

UNITED NATIONS DEVELOPMENT PROGRAMME
Project Document

Project number : MAL/00/G42
Project title: Conservation of Biological Diversity through Sustainable Forest Management Practices in Malaysia

Project short title: Targetted Research

Estimated start date: July 2000
Estimated end date: April 2001

Management arrangement: Ministry of Science, Technology & Environment (MOSTE)

Designated institution: Forest Research Institute of Malaysia (FRIM)

Project site: FRIM

Classification information
 ACC sector and subsector: 20 Environment; 30 Environment Enhancement and Management
 DCAS sector and subsector: 3 Natural Resources; 13 Land Use Planning
 Government sector and subsector: Environment and Biodiversity

Primary areas of focus/sub-focus: 3 Promoting Environmental and Natural Resources Sustainability; 23 Promotion of Sustainable forestry

Secondary areas of focus/sub-focus: 3 Promoting Environmental and Natural Resources Sustainability; 19 Promotion of Sustainable Natural Resources Management

Primary type of intervention: 4 Investigation
 Secondary type of intervention:

Primary target beneficiaries: 03 Target Place (Environmental Habitat)
 Secondary target beneficiaries : 03 Target Place (Environmental Habitat)

LPAC review date:
 Programme Officer: Programme Unit 1

| Summary of UNDP and cost-sharing inputs | |
|--|-----------------------------|
| (as per attached budgets) | |
| UNDP and Co-Financing | US\$ |
| UNDP-GEF | 196,350 |
| Total | 196,350 |
| | |
| <u>Administrative and operational services</u> (where applicable) | |
| | Country Office Admin. Costs |
| TOTAL | 196,350 |

Government inputs: (local currency)
 (in kind)

Brief description:
 The objective of this PDF-B is to assist the government of Malaysia in undertaking necessary research for formulating and finalising a GEF project brief and a GEF full project document for GEF financing using the incremental cost and logical framework approach. The overall goal of the full project is to improve the knowledge base, strengthen the institutional framework for integration of biological diversity considerations into sectoral planning, building of a center of excellence and development of policies, regulations, laws and capacity in the country.

| On behalf of: | Signature | Date | Name/Title |
|---------------|-----------|-------|------------|
| UNDP: | _____ | _____ | _____ |

Government:

| | | |
|--|--|--|
| | | |
| | | |

SUMMARY, PROJECT OBJECTIVES AND DESCRIPTION

Summary

Malaysia is still blessed with relatively large tracts of tropical forests that are extremely rich and diverse in plant and animal life. These forests continue to play a significant role in the socio-economic development of the nation. At the same time, they are vital in the maintenance of soil and water resources, stabilizing climate and the conservation of biological diversity. In this regard, Malaysia has doubled her efforts and has given a high priority in the management of the resource on a sustainable basis to ensure that the nation continues to enjoy the benefits from the forests in perpetuity.

The current forest management practices have been found to be deficient in certain critical aspects that threaten sustainability and conservation of biological diversity. Improved harvesting practices such as implementation of low impact logging (LIL) systems have been shown to significantly reduce adverse environment impacts and enhance conservation of resources. However, the incremental cost of shifting from conventional forestry management system to LIL may be significant.

Malaysia has demonstrated its commitment towards environmentally sound sustainable development. At the international level, Malaysia has ratified the Convention of Biological Diversity, and was the first Chairman of the Commission on Sustainable Development which monitors Agenda 21. In addition, Malaysia being a member to ITTO, is committed to achieving ITTO Year 2000 Objective. At the national front, Malaysia has launched the National Policy on Biological Diversity that aims to conserve Malaysia's biological diversity and to ensure that its components are utilized in a sustainable manner for the continued progress and socio-economic development of the nation. Malaysia has also amended the National Forestry Act to strengthen capacity to conserve forests and the National Forestry Policy to accord greater emphasis towards the protection of the environment and the conservation of biological diversity. The government has allocated significant financial resources towards the management of forest resources which includes more than \$US 10 million in related research and development activities. Besides, Malaysia has already initiated significant long-term research in dedicated, conserved plots in natural forests which provide an understanding of the natural diversity and growth against which management results can be compared.

This project is opportune and could contribute towards the realization of the goals of the various policies above on the conservation of forest resources and the preservation of biological diversity. In this regard the project aims to enhance knowledge and capacity in the planning, management and conservation of biological diversity, specifically in terms of:

- (i) development of better assessment and economic valuation methodologies which would allow better decision making in instances where timber values may conflict with biodiversity conservation; and

- (ii) modification of existing logging planning process and prescriptions to reach optimal compromise between economic production and conservation in forests.

Besides the above, the results and outcomes of the project will become the basis for formulating and making follow-up policy recommendations to the relevant state and national planning authorities for the adoption of more environmentally sound sustainable forestry practices.

To ensure that the project is implemented efficiently, a National Steering Committee will be established to govern and provide overall direction. The GEF Implementing agency will be the UNDP and FRIM will be the national implementing agency and the lead coordinating agency for the project. The project will be implemented in a forest concession area in Perak or Terengganu. FRIM is in a good position to implement the project as it is the national R&D Institution and has a pool of skilled multi-disciplinary staff. FRIM is also committed and has selected a team of scientists to implement the project.

Background

Malaysia is still endowed with relatively large areas of natural tropical forests. These forests are unique and complex ecosystems that are extremely rich and diverse in plant and animal life. In this respect, IUCN has classified Malaysia as one of the worlds megadiversity zones. At the same time, forestry continues to play a major role in the socio-economic development of the nation. They are also vital in the maintenance of soil and water resources, stabilizing climate and the conservation of biological diversity. Consequently, Malaysia realizes that it would be to her advantage to manage the resource on a sustainable basis to ensure that the nation continues to enjoy the myriad of benefits accrued from the forests in perpetuity.

Sustainable management and conservation of the forests have been accorded high priority by the Government. Efforts are being advanced to ensure the flora and fauna are conserved for future generations. Such efforts are reflected by the fact that Malaysia played a leading role at the World Summit in Rio and was the first Chairman of the *Commission on Sustainable Development* that monitors the implementation of Agenda 21. Malaysia has also ratified the Convention on Biological Diversity and has launched her own National Policy on Biological Diversity. The policy outlines clearly Malaysia's commitment towards the conservation of biological diversity.

As a member of the International Tropical Timber Organization (ITTO), Malaysia is committed to achieve the ITTO's *Objective Year 2000*, which requires that internationally traded tropical timber be sourced from sustainably managed forests by the year 2000. Towards this end, a National Committee on Sustainable Forest Management has been established to oversee the efforts needed to be undertaken both at both federal and state levels.

Overview of Problems/ Main Issues

Over the period 1970 to 1992, natural forest area of the country was reduced by 19.3 percent, mainly in conversion to agricultural crops such as oil palm, rubber, cocoa, etc. The forests cleared were predominantly lowland dipterocarp and, to a lesser extent, swamp forests, both peat and freshwater, and mangrove forests. Very little of the lowland forests, the largest reservoir of diversity of terrestrial flora and fauna, remain now and these require total protection, as do the remaining swamp and mangrove forests.

With the loss of lowland forests, timber harvesting has now moved uphill. The terrain, equipment and current harvesting practices are all bound to result in depletion of forest resources for future, along with heavy loss of biological diversity as well as increased sedimentation, unless appropriate forest management practices are introduced.

Baseline or conventional logging in forest concessions of Malaysia is characterized by a selective system where several valuable species, usually between 10-15 trees, are harvested from a given hectare. However, in the selective logging process, significant damage occurs to the residuals and soils due to factors characteristic of conventional logging such as usage of heavy machinery, limited planning, poor skid trail design, disorganized and poorly constructed roads, and felling random trees that are literally tied together by vines. Under the conventional system, as much as 50 percent of the remaining trees are uprooted or damaged and as much as 40 percent of the soil is disturbed. In addition, dragging the trees through the forest destroys undergrowth plants and exposes the soil to erosion, washing away protective soil cover and surface soil that contain buried dormant seeds.

The current conventional logging practices are unsustainable for the timber industry, but also threaten biodiversity of the ecosystem. Low-impact logging systems constructively address the aforementioned problems through carefully managed and controlled harvesting techniques. FRIM has developed a specialized low-impact logging system that is being applied by one major forest concessionaire in Malaysia. This and other specialized and proven systems of low-impact logging seek significant global environmental objectives including watershed protection, reduced runoff and sedimentation of streams, reduced biodiversity loss, improved wildlife habitat conservation, reduced floods, controlled soil erosion and downstream sedimentation, increased ground water storage, and reduced impact on climate. The ultimate goal is to produce a habitat that is livable and healthy for sustainable human use, and protect the biodiversity of flora and fauna that live in these threatened areas.

Since much work has already been done on the application of “reduced impact logging techniques”, this project will not address logging *per se*, and indeed none of the GEF funding for this research project will be used to finance logging (including reduced impact logging), forest conversion, certification (to meet FSC/ITTA criteria or otherwise), reforestation, or tree plantations. This project forms part of an integrated program of targeted research being developed by UNDP/GEF in Indonesia and Malaysia

which, as a whole, will address the complete range of issues relating to biodiversity conservation in production forests (Annex 2).

Project Objectives and Activities

The project will contribute towards realization of strategic goals stated in the National Policy on Biological Diversity launched in April 1998 with emphasis on improvement of the knowledge base, strengthening of the institutional framework, integration of biological diversity considerations into sectoral planning, building of a center of excellence and development of policies, regulations, laws and capacity in the country.

