

# CIFOR's MEDIUM TERM PLAN 1998 - 2000



**Forests and People**

## **CIFOR's role in the CGIAR system**

The Consultative Group on International Agricultural Research (CGIAR), established in 1971, is an informal association of public and private sector agencies that supports a network of 16 international agricultural research institutions. The CGIAR Centers are part of a global agricultural research system that seeks solutions to the problems of the world's resource-poor people through the application of scientific research. Although it is a small component of the global research system, the CGIAR plays an important role as a catalyst and a bridge builder. By conducting strategic and applied research on problems of international significance in agriculture, forestry and fisheries, the CGIAR Centers generate outputs of a public nature capable of widespread application. The mission of the CGIAR is:

*Through international research and related activities,  
and in partnership with national research systems,  
to contribute to sustainable improvements in the productivity of agriculture,  
forestry and fisheries in developing countries  
in ways that enhance nutrition and well-being,  
especially among low-income people.*

The Center for International Forestry Research (CIFOR), established in 1993, is the newest of the CGIAR Centers. CIFOR's research partnerships are primarily with national research systems in developing countries, but also include collaborative links with other CGIAR Centers. CIFOR is the principal implementer of the CGIAR's forestry agenda, concentrating its programmes on the conservation, rehabilitation and sustainable utilisation of forests. An associated CGIAR institution, the International Centre for Research in Agroforestry (ICRAF) focuses on the use of trees and shrubs in improving crop- and animal-based agricultural systems.

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Center for International Forestry Research (CIFOR), Bogor, Indonesia



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## List of Acronyms

ANGAP	Association Nationale pour la Gestion des Aires Protégées, Madagascar
ANU	Australian National University, Canberra, Australia
ARI	Advanced Research Institute(s)
ATO	African Timber Organisation
AWB	Asian Wetland Bureau, Bogor, Indonesia
BIOTROP	SEAMEO Regional Centre for Tropical Biology, Indonesia
BOLFOR	Proyecto de Manejo Forestal Sostenible (USAID/Gobierno de Bolivia)
CAB International	Centre for Agriculture and Bioscience International, UK
CARE	Cooperative for American Relief Everywhere, USA
CASER	Centre for Agro and Socio-economic Research, Bogor, Indonesia
CATIE	Centro Agronomico Tropical de Investigación y Enseñanza, Costa Rica
CBD	The Convention on Biological Diversity
CCAB	Central America Forestry Council, Costa Rica
CEDLA	Centrum voor Documentatie Latijns Amerika (Documentation Centre for Latin America), Netherlands
CG (or CGIAR)	Consultative Group on International Agricultural Research, Washington DC, USA
CIAT	Centro de Investigación Agrícola Tropical, Bolivia and Colombia
CIFOR	Center for International Forestry Research (CGIAR), Indonesia
CIMAR	El Centro de Investigación y Manejo de Recursos Naturales Renovables, Bolivia
CIRAD	Centre de Coopération Internationale en Recherche Agronomique pour le Développement, France
CIRAD-Forêt	Departement Forestier du Centre de Cooperation Internationale en Recherche Agronomique pour la Development, Nogent sur Marne, France (formerly Centre Technique Forestier Tropical (CTFT))
CRES	Centre for Resource and Environmental Studies, ANU, Australia
CSIRO	Commonwealth Scientific and Industrial Research Organization, Australia
CTFS	Centre for Tropical Forest Science (STRI), Singapore
DGIS	Directorate-General for International Co-operation, Netherlands
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária, Brazil
EPMR	External Programme and Management Review
ESALQ/USP	Escola Superior de Agricultura “Luis de Queiroz” Universidade de Sao Paulo
FAO	Food and Agriculture Organization of the United Nations, Rome, Italy
FCAP	Facultade de Ciências Agrárias do Pará, Universidade do Para (Faculty of Agricultural Sciences, University of Para), Belém, Brazil
FORDA	Forest Research and Development Agency, Bogor, Indonesia

