is a review of the content and consistency of the project's logical framework. Projects must establish a logical framework that sets out goals and objectives, lays out critical paths for interventions, defines long-term and short-term strategies and provides objectively verifiable indicators. At this first stage, it is important that the project formally define its approach or strategy and make a statement or hypothesis that shows the way in which conservation and development objectives are linked.

As noted above, ICD projects operate in two functionally different domains: the conservation of protected areas and development of peripheral or buffer zones. The following sections outline monitoring guidelines, indicators and procedures for each domain.

3. A. Monitoring in the conservation domain

Monitoring and evaluation requirements in this domain focus on four key elements:

- 1. Indicators of protected-area integrity.** This indicator is a straightforward assessment of the viability of protected area / park limits. Specific indicators include progress in the physical delimita-

tion of the area as well as monitoring and protection from encroachments by adjacent populations. These indicators can be verified by aerial photography, teledetection and ground-level tours of protected-area perimeters.

2. Indicators of biodiversity. Assessment of biodiversity status is problematical to the degree that both external and internal forces may play a role. Internal forces may be biodynamic processes that change the composition of the bioserve. The use of appropriate indicator species is one means of monitoring biodiversity. Identifying and quantify external impacts is essential.

3. Financial and economic sustainability of the protected area. Parks and protected areas hold significant potential for development through tourism and scientific research. In both cases, revenues are generated. These revenues are of service to the protected area's budget for development and maintenance of protective measures as well as for ANGAP and the peripheral population. It is essential that a common management-information system be established for each protected area / park so that tracking of the financial status of each park enterprise is possible.

4. National database for bioinventories and research products. In collaboration with appropriate ministries and national agencies, ANGAP must assure that all biological inventories and research findings are copied to and compiled at a central point in Madagascar. Bioinventories are a potentially valuable national resource, especially in light of the global loss of biodiversity. Accordingly, a legal review may be necessary to assure that research permits and contracts governing scientific activities clearly indicate compliance with this national necessity.

An important target for ANGAP is the development of Madagascar's parks and protected areas as economically viable enterprises for tourism and scientific research. This development has significant potential to contribute to national economic development as well as to science. It is possible that commodities or products (ie: foods, or products used in pharmaceuticals and cosmetics) found in bioserves may have potential for production in peripheral areas. It is thus sensible that research outputs be recycled into the economic interest of local producers.

3. B. Monitoring Development in Peripheral / Buffer Zones.

The economic development of peripheral zones is fundamental to stabilizing the relationship between park and population. The operational hypothesis of this strategy is that a population experiencing economic growth on the basis of resource use outside the protected area will be less inclined to include nonsustainable use of park resources in its economic survival strategy. It is also much easier to rationalize the use of protective / interdictive measures to maintain protected-area integrity where the neighboring population has no justifiable, economic incentive for encroachment. Furthermore, adjacent populations become supportive allies of conservation to the degree that they are aware of local benefits from the park (ie: as a watershed, a source of genetic material for off-park production and/or as a source of earnings associated with tourism).

Implications for monitoring and evaluation are straight forward in this domain: Essentially monitoring must focus on tracking the economic behavior of people in peripheral or buffer zones. This is the key indicator of progress and intervention achievement; it also links the local economy to the resources of the park or protected area.

Monitoring and evaluations of protected-area projects traverse three stages: project design, implementation monitoring and evaluations. The following sections outline procedures and requirements at each stage.

Stage 1: Structure and content of project design.

At this initial point, the task is to review the content and consistency of the project's logical framework. The logical framework sets out goals and objectives; lays out critical paths; and provides objectively verifiable indicators. At this stage, it is important that a statement or hypothesis is made which links conservation and development.

Project design should be formulated on the basis of baseline surveys that are normally undertaken through participatory interaction with the population. Baseline surveys focus on the household unit that is the building block of economic and social organization and the most relevant point for impact evaluation. Baseline surveys should be a precondition to design and a requirement for Phase I grants. Essentially, baseline surveys serve to:

- (1) define the size, location(s) and demographic characteristics of the beneficiary population;
- (2) establish benchmark measures of economic status of beneficiary households, which are fundamental to monitoring progress and assessing intervention achievement;
- (3) identify social institutions that organize trade and links to the larger economy;
- (4) make household-level inventories of production resources and the allocation of land, labor and capital; and,
- (5) differentiate household units on the basis of resources so that a representative sample of beneficiary households is established for impact monitoring.

In short, baseline surveys provide project decision makers with a pragmatic and realistic perspective of the population's economic situation and social organization. They inform project design by exposing opportunities and constraints to development and establish quantifiable indicators for comparison and measurement through subsequent monitoring and evaluation. Construction of a relevant project logical framework and the establishment of appropriate indicators for monitoring are not possible without a baseline survey.