The following will be the core concerns that relate closely to the economics of forest management, forest conversion and biodiversity conservation:

- HOW do we value biodiversity *versus* other uses of the forest?
- WHEN should we try to integrate and when should we try to segregate areas for conservation and production (i.e. set aside areas ONLY for conservation or ONLY for production, *versus* trying to do both on the same site); and
- HOW do we manage the forest for multiple values at the landscape scale?

FRIM has already conducted experiments on LIL systems and their impact on biodiversity. Using this knowledge as the basis, the project will develop new forest management planning routine which integrates biological diversity conservation priorities in the timber production planning. In this regard, the proposed project has the following objectives:

- Enhance the knowledge and skills of the local staff in the planning, management and conservation of biological diversity.
- Develop efficient methods for the assessment and economic valuation of biodiversity.
- Develop decision making tools for management of forests for multiple products that include timber, ecological services, and biodiversity.

1. DESCRIPTION OF PROPOSED PDF-B ACTIVITIES BY COMPONENTS

Need for urgent action to conserve industrial forest areas of Malaysia

Despite the best efforts of the country, there has undoubtedly in recent years been unsustainable management and degradation of forest resources and biodiversity (and of their potential to support sustainable development). In general, it can be said that there are two major barriers to sustainable management of industrial forest areas:

- The lack of knowledge base, in particular, a comprehensive ecological and economic valuation system to accurately determine opportunity costs of different land use and forest management systems.
- The lack of studies at the landscape level in deciding which management systems , from timber management to biodiversity conservation, are most appropriate for a given forest stand.

Implementation Arrangements

The GEF Implementing Agency is UNDP. FRIM will be the National Implementing Agency as well as the lead coordination agency for the project. FRIM will implement the project by working closely with the Federal Forestry Department, the Terengganu and Perak State Forestry Departments, as well as a private timber organisation in Terengganu. In view of the underlying aim to achieve much greater awareness towards the management of forest resources and the conservation of biological diversity, a concerted effort will be made to co-ordinate activities of other relevant bodies that affect the conservation of biological diversity. International technical input will be sought in building the knowledge base from renowned international organisations and institutions in the field. For the duration of the PDF-B project, a small expert coordinating team comprising experts from FRIM, and the Federal and Terengganu/Perak State Forestry Departments will work on the various project activities that have to be established to guide work of the project and the conduct of various activities.

A National Steering Committee will provide the overall guidance to this expert group as well as the implementation of the PDF-B and the formulation of the full project brief.

Planned activities under PDF-B

The project will be implemented at two levels, namely the national and project site levels. The national level will involve activities general in nature such as capacity building and development of technologies. The site specific activities will involve implementation activities in the selected site in Terengganu or Perak, such as surveys of biological diversity, economic appraisals of forest produce, in secondary production forests that have been logged under conventional system and low-impact logging system. The principal activities will include the preparation of a full project proposal to be submitted to GEF for funding, stakeholders consultations, guidelines and methodology development, site surveys and studies, identification of training needs, and incremental cost calculations. A detailed TOR of Activities 2-6 is given in Annex 3.

Activity 1: Stakeholders Participatory Consultations

This activity aims at securing participation of all stakeholders, national as well as local. *The first required action is to finalize site selection by selecting between the two candidate sites described in Annex 4.* Participatory appraisals will be undertaken that will: (i) identify the key stakeholders, (ii) establish the overall economic and social

situation of local stakeholders, (iii) identify proximate threats and underlying causes of biodiversity loss, and (iv) identify possible management options to address threats at *the selected* site. These appraisals will form the basis for further review of the sites to identify a smaller subset of sites that represent different combinations of human use and threats.

This activity will also review the results of the participatory consultations to identify at a national level the role of the current legislative and regulatory framework in determining the impact on biodiversity and to suggest options/recommendations for alternative regulatory interventions.

Output of Activity 1:

- (i) A report on the participatory workshops, outlining:
- the position of stakeholders towards the full project goals and objectives,
 - report on the consensus of project scope and activities,
 - discussion of the role of the forestry sector to the fulfilment of the biodiversity policy,
 - identification of causes of unsustainable management and loss of biodiversity.

Activity 2: Guidelines and Methodology Development

This activity will provide the necessary sound and cost-effective technical and technological inputs to achieve the project goals as stated in the Project. Under this activity, the specific research activities to be undertaken in the Full Project in order to meet the previously specified project objectives will be identified. In addition, consideration will be given to the possibility of simultaneously addressing issues proposed by the GEF Research Committee, namely:

- (a) the need to evolve flexible adaptive management systems that would adjust harvesting regimes based on information generated through a regular system of monitoring, and
- (b) to encourage systems of participatory management involving members of local communities, as well as other stakeholders such as industry

Outputs of Activity 2:

2.1 Methodology and guidelines

- i) Description of rapid survey and mapping method(s) for ecological assessment of the biological diversity of the study sites, with special attention to:
- the location of sensitive and critical areas for biodiversity conservation,
 - landscape level planning of protected areas,
 - comprehensive fauna and flora baseline project analysis,
 - a spatial description of the natural disturbance regime;

- ii) Description of method(s) for the economic valuation of the biological diversity from national, regional and global perspectives;
- iii) Experimental design for assessing the impact of conventional and low impact harvesting methods on biological diversity and other environmental factors;
- iv) Description of database and geo-referenced information system on the forest resources and the biological diversity; and
- v) Guidelines for the implementation of site surveys and studies in consultation with the national consultants of activity 3 of PDF-B.

The following inputs are foreseen to implement activities described above:

- Inventory & Forest management Specialist: 2 work-month
- Ecologist: 2 work-month
- Economist: 1 work-month
- Statistician/GIS: 1 work-month

2.2 Technical workshop

Towards this end, studies and a technical workshop will be organised with a view to secure a sound and cost-effective methodology for the implementation of the project. It will involve relevant experts from local agencies such as FRIM, the Forestry Department, Department of Environment, NGOs as well as international experts. The workshop will elaborate on aspects such as techniques and methodologies of forest management and ecological and economic assessment and valuation of biological diversity and alternative forest management systems.

Activity 3: Site Surveys and Studies

A suitable site will be selected for the implementation of this activity on a pilot scale. The State of Terengganu has been identified as a possible location, on the basis of a preliminary technical evaluation, for special studies and demonstration purposes in this project. The selection of specific sites will be based on a broad range of criteria, which include among others considerations of uniqueness of biodiversity represented in the sites, and willingness of stakeholders, including local communities, to participate.

Activities to be implemented at the study site will include the following:

- i) Survey and mapping for the biological diversity of the study site, with special attention to:
 - comprehensive baseline fauna and flora analysis,
 - the location of sensitive and critical areas for biodiversity conservation,
 - landscape level planning of protected areas,
 - spatial description of the disturbance regimes;
- ii) Assessment of the ecological and economic impacts of conventional and low impact harvesting methods at the study site focussing on:

- timber harvesting,
- forest rehabilitation,
- species diversity,
- soil characteristics and seedling regeneration,
- carbon intake,
- water,
- wildlife.

The following are the main outputs:

- i) A geographic information system database on the forest resources and the biological diversity;
- ii) A total valuation of forest benefits associated with the alternative management regimes including biological diversity and other environmental functions;
- iii) A public awareness plan on the conservation of biological diversity; and
- iv) An overall comprehensive report to evaluate the appropriateness of the methodology and techniques proposed by the international consultants. The report may also include recommendations for further improvements of the methodologies and techniques.

Activity 4: Identification of training and capacity building needs

Training and capacity building will be an integral activity of the project not only to ensure that the current activities are implemented effectively but more importantly that the work that has been achieved will be continued by competent local staff. Capacity building can be implemented through exchange of scientists between national forestry agencies and international institutions.

Output for Activity 4

- (i) Report on need assessment of training required by different target groups.

Activity 5: Incremental Cost Calculations and Negotiation of Co-financing Opportunities

An analysis of the incremental costs associated with the full project will constitute part of the output for the preparation of a GEF project proposal. The sustainable forest development baseline will be developed during the PDF-B and used to calculate the incremental funding required to implement sustainable management and conservation of biological resources. The GEF alternative will, thus, bring global benefits through better on the ground biodiversity conservation measures, improved public understanding of biological diversity and greater institutional capacity to achieve these ends.

The implementing agency will undertake meetings and discussions with participating national and international institutions to secure matching contributions in cash or kind.

Output for Activity 5:

- i. Incremental costs determined and co-financing opportunities identified.

Activity 6: Preparation of a GEF project brief and full project document

The co-ordinating team will take the lead in preparation of this project proposal, which will essentially be a framework for more detailed technical documents produced under the other activities. The proposal will draw from Activities 1 to 5 above to include all essential elements including: a logical framework analysis with performance indicators for each project output; an incremental cost analysis; a detailed description of each project site with information on globally significant biodiversity represented therein, underlying causes of biodiversity loss at the site, socio-economic conditions; and a public participation plan.

The co-ordinating team will also be responsible for identifying and negotiating co-financing opportunities for activities that cannot be financed through GEF resources but need to be undertaken as part of the project to secure conservation objectives. Potential sources of co-financing that will be explored include FRIM and the Terengganu State.

Output of Activity 6:

- (i) GEF project proposal and project brief developed.