FRIM	Forestry Research Institute Malaysia
FSC	Forest Stewardship Council, USA
GIS	Geographic information system
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit, Federal Republic of Germany (German Technical Cooperation)
IBAMA	Instituto Brasileiro de Meio Ambiente e Recursos Naturais Renovaveis, Brazil
ICER	Internally Commissioned External Review
ICFR	Institute for Commercial Forestry Research, Republic of South Africa
ICLARM	International Centres for Living Aquatic Resource Management (CGIAR), Philippines
ICRAF	International Centre for Research in Agroforestry (CGIAR), Nairobi
IDRC	International Development Research Centre, Canada
IFAD	International Fund for Agricultural Development, Italy
IFPRI	International Food Policy Research Institute (CGIAR), Washington DC, USA
IAP	Instituto de Investigaciones de la Amazonia Peruana, Peru
IICA	Instituto Interamericano de Cooperacion para la Agricultura (Inter-American Institute for Cooperation in Agriculture), Costa Rica
IICA/PROCOTROPICOS	Programa Cooperativo de Investigacion y Transferencia para los Tropicicos Sudamericanos (regional program co-ordinated by IICA)
IIED	International Institute for Environment and Development, UK
IIMI	International Irrigation Management Institute (CGIAR), Sri Lanka
IITA	International Institute for Tropical Agriculture (CGIAR), Nigeria
IITF	International Insitute for Tropical Forestry, USDA Forest Service, Southern Forest Experiment Station, Puerto Rico
INBAR	International Network for Bamboo and Rattan (IDRC, IFAD) India
INIA	Instituto Nacional de Investigación Agraria, Pucallpa, Perú
INPA	Instituto Nacional de Pesquisa Amazônica, Manaus, Brazil
INRA	Institut National de la Recherche Agronomique, France
INRENARE	Instituto Nacional de Recursos Naturales Renovables, Panama
IPEF	Instituto de Pesquisas e Estudos Florestais (ESALQ/USP), Brazil
IPF	Inter-governmental Panel on Forests
IPGRI	International Plant Genetic Resources Institute (CGIAR, formerly, International Board for Plant Genetic Resources - IBPGR), Italy
IRAD	Institute de la Recherche Agricole pour le Developpement, Cameroon
ISNAR	International Service for National Agricultural Research (CGIAR), The Netherlands
ITTO	International Tropical Timber Organization, Japan
IUCN	The World Conservation Union (formerly the International Union for Conservation of Nature and Natural Resources), Switzerland
IUFRO	International Union of Forest Research Organizations, Austria
LATIN	Lembaga Alam Tropika Indonesia



LDC	Less-developed country
LEI	Lembaga Ekolabel Indonesia, Indonesia
LIPI	Lembaga Ilmu Pengetahuan Indonesia (Indonesian Institute of Sciences)
MOU	Memorandum of Understanding
MTP	Medium Term Plan
NARS	National Agricultural Research Service/System/Systems
NGO	Non-governmental organisation
NTFP	Non-timber forest product
ODI	Overseas Development Institute, UK
ONADEF	Office National de Developpement Des Forets, Yaounde, Cameroon
ORSTOM	Office de la Recherche Scientifique et Technique Outre-Mer, France
PFA	Plant functional attribute
PLANTGRO	Expert system using notional relationships between performance and environmental variables to predict performance of forest plantations on untested sites
SADC	Southern Africa Development Community, Malawi
SEAMEO	South East Asian Ministers of Education Organisation
SEARCA	SEAMEO Regional Center for Graduate Study and Research in Agriculture
SODEFOR	Société de Developpement des Forêts, Côte d'Ivoire
SSY	Senior Scientist Year (CGIAR terminology)
STRI	Smithsonian Tropical Research Institute, Panama
TAC	Technical Advisory Committee of the CGIAR, Italy
TAFORI	Tanzania Forestry Research Institute
TCA	Tratado de Cooperación Amazonica (Treaty for Amazonian Cooperation), Brazil
TFF	Tropical Forest Foundation, Alexandria, Virginia, USA
TIERRA	Taller de Iniciativas en Estudios Rurales y Reforma Agraria, Bolivia
UCA	Universidad Centroamericana, Nicaragua
UFAC	Universidad Federal de Acre, Brazil
ULA	Universidad de los Andes, Venezuela
UNALM	Universidade de La Molina, Lima, Peru
UNEP	United Nations Environment Programme
USDA-FS	United States Department of Agriculture Forest Service
WANA	West Asia and North Africa (a regional designation used by the UN and CGIAR)
WATALA	Keluaga Pencinta Alam dan Lingkungan Hidup (Friends of Nature), Indonesia
WWF	World-Wide Fund for Nature Gland, Switzerland

# CIFOR's MEDIUM TERM PLAN 1998-2000

## THE PROGRAMME

### 1. STRATEGIC OVERVIEW

#### Introduction

**Who Benefits From Better Management of Forests?** Forests and Forestry make a significant contribution to the economies of many developing countries. The contribution to the gross national product of Indonesia is 6%, Malaysia 7%, and in some South American and African countries it is higher still. The average contribution of forests and forestry to the gross national product in tropical developing countries is 2 - 3% but these figures do not reflect the numerous contributions that forests make to human well-being, particularly for poor and rural people. In particular the value of non-timber forest products has been shown in several studies to exceed the value of timber products in local economies, although their value is rarely recorded in national statistics.

The importance of forests in providing employment is also greatly under-estimated in many statistics. Some other industries make major contributions to gross national product on the basis of a tiny labour force, but the contribution from forestry generally comes from a much broader employment base. Again some limited studies by the International Labour Organization show that forest-related activities frequently contribute at least 10%, and sometimes as much as 20%, of paid employment in developing countries. Much of the income and employment generated in collecting and processing forest products is in the "informal" sector, and hence is invisible to government statistics. Nevertheless, the available data suggest that improved productivity, "sustainability" and, in particular, better equity in the distribution of benefits from forests and forestry can be a major force for improving the well-being of the rural poor in developing countries.