Stage 2: Monitoring of interventions.

Indicators must measure progress in the economic development of peripheral / buffer zones. This development is linked in turn to forms of production and resource management, which do not exert pressure on protected areas and may indeed work towards the biological rejuvenation of peripheral areas in the interest of diversified and increased production. Ultimately, the goal of development is to move populations beyond the dilemmas and confines of a subsistence economy.

The central indicator of progress in this direction is the household-income portfolio (IP). Using a representative sample of household units identified in baseline surveys, the IP indicator as a

quantifiable means of tracking the progress of interventions and development impacts and monitoring the relationship between the population and the protected area.

Construction of income portfolios is best aided by the use of spreadsheet computer programs that can generate graphical representations of income sources and perform basic statistical analyses. The IP indicator provides two key measures: first, it links household economies to the use of resources in protected areas and second, it evaluates household status with respect to subsistence needs. In this latter regard, IP indicators also enable project decision makers to differentiate beneficiaries on the basis of their level of subsistence.

This is accomplished by two simple techniques. First, all components of the IP "pie" are converted into an equivalent value in kilograms of rice. Thus, using an average price for paddy rice (normally the last annual average), other forms of production, such as manioc, livestock and wages from logging and other sources can be converted into their equivalent in kilograms of paddy. Second, the total paddy equivalent of the household is divided by the number of consumers to produce a quantified measure or subsistence indicator. This measure also reveals the logic of household-level decision making by demonstrating the returns to (as well as the relative productivity of) labor in all sectors. This measure is of particular importance where households continue to exploit natural resources in a nonsustainable way.

The IP indicator, thus, serves a number of ends. Its ultimate use is a quantified assessment of achievements at the end of project. At this final stage, changes in the size of the household portfolio, its composition and the contributions of its constituent parts can be readily assessed. This technique also permits comparisons between projects in various parts of the country.

Monitoring builds on the framework of indicators established in the baseline survey and uses them as benchmarks. It is important that the demographic data collected during the baseline census be updated through monitoring. Over the life of the project, this updating permits accurate tracking of the number of consumers, producers and beneficiaries. It is important to note that a distinction should be made between direct and indirect beneficiaries. Direct beneficiaries are those involved in or directly linked to project interventions. It is neither sufficient nor responsible to assert that the entire population of a given community accounts for all beneficiaries because a project has undertaken activities there.

Monitoring activities also up-date and record use of household inventories. The household resource inventory covers production resources, including land and livestock. On the basis of household-resource inventories, for example, areas planted are known and accurate estimates of production can be made.

Monitoring also follows labor allocation to various activities. It is important to know how labor is allocated as well as when and where labor is hired or exchanged in production. This activity refines and updates general, annual patterns collected in the baseline. Labor-allocation data helps identify constraints to production; it informs the design of interventions and innovations and indicates the types of beneficiaries that have the highest potential for adoption of innovations.

Monitoring key commodities and expenditures in household consumption also provides an indicator of development and change. A few key items, such as paddy stocks, manioc and other staple field crops can be monitored. Likewise, purchases can be tracked by monitoring expenditures. These normally include items like rice and staples, coffee, sugar, cloth and medicines.

These inventories support construction of income portfolios and track production and consumption. Additional indicators may be derived from them, especially as concerns tracking the progress of specific interventions.

A final and very important element in monitoring is identification and development of social institutions that govern trade or exchange. Those governing production are accounted for through the above inventories and tracking of household-level organization. Recall that the objective of development is to move economies beyond the closed system of subsistence. In order for this to happen, markets must play a role. Little utility results from increasing production or productivity of a given commodity if no market exists. Furthermore, beneficiaries will not likely accept an externally inspired reorganization of productive activities if no benefits are to be had. Project interventions must not become expensive nor become merely disruptive exercises, which reorganize subsistence activities in exchange for welfare benefits.

In order to give project interventions the best opportunity for success, market relationships between production and the larger national economy must be identified. This calls for two approaches: (1) collection of baseline information and subsequent tracking of merchants' trade in a selected group of key commodities and (2) assessment of local potential for community-based institutions that can assist in linking local production to the market. The former is frequently an exploitative relationship, for example: rice is sold to the merchant at harvest time at a low price to cover household cash needs; it is then sold back to the producer at a later date at a much higher price. This merchant-producer relationship may well be the central exchange institution in many rural, village economies.

An alternative may be development of grass-roots-level village institutions, which can help improve the two-way exchange between producers and markets. Rural producers typically need inputs, credit and technical assistance for production. They also need optimal returns to their investment and labor through the sale of produce. Their relationship with the market can be optimized by the development of village-based institutions that provide credit and inputs and sell a few basic consumables. These institutions purchase and stock production and act as a buffer against market variations.