3. ELIGIBILITY

Project Eligibility Criteria

The project is eligible for GEF funding based on the following criteria:

- Malaysia's forests are among the most diverse in the world and is extremely important globally for biodiversity. There is a strong threat to these forests due to unsustainable management and conversion, and without strong measures to address the underlying issues of forest management, the loss of forests and biodiversity will continue.
- Constraints to forest conservation, such as harvesting and conversion – these activities will continue in the future, but by addressing the underlying causes of unsustainable forest management, their impact can be reduced.

- The project is strongly country-driven, with enthusiastic support from State government and relevant federal agencies.
- The project is totally consistent with the policies and national plans of Malaysia.

Global Benefits

Global benefits derived from the project will include:

- Conservation of a wide range of threatened fauna and flora,
- Maintain habitats of currently unthreatened species,
- Development of a process of strategic coordination of production forest conservation relevant to many other areas, in the region and other countries.

*The two candidate research sites represent some of the few remaining areas of high-quality forest for several forest types unique to, or largely confined to Peninsular Malaysia. In the case of the favoured Terengganu site, these include the lowland dipterocarp forest of the "Riau pocket", with its extremely high level of endemism among tree species (60%), and the unique kapur forest dominated by *Dryobalanops aromatica*. In the case of the alternate Perak site, the lowland dipterocarp forest represents a unique association of Malesian and Thai-Burmese floristic elements, resulting in high endemism. At both sites, these unique or unusual forest types support faunal associations of similar global significance.*

While the candidate sites themselves contain globally significant biodiversity, the global benefits of the project will extend to other sites where the planning and management options identified through the project can be applied to ensure conservation of globally significant biodiversity in a productive landscape.

Incremental Costs

An analysis of the Incremental Costs associated with the full project will constitute part of the output under Activity 5, above, i.e. full preparation of a project proposal. The realistic baseline is determined by the national structures and conservation measures already established by the Malaysian Government. The sustainable development baseline will be developed during the PDF-B and used to calculate the incremental funding required to remove barriers to effective application of sustainable structures and measures at forest sites that harbor globally significant biodiversity. The GEF Alternative will, thus, bring global benefits through better on-the-ground biodiversity conservation measures, improved public understanding of biodiversity and forests, and greater institutional capacity to achieve these ends.

4. NATIONAL LEVEL SUPPORT

The project will receive strong support of policy makers as it directly contributes to achievement of Malaysia's *Vision 2020* which aims at making Malaysia a fully industrialized nation by the year 2020. This Vision will be achieved through well-planned

and executed strategies which will promote economic, social and cultural progress without compromising the health of the environment.

The project will also receive strong implementation support as it conforms with the environmental objectives stated in the Seventh Five-year Development Plan of Malaysia (1996-2000) which is guided by the various other policies such as the National Policies on Biological Diversity, Agriculture and Forestry. In broad terms, the Seventh Malaysia Plan aims at promoting economic, social and cultural progress through environmentally sound sustainable development. As a part of the Forestry Sector Strategy, the Plan calls for "consideration of environmental impacts, importance of biological diversity and genetic resources."

The National Policy on Biological Diversity aims to conserve Malaysia's biological diversity and to ensure that its components are utilized in a sustainable manner for the continued progress and socio-economic development of the nation. Included in the policy is an Action Plan that outlines the strategies to be adopted to conserve biological diversity. Malaysia has also amended the National Forestry Act to strengthen capacity to conserve forests and the National Forestry policy to accord greater emphasis towards the protection of the environment and the conservation of biological diversity. The government has allocated significant financial resources towards the management of forest resources which includes more than \$US 10 million in related research and development activities.

Malaysia has demonstrated its commitment towards environmentally sound sustainable development. Malaysia has ratified the Convention of Biological Diversity, and was the first Chairman of the Commission on Sustainable Development which monitors Agenda 21. In addition, Malaysia being a member to ITTO, is committed to achieving ITTO Year 2000 Objective. A National Committee on Sustainable Forest Management with representation from all relevant forestry agencies has been established to ensure Malaysia is able to achieve sustainable forest management.

The Forest Research Institute of Malaysia (FRIM) is in a good position to head and implement the project efficiently. It is the national R&D Institution and has a pool of skilled multi-disciplinary staff. FRIM is also committed and has identified a team of scientists to implement the project in Terengganu (or Perak). The Ministries of Primary Industries and Science, Technology and Environment are in support of the Project. Besides all the above, the Federal Government is committed to sustainable forest management practices, and has gone ahead with the implementation of Certification of Forest Management, which activities are coordinated by the newly formed agency, the National Timber Certification Centre. The management prescriptions coming of the present Project, if they prove to be sound from both the production and conservation angle, would be readily adopted into the Criteria and Indicators for Sustainable Forest Management being formulated and tested for Malaysia at present.

Besides all the above, the results and outcomes of the project will form the basis for formulating and making follow-up policy recommendations to the relevant state and national planning authorities for adoption of more environmentally sound sustainable forestry practices that include better protection of biodiversity.

The private sector will play a very significant role in the project. Both candidate sites are within concession areas of private sector forestry companies. In Terengganu, the site is located in the concession area of the Terengganu State Timber Corporation, which has a lease of 120,000 ha for 25 years with possibility of further extension. The Corporation is known to be progressive and is currently cooperating with FRIM in the development of low impact logging techniques. With markets in developed countries, the Corporation is required to obtain Certification for its timber products. It is therefore committed to adopting forest management guidelines following ITTO Year 2000 sustainable forest management objectives. With this in view, the Corporation, which is known to be progressive, has an MOU (Memorandum of Understanding) with FRIM, and is currently seeking FRIM's assistance in the development of low impact logging techniques, rehabilitation of degraded sites, and in developing minor forest produce for local communities. In the planning phase of the PDF-B, a team of researchers of FRIM and Harvard University, visited the Corporation and the State Forest Department to assess their interest and participation. Both of the institutions showed strong interest to participate in and contribute to proposed research activities in principle. Specific areas of cooperation will be quantified during the planning phase of research.

In Perak, the concession holder is the Perak Integrated Timber Complex Sendirian Berhad (PITC), a subsidiary of the Perak State's Economic Development Corporation. PITC is required to manage its 50,000 ha forest concession in Temenggong Forest Reserve on a sustainable basis. Among PITC's objectives are:

- (i) to manage the forest resources in compliance to internationally recognized criteria and indicators for continuous production of forest products;*
- (ii) to enhance public awareness on the environmental and conservational roles of forests; and*
- (iii) to seek internationally recognized and FSC-accredited Certification.*

PITC fully acknowledges the new requirements needed to attain sustainable forest management in its Concession. The agency has sought assistance from FRIM in the implementation of such sustainable practices, supported by the State Forest Department which oversees the management of the Concession. FRIM has already extended considerable amount of expertise and knowledge to develop the overall management plan for the Forest Reserve, as well as annual working plans. PITC has in return agreed to support FRIM's research in management.

1. JUSTIFICATION FOR PDF-B GRANT

As noted in the previous section, extensive work has been done in Malaysia with national funding, to establish sustainable management standards and ensure conservation of biodiversity. These efforts risk failure unless underlying causes of unsustainable

management are addressed including lack of capacity and scant information on opportunity costs of different land use systems. In addition, the further consultation to refine methodologies for biodiversity and forest harvesting need to be undertaken.

The project concepts and approach are fully consistent with and would contribute to developing methodology and demonstration material recommended in CIFOR and IUFRO (1999) and Pearce (1999). The project would add to knowledge base on integrated forest management practices including timber production and on biodiversity. Side by side, the existing and new forest management systems will be experimented and evaluated with respect to their impacts on timber production, species diversity, soil characteristics and seedling regeneration, carbon intake, water and wildlife. In this respect, the project objectives are similar to that of Pearce (1999).

The project would promote automatically Government of Malaysia's efforts in enhancing technical skills, policies, regulations, laws and capacity in the country to implement sustainable forest management. In this regard, the project's aims are consistent with specific recommendations of CIFOR and IUFRO (1999) paper on "Biodiversity Conservation in Managed Forests" (see Section 5.7: Specific proposals).

6. ITEMS TO BE FINANCED

The central coordinating team will contribute to all 6 major activities. Each expert consultant would provide input into several activities. Therefore, some flexibility is needed in the budget. The UNDP budget is attached as annex 6.

| Activity | Item | Total Cost | GEF Contribution | Govt cash Contribution | Govt in-kind contribution |
|----------|--|------------|------------------|------------------------|---------------------------|
| 1 | Workshops, planning & Consultative meetings | \$21,160 | \$19,210 | \$1,950 | - |
| 2 | Methodology & Guidelines | \$73,690 | \$58,690 | - | \$15,000 |
| 3 | Site surveys & studies | \$106,070 | \$63,320 | - | \$42,750 |
| 4 | <i>Training need assessment</i> | \$16,430 | \$11,810 | \$4,620 | - |
| 5 | <i>Incremental assessment/calculations</i> | \$16,430 | \$11,810 | \$4,620 | - |
| 6 | <i>Preparation of project brief and project document</i> | \$36,130 | \$31,510 | \$4,620 | - |
| Total | | \$269,910 | \$196,350 | \$15,810 | \$57,750 |

7. EXPECTED DATE OF PREPARATION COMPLETION

It is expected that PDF-B activities would begin as soon as possible after approval of the grant, and would take twelve months to complete. Provisional dates suggested are April 2000-March 2001. It is estimated that the project brief for the full project will be submitted to the Council in June 2001. A plan of operations and sequence of various activities is given in Annex 1.