**CIFOR's initial analysis suggests that at least 350 million people in the tropics depend primarily on forests (defined as more than 50% of their total household benefit flow). Independent studies by the World Resources Institute have yielded similar estimates. Over the next five years, one of CIFOR's particular challenges is to better understand who and where these forest-dependent people are, what incentives, policies and technologies could improve their welfare and how this change can be monitored.**

Conventional wisdom among environmental agencies in recent years has tended to stress the view that the solution to “the problem of tropical forest conservation” lay in moving people out of the forest and creating activities for them that are not dependent on forests. However, recent studies have demonstrated that many of these forest-dependent activities are more sustainable and yield greater benefits to people than some of the alternative, low-grade agricultural activities that have replaced them.

**Forests and trees directly and indirectly help feed and contribute to the health care of millions of poor people in developing countries. They are:**

- **a direct source of food, fruits and game meat;**
- **a source of fuelwood with which to cook their food;**
- **watersheds and catchment areas that support and sustain their agricultural productivity;**
- **a source of products for use around the farms, such as fence posts, tools and building materials;**
- **a source of income, either from the sale of products collected in the forest or from employment in the forest, that allows food to be purchased; and**
- **a rich source of local medicines.**

## **The Global Forest Agenda**

International perceptions of the critical issues confronting tropical forests have been the subject of intense scrutiny during the first three years of CIFOR's operations. We have seen the establishment of an Inter-governmental Panel on Forests (IPF). This is a unique attempt to combine science and politics in addressing problems of global environmental significance. The IPF has identified numerous technical and scientific problems which need to be addressed if international actions in support of forest conservation are to be successful. During this period also, the International Union of Forest Research Organizations (IUFRO) has greatly expanded the penetration of its activities into the developing world. It is moving towards being a major force in setting the agenda for tropical forest conservation and management and in providing the networks through which this agenda can be met. The Convention on Biological Diversity (CBD) has also played a parallel role in some aspects of tropical forest science. Most biodiversity exists in tropical forests and the greatest threat to its existence is posed by forest clearance.

CIFOR itself has contributed to the process of defining the world's forestry research agenda. We have held regional consultations in Africa, South America and Asia. We convened a dialogue in Indonesia in December 1994 which brought together leaders from politics, business and science. Throughout this period we have received and been attentive to feedback from donors, national institutions and the non-governmental community.

## **CIFOR's Mandate, Mission and Objectives**

**CIFOR's mandate is very complex.** It has emerged to address the ever-changing landscape of sustainable tropical forest management and its relationship to the people who depend on these forests. It embraces the production of commodities such as timber, fuelwood and charcoal, and non-timber forest products; but has additional responsibilities for natural resource conservation that go beyond commodity production. CIFOR's purview includes the conservation of natural forests, forest habitats and biodiversity in rain forests, woodlands, mangrove and other ecosystems. It extends to the role of forests in global atmospheric and climatic changes that influence human well-being in other ways. This has made the task of formulating a clear operational mandate very challenging.

**CIFOR's Mission is:** *to contribute to the sustained well-being of people in developing countries, particularly in the tropics, through collaborative strategic and applied research and related activities in forest systems and forestry, and by promoting the transfer of appropriate new technologies and the adoption of new methods of social organisation, for national development.*

**CIFOR's Objectives are:**

- 1: *Understanding the biophysical and socio-economic environments of present and potential forest systems and forestry, and their functional relationships.***
- 2: *Creating the potential for sustainable improved productivity of forest systems for the benefit of people in developing countries.***
- 3: *Providing analysis, information and advice to assist in making policy decisions about forests and land use.***
- 4: *Increasing national forestry research capacity.***

The first objective addresses two important needs – to identify forest-related problems of international significance, and to improve and synthesise the essential scientific knowledge base that will enable us to address them. While this will provide our problem diagnosis and knowledge platform, the second objective focuses on innovation in problem solving by devising new technological approaches, while the third leads to new policy and institutional options related to the technical developments. It is through these

combined approaches that we will generate and disseminate improved, feasible management options. The final objective aims to strengthen research capacity at the national level with emphasis on promoting a policy-oriented, people-focused research agenda. All CIFOR projects aim to contribute to capacity enhancement through research collaboration.

## **Contribution to CGIAR Objectives**

The establishment of CIFOR was part of a CGIAR initiative to expand from agricultural commodities into broader issues of natural resources management. In contributing to the goals of the CGIAR as set out in the TAC/CGIAR 1992 Review of CGIAR Priorities and Strategies (TAC Secretariat, FAO, Rome), CIFOR's research agenda is focused on:

- effective management and conservation of natural resources;
- improving the productivity of high-priority trees and their integration into sustainable production systems;
- appropriate policies for increased productivity of crops, livestock, trees and fish and for the sustainable use of natural resources; and
- strengthening human resources and institutions to create greater research capacity in developing countries.