In general, the experience with cooperatives in developing countries has been a poor one. Most have failed, primarily because of top-heavy, state-level management. Where cooperatives have worked, such institutions have been village based and operated clearly in the interests of the community. In spite of a poor record, project achievements will ultimately depend on the degree to which rural producers are successfully linked with markets. This poses three options for project decision makers: use of existing exchange mechanisms (chiefly merchants); development of small, locally sustained institutions to help improve exchange relations and support production; or some combination of the two. In all three instances, baseline and tracking of market relations is essential.

In summary, outputs from monitoring must be sufficient to enable ANGAP to make comparisons between projects while simultaneously contributing to articulate tracking and implementation of

interventions within projects. The use of the income portfolio as a central indicator provides a common tool for these two purposes.

Stage 3: Monitoring outputs and evaluation.

The IP indicator and related monitoring outputs provide quantitative measures of economic progress and change. The most important outputs are:

1. Change in household income as expressed in subsistence terms: kg. paddy equivalent / capita.
2. Change in the composition (and size) of the household income portfolio. This includes the absence or presence of nonsustainable protected-area resources in the portfolio. Increase or decrease of portfolio items linked to market sales.
3. The relative share or importance of production interventions introduced through the project.
4. Changes in labor-allocation patterns.
5. The actual number of direct and indirect beneficiaries.
6. Expenditures per beneficiary.
7. Value of production (or production marketed) per Fmg or dollar invested.

Given the substantial sums to be invested in most projects covered by ANGAP, it is reasonable to insist that operators include a social scientist among project decision makers. Baseline surveys, inventories and IP-indicator data collection require an ongoing, field-level presence. Forest wardens - *agents de protection de la nature* (APN) -- can be of assistance in data collection for baseline inventories and demographics as well as in tracking labor allocation. Other local personnel may be hired and/or welfare / social-worker personnel stationed in villages can collect monitoring data.

It is crucial for ANGAP to have reliable, quantifiable information on beneficiary populations. The outputs and measures discussed above will provide a clear, cross-project basis for comparison. Successful projects can be identified; lessons and models can be derived. Interaction and information exchange between projects will be aided by a common basis for monitoring, measurement and assessment.

4. Conclusions and recommendations for implementing the ANGAP monitoring and evaluation system.

On the basis of three short field visits -- one to each of three sites -- Amber Mountain (WWF), Ranomafana (Duke University) and the UNESCO/UNDP project at Bemaraha, there is a clear consensus that socioeconomic expertise is needed to design projects and identify and design appropriate interventions. Both Ranomafana and Bemaraha have social scientists on staff; Amber Mountain has not, as yet.

Monitoring and evaluation system:

All three projects are in a stage of reformulation: CARE has applied to the GMU for financing to prepare a Phase-1 proposal for the development component at Amber Mountain; UNESCO is preparing for a reformulation of its project at Bemaraha in November; and the Duke University team is soon to revise project design at Ranomafana. In these three cases, events are timely for ANGAP's implementation of a common monitoring system.

A series of workshops is proposed for October 1992 to implement the monitoring and evaluation system in close collaboration with representative of the 12 projects covered by ANGAP. The original plan of a general meeting of all personnel may be used if necessary. However, the alternative of working in smaller groups of three or four projects will be more productive. This structure permits a more effective exchange of ideas and gives more time for discussion and analyses of actual, individual project situations.

The subject of these workshops will be practical application of the monitoring system. The workshops will include the topics described below.

1. Selection of appropriate baseline-survey methods.
2. Construction of computer-based inventories for recording baseline data. (The consultant will prepare preliminary formats.)
3. Data-gathering techniques.
4. Identification and use of specific indicators derived from household allocations of land, labor and capital.
5. Implementation of project monitoring and the construction and use of the PI indicator.
6. Techniques for monitoring data acquisition.
7. Reporting schedules and reporting format.

Workshops will run for three or four days. Each project will be represented by a manager or key decision maker and the monitoring / evaluation specialist. ANGAP participants will include monitoring and evaluation personnel, an ANGAP management-information specialist and the consultant.

In order to achieve the optimal transfer of information in the workshops and to insure an efficient use of the monitoring system, a number of recommendations must be made.

- Recommendation 1
ANGAP / GMU will include this report as a basic document for orienting project-monitoring systems and will provide copies to actual and potential participants.
- Recommendation 2
ANGAP will assure that projects operating under the ANGAP umbrella establish monitoring and evaluation units.

- Recommendation 3
ANGAP / GMU will assure that an expert with social science (socioeconomic) expertise is hired as a team member who will manage project-monitoring and evaluation units.
- Recommendation 4
Participating projects will cooperate with ANGAP by providing reports according to an agreed schedule.



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