An overall plan of action will be as follows follows:

| Activity | Period in Months from the Project Start | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|--|--|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | | |
| Stakeholder Participatory Consultations | ■ | ■ | ■ | | | | ■ | ■ | | | | |
| Guidelines and Methodology Development | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | |
| Site Surveys and Studies | | ■ | ■ | ■ | ■ | ■ | ■ | | | | | |
| Identification of Training Needs | | | | ■ | ■ | ■ | ■ | | | | | |
| Incremental Cost Assessment/Calculations | | | | | | ■ | ■ | ■ | | | | |
| Preparation Of Project Brief and Proj Document | | | | | | ■ | ■ | ■ | ■ | | | |

8. SPECIAL FEATURES

The present project represents one of the first attempts anywhere in the world to put the theory of sustainable forestry for biodiversity conservation into practice. It is particularly relevant, given the current state of forest management and questions about economics of forest conversion versus sustainable forest management.

But, it does not represent a “top down” approach, since an essential part is the development of integrated management plans at specific sites, where participation of local stakeholders will be actively sought. The project has excellent prospects of being implemented successfully because of the strong commitment and support of the government as well as the presence of strong institutional linkages.

9. INSTITUTIONAL DESCRIPTIONS AND LINKAGES

Forest Research Institute Malaysia (FRIM)

FRIM is the national Institute responsible for all research and development activities relating to the conservation and sustainable management of forest resources. It was first established as the Forest Research Institute in 1929 under the wings of the Forestry Department Peninsular Malaysia and became a statutory body named FRIM in 1985. Its primary functions include:

- To conduct and advance research towards development of forestry and forest industrial sector,
- To obtain and disseminate information regarding the management and development of forestry, forest products and their utilization,
- To coordinate research activities related to forestry and forest utilization, and to create cooperation and linkages with organizations outside the country for the above matters.

The key areas for research, development and extension for FRIM are natural and plantation forest management, environmental sciences and biological diversity, forest products utilization, chemical products, forest economics and medicinal plants.

Stakeholders

Governmental, private and non-governmental institutions are involved including Ministries of: Primary Industries, Science, Technology and Environment, Economic Planning Unit (External Assistance Section, Regional Economic Section, and Agriculture Section), State Government of Terengganu (or Perak), Forestry Department Peninsular Malaysia, and the Terengganu (or Perak) State Forestry Department, University of Malaya, and concerned NGOs such as World Wildlife Fund (WWF) and Malaysian Nature Society (MNS), as well as international organizations such as UNDP and FAO. In addition, the private timber concessionaires and the surrounding communities in Terengganu (or Perak) where the project will be implemented will also be involved.

Bilateral donors

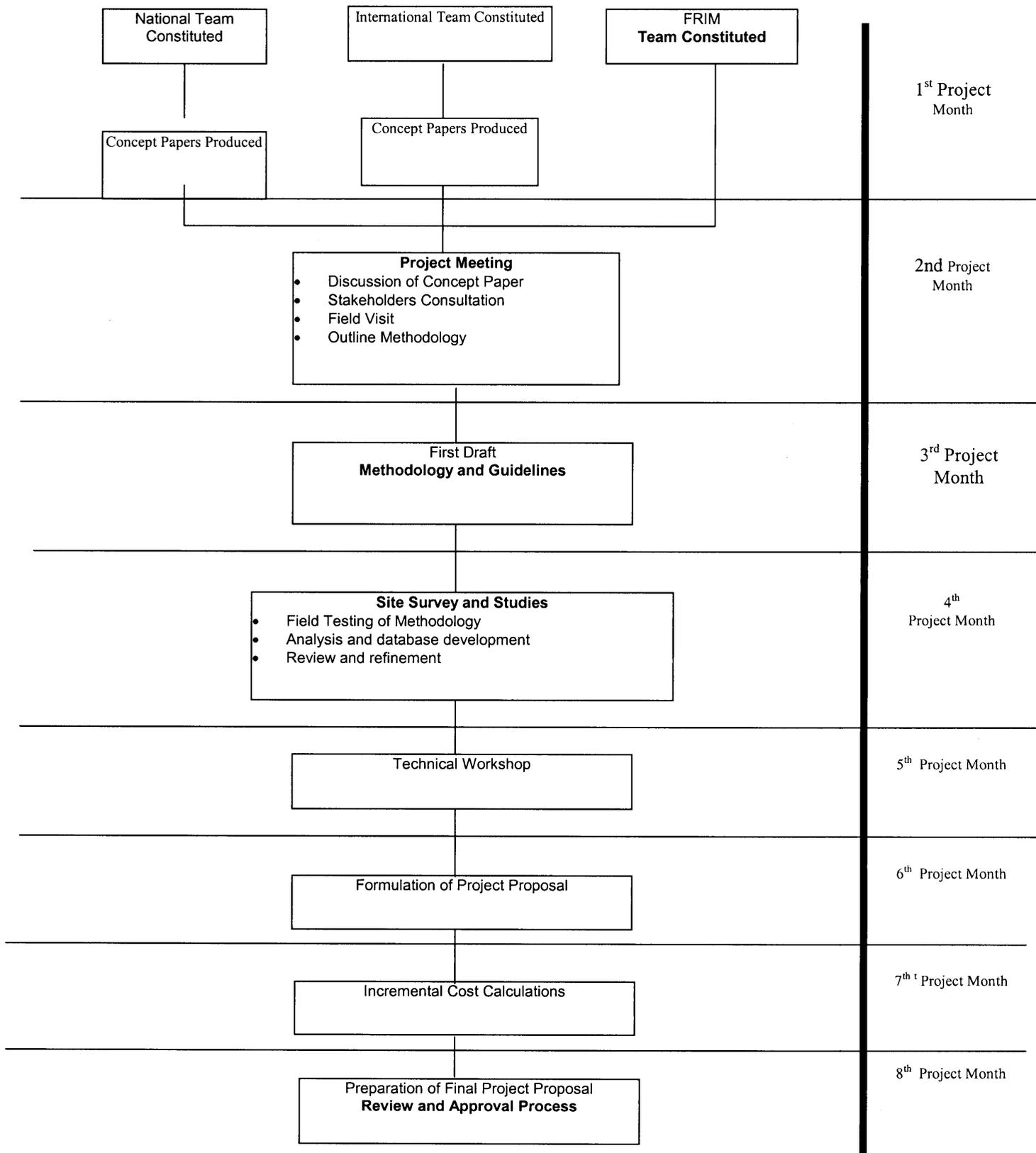
Specialized International Institutions such as the Center for International Development, Harvard University and the Forest Service of the United States Department of Agriculture and the Japanese International Corporation Agency have indicated interest in contributing towards the project planning and implementation.

References

CIFOR and IUFRO. 1999: Biodiversity Conservation in Managed Forests, A paper by Center for International Forest Research and International Union for Forestry Research organizations.

Pearce, D. 1999: Is Financing for Sustainable Forest Management Different to Traditional Forest Financing, Workshop on the Financing of Sustainable Forest Management London.

Annex 1
Plan of Operation and Sequence of Activities (Flow Chart)



Annex 2. UNDP/GEF Targeted research programmatic strategy for biodiversity-friendly sustainable logging in tropical humid forests

Protected areas are a vital component of biodiversity conservation in tropical humid forests, but there are two very significant reasons why protected areas alone cannot provide adequate protection of globally significant biodiversity. Firstly, most protected areas are designated not on the basis of the biodiversity value of the area, but rather on the basis of low alternative (economic) values. Secondly, protected areas will never constitute more than a small proportion of the total area of tropical humid forests. Consequently, biodiversity conservation in production forests is a very important issue. The development and application of methods to maximize biodiversity conservation in production forests will thus provide significant global environmental benefits.

The STAP is currently embarking on a review of the “state-of-the-art” of low impact logging practices. However, a number of key issues that are significant in defining the current situation where logging techniques are highly damaging and non-sustainable. These include:

- a) A lack of scientific understanding of the impacts of logging on biodiversity, combined with an absence of practical assessment techniques that can be applied locally to plan biodiversity conservation at the level of the forest management unit.
- b) A lack of rational, quantitative methods to define when the economic returns from logging outweigh the global environment benefits of not logging. Without such valuation methods, it is not possible to determine when integration of production and conservation is possible and desirable, and when segregation of these two aspects is necessary. A closely related issue concerns economic incentives to address the fact that costs are incurred locally, but benefits are global. A lack of understanding of the decision making process at the forest concession level also precludes the design of effective incentives to promote biodiversity conservation.

These issues are inter-related and all need to be resolved in order to secure biodiversity conservation in production forests. However, the magnitude of the research questions associated with these issues is so great that it is not practical to address all of them through a single project. A large number of institutions with differing scientific strengths are required to provide solutions, and coordination on a single project site would pose insurmountable logistic problems.

Consequently, UNDP/GEF is working with numerous research partners to design two inter-related research projects, to be implemented in Malaysia and Indonesia, which together will provide solutions to the problems posed above. Co-ordination between the two projects is promoted not through duplication of activities on different sites, but through overlap of research questions, combined with an active, UNDP-mediated information exchange activity.