## **CIFOR's Strategic Context**

The closing years of the 20th century have seen major changes in the strategic context of forest management and forest research. Globalisation of economies, privatisation of enterprises and the recognition of the environmental externalities of forest use and misuse are all compounding a research system whose culture has been traditionally based on dealing with "steady-state", locality-specific problems. However, major global changes are having an influence on the paradigm of forest research. A more detailed analysis of some of these changes is presented in CIFOR's Strategic Plan (1996). However, some of these changes have such profound implications for the nature of CIFOR's research programme that it is appropriate to summarise them here. Examples are as follows:

- **Pressures on natural forests for timber harvesting will decline as timber production shifts to high-yielding plantations in the tropics.** Timber production from natural forests has been expanding steadily, but at increasing costs. At the same time, the ability to produce timber at low cost and in strategically advantageous locations through plantation forestry has been increasing rapidly. These changes have been paralleled by an evolution of technology which has raised the tolerance of many end users of timbers to raw materials which meet less stringent technological prerequisites. This leads us to the conclusion that, in general, pressures on natural forests for timber harvesting will decline as the centre of gravity of timber production shifts to high-yielding plantations in the

tropics. This process will be accompanied by a gradual elimination of barriers to trade between countries and internationalisation of the timber industry. Issues of comparative advantage based on climate, soils, accessibility and the prevailing policy environment will assume increasing importance.

- **Pressures for conversion of forests to agriculture will be greatest in Asia, considerably less in South America and minimal in Africa.** Pressures on forests for conversion to agriculture will evolve in coming years, although the extent of the pressure will vary both between and within regions. In general, the pressures for conversion will be greatest in Asia, considerably less in South America and minimal in Africa. CIFOR's research programme has to recognise that it will exist in an environment where there will be rapid shifts between regions and countries in both demands upon, and supplies of, tropical forests and their products. The major consumers of tropical forest products in the future will be the newly industrialised countries of the south including China, India and the emerging economies of the Pacific Rim. South-south trade will be far more important than south-north trade in determining the patterns of forest use.
- **The world's burgeoning population will depend heavily on biomass from tropical forests and plantations to meet energy and industrial raw material needs.** Most predictions of world needs for the products of tropical forests are based upon extrapolations of the needs of the 1990s. It seems, however, that as international awareness of the risks inherent in excessive dependence upon fossil fuels become more broadly recognised, there must be a shift towards the use of renewable sources of energy. Some predictions are now portraying a scenario for the middle of the 21st century where there will be widespread use of biomass from forests and plantations to meet the needs of the world's increasing population for energy and industrial raw materials. The nature of the evolution of the supply and demand for these products will have a major influence on pressures and demands upon forest lands in the 21st century.
- **Dependence of poor people on tropical forests will continue to exist.** In the closing years of the 20th century about 5% of the world's population depend predominantly on natural tropical forests for their livelihood. The nature and the extent of this dependence on forests will certainly change radically in coming decades. However, it would be a mistake to believe that the evolution of industrial economies will lead to a situation where those people who have hitherto been dependent upon forests will adopt new ways of life. History suggests that although the nature of the dependence upon forests, and to some degree its extent, vary greatly, dependence will continue to exist and will be significant for a large portion of the world's population. Understanding the dynamics of these changes represents a major scientific challenge.
- **Biodiversity conservation and forest production can be combined.** The predominant thesis of the "biological diversity" community in the past decade has been that deforestation of the tropics should be halted. Now studies have begun to explore the realities of the impacts of fragmentation and forest disturbance on the maintenance of biological diversity. There is a consensus that the doomsday scenarios of the ecologists of the 1980s are not a basis for planning forest use and pro-



tection. There is an emerging pragmatism which is based upon more express weighting of the values of different components of biodiversity. This is rooted in a recognition that the implications for biodiversity conservation of changes in the area and condition of forests are much more nuanced than had previously been recognised. Research in coming years is likely to demonstrate that biodiversity conservation needs can be met through the allocation of smaller areas of forest to total protection and through the adaptation of management regimes for other forest areas to optimise the combined benefits of biodiversity and production.

The above scenarios represent a subset of the rapidly evolving issues which will have implications for CIFOR's research programme. Research conducted today will have implications in a political and environmental situation which differs from that prevailing at the time when the research is carried out. CIFOR's research has to respond to the needs of forest management and conservation in 5 to 10 years time. It is not adequate that we simply address the needs that may be perceived today. It is our hope that the plan that we are proposing represents an optimal compromise between pragmatic responses to the problems of today and strategic recognition of the likely problems of tomorrow.

CIFOR's strategic approach reflects recent advances in natural resource management, at both the ecosystem and landscape levels, while emphasising the need to reconcile the interests of all forest stakeholders. This requires that the costs and benefits to diverse sectors of society, both local and distant users, are taken into account in evaluating different options for forest use or protection.