Briefly the two related research projects are:

- a) **Conserving biodiversity in hill-dipterocarp forests of East Kalimantan** implemented by WCS and CIFOR at Bulungan, East Kalimantan, Indonesia. This project will focus on the first of the research issues listed above, i.e. planning for biodiversity conservation at the level of the forest management unit. It is expected that this project will be funded through the MSP funding window.
- b) **Practical methods for assessing and sustaining biological diversity in production forests in the tropics** implemented by FRIM, HIID and Counterpart International at two sites in Malaysia, namely the Danum Valley, Sabah and a site in Terengganu state. The focus of this project will be on the second research issue, namely valuation techniques and landscape-level planning of integration/segregation of production and conservation goals. The inclusion of two sites, promoting generalization of the results, will likely make this a Full Project.

UNDP/GEF PROPOSAL FOR PDF BLOCK B

Terms Of Reference For National Implementing Agency To Develop A GEF Project Brief, And A Draft GEF Full Project Document On Conservation Of Biological Diversity Through Sustainable Forest Management Practices In Malaysia

Background

The Government of Malaysia has requested UNDP GEF for supporting research, of global applicability, on impact of alternative harvesting practices on biodiversity in hill forests; and its application in the State of Terengganu or Perak to minimize the loss of biodiversity through the choice of appropriate harvesting techniques. The project should also establish whether—compared to conventional systems of logging- sustainable multipurpose management systems, incorporating total production and also service values of forested areas are economically as well as environmentally preferable.

The objective of this Project Development Fund-B (PDF-B) is to assist the government of Malaysia, specifically FRIM as the national implementing agency, in undertaking necessary research for formulating and finalizing a GEF project brief and a GEF full project document for GEF financing using the incremental cost and logical framework approach. The project will be implemented in a forest concession area in Perak or Terengganu. FRIM is in a good position to implement the project as it is the national R&D Institution and has a pool of skilled multi-disciplinary staff. FRIM is also committed and has selected a team of scientists to implement the project.

Scope of Work

The PBF-B will be undertaken by FRIM as the national implementing agency. FRIM's assignment will be to develop the GEF project brief and a GEF full project document for possible GEF financing on the project entitled "Conservation Of Biological Diversity Through Sustainable Forest Management Practices In Malaysia". The PDF-B will be for a duration of 9 months.

FRIM may hire local and international consultants to assist in the implementation of the activities and the completion of the full project proposal. FRIM will work closely with the relevant stakeholders particularly the Forestry Department Peninsular Malaysia, the State Forestry Department of Terengganu or Perak, and the forest concessionaire KPKK Terengganu or Perak ITC.

The PDF-B will involve the implementation of the following activities:

Stakeholders Consultations

This activity aims at securing participation of all stakeholders, national as well as local. The first required action is to finalize site selection by selecting between the two candidate sites located in Terengganu and Perak. This activity will also review the results of the participatory consultations to identify at a national level the role of the current legislative and regulatory framework in determining the impact on biodiversity and to suggest options/recommendations for alternative regulatory interventions.

Guidelines and Methodology Development

This activity will provide the necessary sound and cost-effective technical and technological inputs to achieve the project goals such as the methods for rapid assessment of biological diversity, techniques for their economic valuation, field experimental designs and GIS databases.

Site Surveys and Studies

Some of the activities to be implemented at the selected study site will include:

- Survey and mapping for the biological diversity of the study site
- Assessment of the ecological and economic impacts of conventional and low impact harvesting methods at the study

Identification Of Training Needs

Needs for training and capacity building will be identified as it is an integral activity of the project not only to ensure that the current activities are implemented effectively but more importantly that the work that has been achieved will be continued by competent local staff.

Incremental Cost Calculations

An analysis of the incremental costs associated with the full project will constitute part of the output for the preparation of a GEF project proposal. The sustainable forest development baseline will be developed during the PDF-B and used to calculate the incremental funding required to implement sustainable management and conservation of biological resources.

Preparation of Project Proposal

The implementing agency will take the lead in preparation of this project proposal, which will essentially be a framework for more detailed technical documents produced under the other activities. The proposal will draw from Activities 1 to 5 above to include all

essential elements including: a logical framework analysis with performance indicators for each project output

Outputs

The main output expected to be delivered by the FRIM as the national implementing agency will be the GEF project proposal and project brief. However, as a result of the implementation of various activities outlined above some of the important outputs include the following:

1. A report on the participatory workshops, outlining
 - the position of stakeholders towards the full project goals and objectives;
 - report on the consensus of project scope and activities;
 - discussion of the role of the forestry sector to the fulfilment of the biodiversity policy; and
 - identification of causes of unsustainable management and loss of biodiversity.

2. The following methodologies and guidelines developed:
 - Description of rapid survey and mapping method(s) for ecological assessment of the biological diversity of the study sites, with special attention to:
 - the location of sensitive and critical areas for biodiversity conservation,
 - landscape level planning of protected areas,
 - comprehensive fauna and flora baseline project analysis,
 - a spatial description of the disturbance regimes;
 - Description of method(s) for the economic valuation of the biological diversity from national, regional and global perspectives;
 - Description of methods for the economic valuation, where possible and as appropriate, of other services from national, regional and global perspectives;
 - Experimental design for assessing the impact of conventional and low impact harvesting methods on biological diversity and other environmental services;
 - Description of database and geo-referenced information system on the forest resources and the biological diversity; and
 - Guidelines for the implementation of site surveys and studies in consultation with the national consultants of activity 3 of PDF-B

3. Completion of site survey and studies that will produce
 - A geographic information system database on the forest resources and the biological diversity;
 - A total valuation of forest benefits associated with the alternative management regimes including biological diversity and other environmental functions;
 - A public awareness plan on the conservation of biological diversity; and

- An overall comprehensive report to evaluate the appropriateness of the methodology and techniques proposed by the international consultants. The report may also include recommendations for further improvements of the methodologies and techniques
4. Report on need assessment of training required by different target groups.
 5. Incremental costs determined and co-financing opportunities identified

Annex 3b

UNDP – GEF /GOVERNMENT OF MALAYSIA PROJECT DEVELOPMENT FUND-B

Conservation of Biological Diversity through Sustainable Forest Management Practices in Malaysia

Terms of Reference of Activity 2: Guidelines and Methodology Development

General Background

Over the period 1970 to 1992, natural forest area of the country was reduced by 19.3 percent, mainly in conversion to the agricultural crops, oil palm and rubber. The forests cleared were predominantly lowland dipterocarp forests and, to a lesser extent, swamp forests, both peat and freshwater, and mangrove forests. Very little of the lowland forests, the largest reservoir of diversity of terrestrial flora and fauna, remain now and these require total protection, as do the remaining swamp and mangrove forests.

With the loss of lowland forests, timber harvesting has now moved uphill. The terrain, equipment and current harvesting practices, are all bound to result in depletion of forest resources for future, along with heavy loss of biological diversity as well as increased sedimentation unless appropriate forest management practices are introduced.

Project Background

With the above in view, the Government of Malaysia has requested UNDP-GEF for supporting research, of global applicability, on impact of alternative harvesting practices on biodiversity in hill forests, and their application in the Terengganu (or Perak) State to minimize the loss of biodiversity through the choice of appropriate harvesting techniques. The project should also demonstrate that compared to conventional systems of logging, sustainable management systems, incorporating total values of forests are economically and environmentally preferable. The project will provide instructions in the methodologies to trainees in Malaysia and the region and contribute to building of a center of excellence for development of technical skills, policies, regulations, laws, and capacity in Malaysia to implement sustainable forest management.

Project Development Fund-B

The Project Development Fund-B (PDF-B) is intended to prepare a project proposal for funding by GEF for the development of techniques to incorporate biological diversity assessment in conventional forest management planning. The PDF-B includes the following activities: stakeholder(s) consultations, guidelines and methodology development, site surveys and studies, identification of training needs, incremental cost calculations, and preparation of the project proposal.

Activities and Outputs

This project component is one of the six included in PDF-B. It is designed to develop methods and guidelines and associated costs to help formulation of a realistic project proposal. The main outputs expected are as follows:

- i) Description of rapid survey and mapping method(s) for ecological assessment of the biological diversity of the study sites, with special attention to:
 - the location of sensitive and critical areas for biodiversity conservation,
 - landscape level planning of protected areas,
 - comprehensive fauna and flora baseline project analysis,
 - a spatial description of the natural disturbance regime;
- ii) Description of method(s) for the economic valuation of the biological diversity from national, regional and global perspectives;
- iii) Experimental design for assessing the impact of conventional and low impact harvesting methods on biological diversity and other environmental factors;
- iv) Description of database and geo-referenced information system on the forest resources and the biological diversity; and
- v) Guidelines for the implementation of site surveys and studies in consultation with the national consultants of activity 3 of PDF-B.

Towards the end of this activity, a technical workshop will be organised with a view to discuss the proposed methodology. It will involve relevant experts from local agencies such as FRIM, the Forestry Department, Department of Environment, NGOs, as well as international experts. The workshop will elaborate on aspects such as techniques and methodologies of forest management and ecological and economic assessment and valuation of biological diversity and alternative forest management systems.

Main inputs/job description

The requirement of experts, job description and duration of work is given Table below:

| Specialist | Responsibility | Duration work-months |
|--|---|-----------------------------|
| 1. Inventory & Forest Management Planning Specialist | i) Survey methods for management plan inventories including assessment of biological diversity and environmental functions of forests, ii) Landscape level planning of production/conservation areas, Guidelines for the implementation of site surveys and studies. | 2 |
| 2. Ecologist | i) Experimental design for assessing the impact of conventional and low impact harvesting methods on biological diversity and other environmental factors, ii) Comprehensive baseline fauna and flora analysis, iii) A spatial description of the disturbance regime and guidelines for the location of sensitive and critical areas for biodiversity conservation. | 2 |
| 3. Economist | i) Method(s) for the evaluation of the total functions of forests including biological diversity and other environmental functions from national, regional and global perspectives. | 1 |
| 4. Statistician/GIS | ii) Survey and experimental design and methods of data analysis, iii) Database and geo-referenced information system on the forest resources and the biological diversity. | 1 |

Duration

Three months from the date of award of contract.

Qualifications

All the studies included under this activity may be contracted to one institution having proven capability to implement all items of the research. The contracting institution should have extensive research experience and established reputation for research on issues related to problems under investigation including assessment of biological diversity, evaluation of environmental functions of forests, system design and modeling.

Annex 3c

UNDP – GEF /GOVERNMENT OF MALAYSIA

PROJECT DEVELOPMENT FUND-B

CONSERVATION OF BIOLOGICAL DIVERSITY THROUGH SUSTAINABLE FOREST MANAGEMENT PRACTICES IN MALAYSIA

TERMS OF REFERENCE OF ACTIVITY 3: SITE SURVEYS AND STUDIES

General Background

Over the period 1970 to 1992, natural forest area of the country was reduced by 19.3 percent, mainly in conversion to the agricultural crops, oil palm and rubber. The forests cleared were predominantly lowland dipterocarp forests and, to a lesser extent, swamp forests, both peat and freshwater, and mangrove forests. Very little of the lowland forests, the largest reservoir of diversity of terrestrial flora and fauna, remain now and these require total protection, as do the remaining swamp and mangrove forests.

With the loss of lowland forests, timber harvesting has now moved uphill. The terrain, equipment and current harvesting practices, are all bound to result in depletion of forest resources for future, along with heavy loss of biological diversity as well as increased sedimentation unless appropriate forest management practices are introduced.

Project Background

With the above in view, the Government of Malaysia has requested UNDP-GEF for supporting research, of global applicability, on impact of alternative harvesting practices on biodiversity in hill forests, and their application in the Terengganu (or Perak) State to minimize the loss of biodiversity through the choice of appropriate harvesting techniques. The project should also demonstrate that compared to conventional systems of logging, sustainable management systems, incorporating total values of forests are economically and environmentally preferable. The project will provide instructions in the methodologies to trainees in Malaysia and the region and contribute to building of a center of excellence for development of technical skills, policies, regulations, laws, and capacity in Malaysia to implement sustainable forest management.

Project Development Fund-B

The Project Development Fund-B (PDF-B) is intended to prepare a project proposal for funding by GEF for the development of techniques to incorporate biological diversity assessment in conventional forest management planning. The PDF-B includes the following activities: stakeholder(s) consultations, guidelines and methodology

development, site surveys and studies, identification of training needs, incremental cost calculations, and preparation of the project proposal.

Activities and Outputs

This is a follow-up of Activity 2 where international consultants will be involved in the development of methodologies and protocols for the ecological appraisal and economic valuation of total forest resources. Consequently, Activity 3 will involve the implementation of these methods and protocols developed.

A suitable site will be selected for the implementation of this activity on a pilot scale. The State of Terengganu (or Perak has been identified as a possible location, on the basis of a preliminary technical evaluation, for special studies and demonstration purposes in this project. The selection of specific sites will be based on a broad range of criteria, which include among others considerations of uniqueness of biodiversity represented in the sites, and willingness of stakeholders, including local communities, to participate.

Activities to be implemented at the study site will include the following:

- i) Survey and mapping for the biological diversity of the study site, with special attention to:
 - comprehensive baseline fauna and flora analysis,
 - the location of sensitive and critical areas for biodiversity conservation,
 - landscape level planning of protected areas,
 - spatial description of the disturbance regimes;
- ii) Assessment of the ecological and economic impacts of conventional and low impact harvesting methods at the study site focussing on:
 - timber harvesting,
 - forest rehabilitation,
 - species diversity,
 - soil characteristics and seedling regeneration,
 - carbon intake,
 - water,
 - wildlife.

The following are the main outputs:

- i) A geographic information system database on the forest resources and the biological diversity;
- ii) A total valuation of forest benefits associated with the alternative management regimes, including biological diversity and other environmental functions;
- iii) A public awareness plan on the conservation of biological diversity; and
- iv) An overall comprehensive report to evaluate the appropriateness of the methodology and techniques proposed by the international consultants. The report

may also include recommendations for further improvements of the methodologies and techniques.

Inputs

The job description and duration of national consultants is given in the Table below. It would be essential to award the consultancy to an established institution with good record of research and development capabilities in the field of forestry covering all aspects described above. This will facilitate coordination and implementation of the activities as well as training of staff and the transfer of technology.

The national consultants will work closely with the international consultants and will have to study the reports on the methodologies and protocols developed by the international consultants to ensure its effective implementation in the pilot study area. He/she will be responsible to the coordinator of the project in FRIM.

| Consultant | Responsibilities | Duration |
|-----------------------------|--|----------|
| Team Leader /Silviculturist | i) Will take a lead role in the implementation of the all activities in the pilot area, ii) Supervise field operations and provide technical inputs on relevant fields of expertise, iii) Preparation of an overall report on the implementation of the methodologies and techniques developed, iv) Prepare appraisal reports by each consultant. | 3 months |
| Botanist | v) Develop baseline information on the flora of the site, vi) Study the impact of alternative management regimes on the plant biodiversity of the area. | 1 month |
| Zoologist | vii) Develop baseline information on the fauna of the site, viii) Study the impact of alternative management regimes on the animal biodiversity of the area. | 1 month |
| Ecologist | ix) Study the impact of alternative forest management regimes on the soils and regeneration capacity of the site. | 1 month |
| Hydrologist | x) Study the impact of alternative forest management regimes on the hydrological status of the catchment. | 1 month |
| GIS Specialist | xi) Undertake data analysis and develop an operational GIS database. | 1 month |
| Economist | xii) Undertake an economic evaluation of the alternative management regimes in respect to biological diversity and other environmental functions. | 1 month |

Duration

Three months from the date of award of contract.

Qualification

At least a degree in relevant fields of expertise with at least 5 years of working experience in that field. A good understanding on the issues of sustainable forest management both at the local and global levels. Able to work as team in the implementation of the activities in the field and the preparation of the overall report.

Annex 3d

UNDP – GEF /GOVERNMENT OF MALAYSIA

PROJECT DEVELOPMENT FUND-B

CONSERVATION OF BIOLOGICAL DIVERSITY THROUGH SUSTAINABLE FOREST MANAGEMENT PRACTICES IN MALAYSIA

TERMS OF REFERENCE OF ACTIVITY 4:

Identification of training and capacity building needs

General Background

Over the period 1970 to 1992, natural forest area of the country was reduced by 19.3 percent, mainly in conversion to the agricultural crops, oil palm and rubber. The forests cleared were predominantly lowland dipterocarp forests and, to a lesser extent, swamp forests, both peat and freshwater, and mangrove forests. Very little of the lowland forests, the largest reservoir of diversity of terrestrial flora and fauna, remain now and these require total protection, as do the remaining swamp and mangrove forests.

With the loss of lowland forests, timber harvesting has now moved uphill. The terrain, equipment and current harvesting practices, are all bound to result in depletion of forest resources for future, along with heavy loss of biological diversity as well as increased sedimentation unless appropriate forest management practices are introduced.

Project Background

With the above in view, the Government of Malaysia has requested UNDP-GEF for supporting research, of global applicability, on impact of alternative harvesting practices on biodiversity in hill forests, and their application in the Terengganu/Perak State to minimize the loss of biodiversity through the choice of appropriate harvesting techniques. The project should also demonstrate that compared to conventional systems of logging, sustainable management systems, incorporating total values of forests are economically and environmentally preferable. The project will provide instructions in the methodologies to trainees in Malaysia and the region and contribute to building of a center of excellence for development of technical skills, policies, regulations, laws, and capacity in Malaysia to implement sustainable forest management.

Project Development Fund-B

The Project Development Fund-B (PDF-B) is intended to prepare a project proposal for funding by GEF for the development of techniques to incorporate biological diversity assessment in conventional forest management planning. The PDF-B includes the

following activities: stakeholder(s) consultations, guidelines and methodology development, site surveys and studies, identification of training needs, incremental cost calculations, and preparation of the project proposal.

Activities and Outputs

Training and capacity building are an important activity of the project not only to ensure that the current activities are implemented effectively but more importantly that the work that has been achieved will be internalized. To achieve this ultimate goal, the need for capacity enhancement of the local staff in planning, management, implementation and R&D should be assessed and appropriate recommendations made.

Output of Activity 4

- i) Report on assessment of training needs for different target groups during the main project phase in order to introduce sustainable forest management practice in the Terengganu (or Perak) State.

Main inputs

The following inputs are foreseen to implement activities described earlier:

One month of consultant's time to make a comprehensive assessment and a report on the subject.

Duration

Three months from the date of award of contract.

Qualifications

The consultant/institution should have both academic distinction and practical experience in planning and implementation of forest management and R&D in developing country environment.