## **CIFOR's 1998-2000 Medium Term Plan**

**CIFOR's research in 1998-2000 will be on strategic issues.** It is intended that this strategic research will generate broad outputs which are international public goods. The issues are those which will enable more informed, productive, sustainable and equitable decisions to be made about the management and use of forests. The generalised concepts and methods developed will reinforce the work of national, regional and international researchers and development practitioners. The partnership process is indispensable not only to developing the capacity to pose appropriate questions and to producing high-quality research and "answers", but also to the adoption and use of the findings.

**Comparative international research is a crucial element of the MTP.** Through comparison and contrast, forest qualities, uses and management systems which are common to many countries and which are unusual or unique will be identified. From such information, and with input from our national research partners, circumstances in which certain forest management practices function well and those in which they fail will be determined. We see no conflict with working at specific sites with partners whose objectives are rightly achieved through applied and action research. The synthesis of results from specific sites will generate broad conclusions which are international public goods. It will form the basis for developing policy and management options and further applied and action research. The capacity and mandate for this form of international comparative research, and the commitment to share

this with partners from tropical countries, is a feature of CIFOR's strategic approach and is reflected in this plan.

**All the proposed projects include economic, social and biophysical components.** Societies and economies are dynamic, and demands made on forests and forest lands are complex. The driving socio-economic and biophysical processes must be understood to assist in shaping socially and environmentally positive outcomes. From our inter-disciplinary and inter-sectoral approach, it is clear that many underlying causes of deforestation are fundamentally social. While there is general agreement on the physical agents of deforestation, there is widespread disagreement on the social causes and processes underlying forest loss. Those considered to be important include population growth, migration and inadequate government policies. Forests both affect and are affected by economic and social processes outside the forest sector. Our research approach aims to place forests in a pattern of evolving natural resource and land uses, which will sustain or enhance their global value.

Agriculture/forest boundaries will vary as social and economic relations to the forests change. It is important that forests remain a long-term, viable and significant land-use option for those whose livelihoods depend on them. There should be minimal irreversible loss. "Sustainable livelihoods" does not mean that all people currently deriving all or part of their incomes from forests will indefinitely continue those activities. Rather, whatever livelihoods people pursue, the demands on the forests should be sustainable and forests should be managed in a way that retains options to meet current and future needs for water, amenity, wildlife, food and fibres.

**Capacity Building.** One issue which has surfaced prominently throughout recent international discussions of the needs and opportunities for forest science has been that of the lack of capacity within developing countries to address these issues. Perhaps the single greatest flaw in CIFOR's 1993 Medium Term Plan was the failure to confront squarely the fact that the national research systems in developing countries (the "NARS") dealing with forests were one or two decades behind their siblings in agriculture. It rapidly became apparent as CIFOR began operations that the concept of a "centre without walls", a centre that would work in close collaboration with, and through, national research systems, was only viable if these systems had a minimum critical capacity. In most tropical countries this was not the case. CIFOR was confronted with the reality that the forest research community in the developing world stood in urgent need of the sort of support that their agricultural counterparts had received over the last 25 years from the CGIAR and particularly from the institutional building efforts of ISNAR. The forest research community was in desperate need of its own ISNAR. At the same time we were confronted with the reality that CIFOR's donors had a high expectation that it would do "hands-on" research and that institution building would be a subsidiary activity and would remain the prime responsibility of bilateral and multilateral development assistance agencies.

Notwithstanding these new perspectives that emerged during CIFOR's formative years, there was a general consensus, as operations evolved, that the initial selection of topics for the first Medium Term Plan had been a reasonable approximation of global priorities. CIFOR's own experience coupled with

### **What is New in the Plan?**

- **Increased research in Africa and Latin America.**
- **More emphasis on research in the dry tropical forests and woodlands.**
- **Greater staff presence in target regions.**
- **Inter-disciplinary project teams.**

the views of a number of Internally Commissioned External Reviews (ICERs) confirmed the view that no radical departures from the main focal areas were required. The three years of operation of CIFOR's programme have, therefore, led Management and the Board to accept the key issues identified in 1993. Nonetheless, practical experience has allowed us to narrow the focus on a subset of these issues which are perceived as being priorities by our partners in the NARS and in donor agencies, and where our scientists found ready collaborators and perceived a high probability of high-impact outcomes.

**Regional Outreach.** In practical terms our vision of the 1998-2000 development of CIFOR is one of marginal growth in headquarters and moderate growth in the regional focal areas. We need to achieve a critical inter-disciplinary mass in each of these regions. 1997 will see the establishment or consolidation of a CIFOR presence in Belém covering Amazonia, in Libreville covering West Central Africa, in Harare covering the Miombo Woodlands of the SADC countries and in Turrialba covering Central America. Activities in the Asian region will be operated from CIFOR's headquarters in Bogor. However, as we enter the 1998-2000 triennium it is clear that there is insufficient depth in our presence in the non-Asian regions. To ensure consistency and coherence of CIFOR's activities in these areas it is necessary to build teams which encompass at least a minimal range of disciplines and experience. The intention is, therefore, that any growth in CIFOR's total volume of activity in 1998-2000 will be in achieving the critical mass of scientists necessary to build viable programmes in Africa and South America. Growth in volume of activity at headquarters in Bogor is expected to consist of more post-doctoral fellows and scientists on various forms of detachment and collaboration from ARIs.

Within the regions there are interesting issues relating to dispersal of effort. Early in CIFOR's development it was decided that to achieve maximum impact with finite resources it was necessary to focus on a number of regional benchmark sites which would represent the "default option" for the location of CIFOR's research. This was seen as a means of optimising the benefits to be obtained from inter-disciplinarity and from acquiring the sort of detailed historical and geographic knowledge of an area that is necessary to provide the context for any research. However, it was also rapidly recognised that excessive concentration in these areas carried with it the risk of diminished performance in CIFOR's

important role of outreach and capacity building. There has, therefore, been considerable debate as to the extent to which CIFOR's regionalised efforts should be focused in the concentration areas. At present the ratio between dispersed and focused activities is approximately 50:50. More experience will be required from CIFOR's operations to determine if this is an optimal balance. CIFOR will strive to attain the most appropriate balance in accordance with external conditions and operating experience.

**Drier Forests.** While in the medium term CIFOR will not develop any major new projects and will continue shedding some peripheral or marginal activities in the interests of focusing on the highest pay-off areas, there has also been an emerging consensus that the real problems of poverty alleviation and environmental conservation are not restricted to the lowland humid forests which were CIFOR's initial focus. The Board of Trustees has, therefore, proposed that during the 1998-2000 period CIFOR should expand its efforts in drier forest areas. In the short term, this will mean expanding the activities of the theme-based projects into drier tropical areas. In the longer term CIFOR may choose to further expand some of these activities into other eco-regional zones such as the dry temperate zones of the LDCs in Central Asia and the semi-arid areas of West Asia and North Africa.

**Research Structure.** The main change that has taken place during the first three years has been a re-packaging of the research activities into ten projects. In the 1993 MTP, the research programme had been sub-divided according to discipline. It became quickly apparent that this sort of division of labour ran counter to the widely perceived need to achieve a holistic, multi-disciplinary, integrated view of forest issues. It tended to reinforce the sorts of discipline-based barriers to research integration which had plagued tropical forest science in the past. In 1996, CIFOR therefore revised the structure of its research programme and organised its science into projects which reflected the problems which had to be addressed and the requirements of the ultimate users of the research. Deliberations of the Inter-governmental Panel on Forests (IPF), the Convention on Biological Diversity (CBD) and the work of numerous IUFRO specialist groups helped us to achieve this reorganisation. The ten projects which were defined are all multi-disciplinary and are intended to produce results which can be readily applied at the local, national, regional or global level. They were not designed as discrete independent activities, but rather are interlocking and mutually reinforcing. The nature of this reorganisation can be most clearly expressed by referring to some of these projects. The IPF identified the development of criteria and indicators for assessing the sustainability of forest management as being of high international priority. CIFOR was able to take numerous sets of criteria and indicators which had been developed by different interest groups and to test them in a rigorous and independent scientific way in five different countries. We were, therefore, able to deliver to the IPF a relevant and usable research product which has immediate application to the problems of forest conservation worldwide. CIFOR's work on biodiversity has followed a similar pattern vis-à-vis the CBD. A vigorous global debate on the impact of extra-sectoral policies on forest conservation has similarly benefited from the initial results of CIFOR's studies in this area.

CIFOR's ten research projects have now been operating for about one year. Management and the Board of Trustees are in general happy that this new organisation of our programme represents a better option

than its predecessor and should be given several more years to prove its usefulness. The 1998-2000 Medium Term Plan, therefore, proposes only minor adaptation of this project structure in the coming years. It is not proposed that any additional projects be added or that any projects be deleted. However, it is envisaged that the rate of growth of the different projects will be differential both in terms of total volume of activity and in terms of regional distribution of effort. To a large extent, the redistribution of effort is prejudiced on assumptions concerning the minimum critical mass of scientific expertise that is required to have an impact in the priority research areas.

## **2. HIGHLIGHTS OF CENTER ACTIVITY**

### **Project Highlights**

Ten Research Projects are included in the 1998-2000 MTP.

- |                    |  |
|--------------------|--|
| <b>Project 1.</b>  | <b>Underlying Causes of Deforestation, Forest Degradation and Poverty in Forest Margins</b>  |
| <b>Project 2.</b>  | <b>Forest Ecosystem Management</b>   |
| <b>Project 3.</b>  | <b>Multiple Resource Management of Natural Forests</b>                                       |
| <b>Project 4.</b>  | <b>Assessing the Sustainability of Forest Management: Developing Criteria and Indicators</b> |
| <b>Project 5.</b>  | <b>Plantation Forestry on Degraded or Low-Potential Sites</b>                                |
| <b>Project 6.</b>  | <b>Conservation of Biodiversity and Genetic Resources</b>                                    |
| <b>Project 7.</b>  | <b>Local Livelihoods, Community-Based Forest Management and Devolution</b>                   |
| <b>Project 8.</b>  | <b>Sustainable Use and Development of Non-Timber Forest Products</b>                         |
| <b>Project 9.</b>  | <b>Research Impact, Information and Capacity Building</b>                                    |
| <b>Project 10.</b> | <b>Policies, Technologies and Global Changes</b>   |