Annex 3e

UNDP – GEF /GOVERNMENT OF MALAYSIA

PROJECT DEVELOPMENT FUND-B

CONSERVATION OF BIOLOGICAL DIVERSITY THROUGH SUSTAINABLE FOREST MANAGEMENT PRACTICES IN MALAYSIA

TERMS OF REFERENCE OF ACTIVITY 5:

INCREMENTAL COST CALCULATIONS AND NEGOTIATION OF CO-FINANCING OPPORTUNITIES

General Background

Over the period 1970 to 1992, natural forest area of the country was reduced by 19.3 percent, mainly in conversion to the agricultural crops, oil palm and rubber. The forests cleared were predominantly lowland dipterocarp forests and, to a lesser extent, swamp forests, both peat and freshwater, and mangrove forests. Very little of the lowland forests, the largest reservoir of diversity of terrestrial flora and fauna, remain now and these require total protection, as do the remaining swamp and mangrove forests.

With the loss of lowland forests, timber harvesting has now moved uphill. The terrain, equipment and current harvesting practices, are all bound to result in depletion of forest resources for future, along with heavy loss of biological diversity as well as increased sedimentation unless appropriate forest management practices are introduced.

Project Background

With the above in view, the Government of Malaysia has requested UNDP-GEF for supporting research, of global applicability, on impact of alternative harvesting practices on biodiversity in hill forests, and their application in the Terengganu (or Perak) State to minimize the loss of biodiversity through the choice of appropriate harvesting techniques. The project should also demonstrate that compared to conventional systems of logging, sustainable management systems, incorporating total values of forests are economically and environmentally preferable. The project will provide instructions in the methodologies to trainees in Malaysia and the region and contribute to building of a center of excellence for development of technical skills, policies, regulations, laws, and capacity in Malaysia to implement sustainable forest management.

Project Development Fund-B

The Project Development Fund-B (PDF-B) is intended to prepare a project proposal for funding by GEF for the development of techniques to incorporate biological diversity assessment in conventional forest management planning. The PDF-B includes the

following activities: stakeholder(s) consultations, guidelines and methodology development, site surveys and studies, identification of training needs, incremental cost calculations, and preparation of the project proposal.

Activities and Outputs

An analysis of the incremental costs associated with the full project will constitute part of the output for the preparation of a GEF project proposal. The sustainable forest management baseline data will be obtained and used to calculate the incremental funding required to implement sustainable management and conservation of biological resources. The GEF alternative will, thus, bring global benefits through better on the ground biodiversity conservation measures, improved public understanding of biological diversity and greater institutional capacity to achieve these ends.

The implementing agency will undertake meetings and discussions with participating national and international institutions to secure matching contributions in cash or kind.

Output for Activity 5:

- i. Incremental costs determined and co-financing opportunities identified.

Main Inputs

One month of a consultant's time.

Duration

Three months from the date of award of contract.

(i)

Qualifications

The consultant should, besides specialisation in economic analysis related to forestry, have proven capability in evaluation of environmental functions of forests. He/she should have international experience in forestry negotiations related to biological diversity and/or climate change and sensitivity to discriminate between national/regional/global benefits arising from the proposed project implementation. Experience in formulation of similar projects for GEF funding will be an important consideration.

The consultant should have skills in negotiating with participating national institution(s) and prospective donors to secure contribution in cash or kind needed for an effective project implementation.

Annex 3f

UNDP – GEF /GOVERNMENT OF MALAYSIA

PROJECT DEVELOPMENT FUND-B

CONSERVATION OF BIOLOGICAL DIVERSITY THROUGH SUSTAINABLE FOREST MANAGEMENT PRACTICES IN MALAYSIA

TERMS OF REFERENCE OF ACTIVITY 6:

Preparation of a GEF project brief and full project document

General Background

Over the period 1970 to 1992, natural forest area of the country was reduced by 19.3 percent, mainly in conversion to the agricultural crops, oil palm and rubber. The forests cleared were predominantly lowland dipterocarp forests and, to a lesser extent, swamp forests, both peat and freshwater, and mangrove forests. Very little of the lowland forests, the largest reservoir of diversity of terrestrial flora and fauna, remain now and these require total protection, as do the remaining swamp and mangrove forests.

With the loss of lowland forests, timber harvesting has now moved uphill. The terrain, equipment and current harvesting practices, are all bound to result in depletion of forest resources for future, along with heavy loss of biological diversity as well as increased sedimentation unless appropriate forest management practices are introduced.

Project Background

With the above in view, the Government of Malaysia has requested UNDP-GEF for supporting research, of global applicability, on impact of alternative harvesting practices on biodiversity in hill forests, and their application in the Terengganu (or Perak) State to minimize the loss of biodiversity through the choice of appropriate harvesting techniques. The project should also demonstrate that compared to conventional systems of logging, sustainable management systems, incorporating total values of forests are economically and environmentally preferable. The project will provide instructions in the methodologies to trainees in Malaysia and the region and contribute to building of a center of excellence for development of technical skills, policies, regulations, laws, and capacity in Malaysia to implement sustainable forest management.

Project Development Fund-B

The Project Development Fund-B (PDF-B) is intended to prepare a project proposal for funding by GEF for the development of techniques to incorporate biological diversity assessment in conventional forest management planning. The PDF-B includes the

following activities: stakeholder(s) consultations, guidelines and methodology development, site surveys and studies, identification of training needs, incremental cost calculations, and preparation of the project proposal.

Activities and Outputs

The activity is expected to result in the full project proposal and project brief to be submitted for GEF. The proposal will draw from Activities 1 to 5 of the PDF-B and include all essential elements such as a logical framework analysis with performance indicators for each project output, an incremental cost analysis, a detailed description of each project site with information on globally significant biodiversity represented therein, underlying causes of biodiversity loss at the site, socio-economic conditions, and a public participation plan.

The output will also include a separate identifying and describing co-financing opportunities for elements that cannot be financed through GEF resources but need to be undertaken as part of the project to secure conservation and development objectives. Potential sources of co-financing will be likewise explored with Terengganu (or Perak) State Government, Federal Government and other major institutions in the country.

Output of Activity 6:

- i) GEF project proposal and project brief developed.

Main inputs

The activity will be implemented by a team of specialists chosen from one of the following three sources with an input of additional one month of consultant's time.

- i) Methodology Development (International),
- ii) Site Survey and Studies (National),
- iii) Incremental cost calculations (International).

Duration

Three months from the date of award of contract.

Qualifications

The qualification of consultants/institutions will be as described under the respective TOR, namely for activities 2, 3 and 5.

Annex 4: Description of candidate sites

Site I. Terengganu:

Forests of the proposed research area form a part of "The Riau Pocket" (so named by E. J.H. Corner of Singapore Botanical Gardens and Cambridge University) known for an exceptional diversity in terms both of the species diversity of the region as a whole and the species richness of individual communities. About 60 % of these species are endemic. The forests of Terengganu contain three major types:

- Kapur forest, in which Kapur (*Dryobalanops aromatica*), is monodominant. It is a unique forest type harboring an exceptional number of endemic species within the Peninsula.
- Lowland dipterocarp forest, differing substantially in species composition from above and exceptionally rich in endemics within the Riau Pocket.
- Hill forest, dominated by seraya (*Shorea Curtisii*), which is the main forest type within the permanent natural forest estate of Peninsular Malaysia.

The site is located in the concession area of the Terengganu State Timber Corporation (known as Kumpulan Pengurusan Kayu-Kayan Terengganu), incorporated as a subsidiary company of the Terengganu State Economic Development Corporation in 1980. It has a lease of 120,000 ha of forests in the State of Terengganu for 25 years with possibility of further extension. The Company is an integrated complex, and associated with the timber concessions, it also has a plywood mill and two sawmills. Besides plywood, the Corporation is a major exporter of doors and panel products to markets in the United Kingdom and the EEC. With such markets, the Corporation is required to obtain Certification for its timber products. It is therefore committed to adopting forest management guidelines following ITTO Year 2000 sustainable forest management objectives.

Site II – Perak Site:

Forests of the proposed research area is located in the Temengor Forest Reserve which lies in the northeastern corner of Perak State, in the borders of Kelantan State to the east and Thailand to the north. The Temengor Forest Reserve which was officially gazetted as a forest reserve in 1991, covers a total area of 148,000 ha, which is about 15% of the Permanent Forest Estate in the State of Perak. This is by far the largest contiguous forest reserve in the State. Another important point for consideration is that this reserve is adjacent to the Belum State Nature Park which has been dedicated for conservation in this State. The Temengor Forest Reserve, like most forests in the area, has exceptionally high species diversity, enriched further by elements from the Thai-Burmese communities. The forests of this border region of Perak contain:

- Lowland dipterocarp forest, with two strong associations, i.e. the red meranti-keruing (*Shorea – Dipterocarpus*) and the merbau-kekatong (*Intsia-Cynometra*) forests. The

region has a strong intrusion of Thai-Burmese elements, giving it a high level of endemism.

- *Hill dipterocarp forest, dominated by seraya (*Shorea Curtisii*). The strong presence of this species, keruing (*Dipterocarpus spp.*) and merbau (*Intsia palembanica*) makes the area particularly rich in timber.*
- *Upper dipterocarp forest, dominated by meranti bukit (*Shorea platyclados*).*

The concession holder is the Perak Integrated Timber Complex Sendirian Berhad (PITC), a subsidiary of the Perak State's Economic Development Corporation. PITC processes logs from this concession for furniture parts, which are supplied to Ivory Pearl Sendirian Berhad for final assembly and packaging.. Under an arrangement with Home and Leisure International (HLI – a United Kingdom corporation), the entire produce will be marketed in the United Kingdom and Europe. PITC is therefore required to manage its 50,000 ha forest concession in Temenggor Forest Reserve on a sustainable basis.

Annex 5: Research Outline

A brief outline of research hypothesis

The main research hypothesis is that: "protocols and policies can be developed for sustainable management of biodiverse forests which are ecologically and economically viable and take into account total value of forest ecosystem, goods as well as services". Specifically this involves:

- Development of rapid survey methods and indices to assess the state of biological diversity at a landscape level and monitoring of changes.*
- Experimental procedures to assess the impacts of different management systems on biodiversity.*
- Test comparisons of areas that have historically been utilized in a wide range of ways.*
- Models to identify the economic trade-offs and complementarities among goods and services and their impacts on biodiversity and ecosystem services.*
- Identification of constraints to adoption of sustainable forest management techniques.*
- Training of an international cadre of researchers on novel approaches of multi-disciplinary management of biodiverse forests.*

Relevance of the proposed research to needs of the GEF

Advice from both the Conference of the Parties to the Convention on Biological Diversity and from the GEF Council has consistently requested the GEF to address issues related to sustainable use and conservation of biodiversity in productive landscapes. In the case of forest ecosystems and logging, this advice has been a catalyst in the preparation of draft guidelines for the GEF on forests and logging, prepared by CIFOR and IUFRO. These guidelines recognize both that conservation of biodiversity in production forests is possible, and also that targeted research is required to elucidate management protocols – especially at the landscape level.

Thus, the research outputs from this project will directly assist the GEF in operationalizing the draft guidelines and any resulting policy statement agreed by the GEF Council. As a result of this project it will be possible to design GEF projects which include a planning and management component in productive forests that results in effective conservation of globally significant biodiversity. In securing this result, the proposed research forms an element of an overall strategy described in Annex 2, above.

Incrementality of the research proposal

Baseline or conventional logging in forest concessions of Malaysia is characterized by a selective system where several valuable species, usually between 10-15 trees, are harvested from a given hectare. However, in the selective logging process, significant damage occurs to the residuals and soils due to factors characteristic of conventional logging such as usage of heavy machinery, limited planning, poor skid trail design, disorganized and poorly constructed roads, and felling random trees that are literally tied together by vines. Under the conventional system, as much as 50 percent of the remaining trees are uprooted or damaged and as much as 40 percent of the soil is disturbed. In addition, dragging the trees through the forest destroys undergrowth plants and exposes the soil to erosion, washing away protective soil cover and surface soil that contain buried dormant seeds.

The current conventional logging practices are unsustainable for the timber industry, but also threaten biodiversity of the ecosystem. Low-impact logging system, recently developed by FRIM, constructively addresses the aforementioned problems through carefully managed and controlled harvesting techniques. The system seems to promise watershed protection, reduced runoff and sedimentation of streams, reduced biodiversity loss, improved wildlife habitat conservation, reduced floods, controlled soil erosion and downstream sedimentation, increased ground water storage, and reduced impact on climate. There is, however, urgent need to develop forest management protocol and forest policy which contribute towards realization of strategic goals stated in the National Policy on Biological Diversity launched in April 1998 with emphasis on improvement of the knowledge base, strengthening of the institutional framework, integration of biological diversity considerations into sectoral planning, building of a center of excellence and development of policies, regulations, laws and capacity in the country. The following are some core concerns, incremental in nature, which the project will investigate:

- *HOW do we value biodiversity versus other uses of the forest?*
- *WHEN should we try to integrate and when should we try to segregate areas for conservation and production (i.e. set aside areas ONLY for conservation or ONLY for production, versus trying to do both on the same site); and*
- *HOW do we manage the forest for multiple values at the landscape scale?*

The project will define general principles for evaluation and management of biodiverse tropical rainforests of Asia with an emphasis on biological diversity (over and above the sustainable timber production); and disseminate this knowledge and information beyond Malaysia (through FRIM) to other countries of the region with a view to promote biological diversity conservation on a regional basis.

Annex 6

**Project Title : Conservation of Biological Diversity through Sustainable Forest
Management Practices in Malaysia**

Project Budget

| BL | DESCRIPTION | APPROVED BUDGET | BUDGET YEAR | |
|--------------|----------------------------------|--------------------|------------------|------------------|
| | | | 2000 | 2001 |
| 11 | International Experts | | | |
| 11.01 | Inventory/Mgt Expert | 15,000.00 | 11,250.00 | 3,750.00 |
| 11.02 | Ecologist | 15,000.00 | 11,250.00 | 3,750.00 |
| 11.03 | Economist | 7,500.00 | 7,500.00 | |
| 11.04 | Statistician/GIS | 7,500.00 | 7,500.00 | |
| 11.05 | Training Consultant | 7,500.00 | 7,500.00 | |
| 11.06 | Incremental Cost Consultant | 7,500.00 | | 7,500.00 |
| 11.07 | Project Preparation Experts(2) | 15,000.00 | 15,000.00 | |
| 11.08 | Inception Workshop Consultant | 8,000.00 | 8,000.00 | |
| 11.99 | Sub-total | 83,000.00 | 68,000.00 | 15,000.00 |
| | | | | |
| 13 | Administrative Costs | | | |
| 13.01 | Research Assistants (8) | 6,720.00 | 5,040.00 | 1,680.00 |
| 13.99 | Sub-Total | 6,720.00 | 5,040.00 | 1,680.00 |
| | | | | |
| 15 | Local Travel | | | |
| 15.01 | Local Travel(Consultants & Asst) | 17,790.00 | 13,343.00 | 4,447.00 |
| 15.99 | Sub-total | 17,790.00 | 13,343.00 | 4,447.00 |
| | | | | |
| 16 | Mission Costs | | | |
| 16.01 | Mission Costs for Experts | 24,730.00 | 18,548.00 | 6,182.00 |
| 16.99 | Sub-Total | 24,730.00 | 18,548.00 | 6,182.00 |
| | | | | |
| 17 | National Consultants | | | |
| 17.01 | Chief Technical Expert | 15,000.00 | 15,000.00 | |
| 17.02 | Silviculturist | 5,000.00 | 5,000.00 | |
| 17.03 | Botanist | 5,000.00 | 5,000.00 | |
| 17.04 | Zoologist | 5,000.00 | 5,000.00 | |
| 17.05 | Ecologist | 5,000.00 | 5,000.00 | |
| 17.06 | Hydrologist/Soil Scientist | 5,000.00 | 5,000.00 | |
| 17.07 | GIS Specilaist | 5,000.00 | 5,000.00 | |
| 17.08 | Economist | 5,000.00 | 5,000.00 | |
| 17.09 | Project Preparation Expert | 7,500.00 | 7,500.00 | |
| 17.99 | Sub-total | 57,500.00 | 57,500.00 | - |

| BL | DESCRIPTION | APPROVED BUDGET | BUDGET YEARS | |
|--------------|---------------------------------|--------------------|-------------------|------------------|
| | | | 2000 | 2001 |
| 33 | In-Service Training | | | |
| 33.01 | Inception Workshop | 810.00 | 810.00 | |
| 33.02 | Methodology/Guidelines Workshop | 800.00 | 800.00 | |
| 33.99 | Sub-total | 1,610.00 | 1,610.00 | - |
| | | | | |
| 53 | Sundry | | | |
| 53.01 | Miscellaneous | 5,000.00 | 2,500.00 | 2,500.00 |
| 53.99 | Sub-Total | 5,000.00 | 2,500.00 | 2,500.00 |
| | Total | 196,350.00 | 166,541.00 | 29,809.00 |



MINISTRY OF SCIENCE, TECHNOLOGY
AND THE ENVIRONMENT, MALAYSIA,
14TH FLOOR, WISMA SIME DARBY,
JALAN RAJA LAUT,
50662 KUALA LUMPUR,
MALAYSIA

Telefon: 2938955
Telex: MOSTEC MA 28154
Telefax: 603-2936006

Our Ref: **KSTAS(S)130.010**
Your Ref: **P001 Jld 8(2)**
Date: **February 2000**

| | |
|--------------------|--|
| RBC'D: 24 FEB 2000 | |
| RRCA | |
| DRR | |
| ADMIN | |
| FINANCE | |
| IT & SVC | |
| PROG. 1 | |
| PROG. 2 | |
| PROG. 3 | |

Admin/GEF/Proposals/26877

Resident Representative
United Nations Development Programme
Wisma UN, Blok C, Komplek Pejabat Damansara
Jalan Dungun, Damansara Heights
50490 Kuala Lumpur
(Attn: Dr. Selva Ramachandran)

Dear Sir,

Conservation of Biological Diversity Through Sustainable Forest Management Practices In Malaysia

I wish to refer to the above and am pleased to submit herewith a proposal on *Conservation of Biological Diversity through Sustainable Forest Management Practices in Malaysia* for support under the GEF programme. The Ministry, as the GEF operational focal point, has undertaken consultations with the relevant agencies and has received unanimous support for this proposal. We therefore endorse this proposal and look forward to your support and early implementation.

With best regards

Yours sincerely,

DR. RAMAN LETCHUMANAN
for Secretary-General,
Ministry of Science, Technology and the Environment