We believe that this portfolio of Projects constitutes a coherent and co-ordinated response to CIFOR's Objectives. There is deliberate interaction (overlap) between Projects – each has natural logical con-

nections with at least two others, and this is reflected in many ways, including allocation of some percentage of staff time between related Projects (see Table below). The Projects are not designed as discrete independent activities, but rather are interlocking and mutually reinforcing in numerous ways. Not only do the Projects emphasise different combinations of the elements in CIFOR's overall Objectives (understanding relationships, then formulating technical and policy options while enhancing capacity) but they also address problems that occur and are investigated at different scales. For example, Project 1 examines mainly **national** economic and social policies, and how and why they are derived and implemented as they are, although some of the origins may be international, and many of the consequences are ultimately felt locally. On the other hand, although devolution to local community-based management is occurring in many countries around the world, the primary focus of our research is at the **local-community-district level**; it aims to understand the relationships between local communities and local forests.

Scientists currently allocate time between research projects

Project	1	2	3	4	5	6	7	8
1		x	x		x		x	x
2	x		x		x		x	x
3	x	x			x		x	x
4					x	x	x	
5	x	x	x	x		x	x	x
6				x	x			
7	x	x	x	x	x			
8	x	x	x		x			

Note: Projects 9 and 10 work across Projects 1-8

x indicates scientist involved in both projects, e.g. scientists in Project 1 currently have part of their time allocated in Projects 2, 3, 5, 7 and 8

The ten research Projects are all inter-disciplinary, although the mix of disciplines varies. However, this does not negate the need for specific disciplinary components in solving specific research problems. In some cases, it will be more efficient, and in keeping with CIFOR's comparative advantage, for the specialist component research to be undertaken by NARS or ARIs, with CIFOR providing the system context – the holistic integration.



The proposed MTP continues to focus on tropical regions, especially on the humid tropical forests. Specific activities are not planned outside the tropics (latitudinal range 27°N-27°S) although it is recognised that some of the research findings will have relevance to forest management in temperate regions. Recognition that concentration of populations in more drought-prone areas has resulted in high levels of poverty and environmental degradation has prompted an expansion of activities to seasonally dry tropical forest regions. The proposed MTP incorporates new activities in tropical Latin America, Sub-Saharan Africa and the Indian sub-continent. More specifically, we plan expansion of activities in:

- Project 1 (Underlying causes of deforestation, forest degradation and poverty at forest margins) in Africa, and South and Central America;
- Project 3 (Multiple resource management of natural forests) in West and Central Africa;
- Project 5 (Plantation forestry of degraded and low-potential sites) in Amazonia and the Indian sub-continent;
- Project 6 (Conservation of biodiversity and genetic resources) in Latin America, Sub-Saharan Africa and the Indian sub-continent
- Project 7 (Local livelihoods, community-based forest management and devolution) in Latin America and Africa;
- Project 8 (Sustainable management of non-timber forest products) in Africa and Latin America; and
- Project 9 (Research impact, information and capacity building) in all three regions of the tropics.

Research on the criteria and indicators of sustainable forest management component in Project 4 (Assessing the Sustainability of Forest Management: Testing Criteria and Indicators) will be completed during the period of the MTP. The greater part of the funding is applied to the forestry component of natural resource management of which the CGIAR Programs of Protection of the Environment, Biodiversity and Policy are critical elements. About one quarter of this budget will go to increasing the productivity of tree production systems. The following are brief descriptions of the Research Projects highlighting some of the activities they undertake. The Research Projects are described more fully in Section III.

### **Project 1. Underlying Causes of Deforestation, Forest Degradation and Poverty in Forest Margins**

Millions of hectares of tropical forest are cleared annually and millions more are severely degraded. Some of this conversion is appropriate from an economic, social and environmental viewpoint, but much is not. Meanwhile, forest-dwelling people face increasing threats to their livelihoods from a variety of sources. The immediate causes of deforestation and forest degradation are well known: agricultural conversion, livestock expansion and inappropriate logging practices. These have their origins in more general patterns of resource distribution and incentive structures which are influenced by government economic and sectoral policies, market fluctuations and changes in population and technology. The impacts of structural adjustment, trade liberalisation, population growth and growth in public infrastructure investment and other factors on land clearing, timber extraction and forest dwelling people, are still poorly understood.

Through a series of comparative case studies in Latin America, Africa and South-east Asia, this project will analyse the underlying causes of changes in forest conditions to enable improved prediction of policy impacts on forests and people in forest margins, under different social and economic conditions. This will allow formulation of more appropriate policies. The aim is to change attitudes regarding forestry issues, as well as to change policies and their implementation. These changes should contribute simultaneously to the goals of poverty alleviation, environmental conservation and food security, and to a better understanding of the possible trade-offs between them. Regarding poverty alleviation, these changes will be reflected in measures that give local communities greater access to forest resources, and services such as extension and credit. They will also be reflected in steps to protect poor people's livelihoods from the negative effects of forest degradation. The project will contribute to food security by helping to improve poor people's income as well as their access to forest products used for food.

### **Project 2. Forest Ecosystem Management**

As pressures on natural resources increase steadily as a result of population increase, rising living standards, pollutants, and other factors, it becomes critical that we gain a thorough understanding of forest ecosystem function. In particular, we need to know how natural systems behave under pressure. We also need to know how best to manage a system to minimise the impact of perturbations such as timber harvesting. Increasing stresses on forest systems are coming at a time when demands on the forest are subject to rapid change. Society is creating new threats and opportunities. This requires the development of much more "adaptive" management capacities than have been normal in the past.

The complexity of this problem requires an approach spanning both social and ecological aspects. Research will be conducted at representative sites with specific objectives to:

- Improve understanding of forest ecosystem function and its relationship with human well-being.
- Devise and promote sustainable, productive and equitable management options for forest lands.
- Offer more factual and efficient ways to resolve land-use conflicts.
- Enhance national capacities to monitor and research forest ecosystem management.
- Develop methods for more "adaptive" management of forests.

Better understanding of the potential of alternatives, and the short- and long-term consequences of present procedures will contribute towards better management of natural resources. This should help to maintain ecosystem function and, in turn, lead to better food security, conservation of biodiversity and indirectly to alleviation of poverty.

### **Project 3. Multiple Resource Management of Natural Forests**

We need management systems which consider how both commodity and non-timber values of natural forests will be affected by management operations. Two areas offering high potential returns from research are:

*Reduced-impact harvesting practices.* This research aims to show that timber can be produced without destroying the forests. New guidelines and technologies being developed by CIFOR can reduce environmental impacts associated with timber harvesting while retaining economic efficiency. By the year 2000, adoption of reduced-impact harvesting techniques in 20% of all harvesting operations in tropical forests would result in a 10% increase in carbon sequestration by residual vegetation in all tropical forests harvested for timber, and a 5% reduction in soil impacts caused by logging equipment in those forests. The ultimate gains will be:

- a significant decrease in deforestation;
- maintenance of biological diversity;
- stable household incomes of forest-dependent people together with improvement in equity and strengthening of rights; and
- better utilisation of forests.

*Secondary forests.* The area of trees which have re-grown on land cleared for agriculture or pasture and subsequently abandoned is rapidly expanding in Latin America and other tropical areas. These secondary forests provide a potentially valuable resource for timber and other forest products and present a great opportunity for small-scale, intensive management by farmers. CIFOR will develop appropriate management practices to utilise this natural resource and contribute to the rural economy and biodiversity conservation.

A pilot project, is already under way in north-east Costa Rica, in a rural community where the landscape is composed of degraded primary forest, interspersed with both active and abandoned pastureland. The effects of thinning on stand development and forest biodiversity are being evaluated and this and similar studies will continue in the next three years. The output from this research will be generalisable at the regional level because of the wide geographic range of the selected tree species in lowland Central America and Amazonia.

#### **Project 4. Assessing the Sustainability of Forest Management: Developing Criteria and Indicators**

In many countries, forest agencies and owners are anxious to know whether forests are being managed sustainably. Some special markets exist for products from certified forests so certification – to let timber consumers and traders know what they are buying – may also be a powerful incentive to bring forests under improved management. Few of the proposed standards for certification or eco-labelling had been independently tested in the field, until CIFOR led a world-wide evaluation of the criteria and indicators for sustainable forest management by testing the feasibility and efficiency of systems to assess sustainability in both industrial and community-managed forests.

Now we will build on the results of previous evaluations to develop and refine criteria and indicators related to the impacts of logging and other management practices on the local economy and society, including local or indigenous users of non-timber products; measurement of ecosystem health, including

assessment of biodiversity, regeneration, resilience and impacts on soil, water, flora and fauna; development of technologies and indices for reduced-impact logging, from harvesting techniques to road design, to training programmes; and the development of decision-support systems based on criteria and indicators.

### **Project 5. Plantation Forestry on Degraded or Low-Potential Sites**

Increasing amounts of wood are now being produced in plantations especially in areas where there is high population density and relatively small areas of natural forests. In the past 10 years in Asia the area of small-scale plantings to produce poles, posts, fuelwood and non-timber tree products has overtaken the area used for industrial wood products. The sites available for the plantations are frequently degraded or of low fertility and there is a question about whether they can sustain a high level of productivity without large inputs of fertiliser, weedicides, etc. There is also the question of what policy and economic constraints inhibit successful tree planting by farmers. Specific objectives are to:

- identify and analyse priority problems, both technical and socio-economic, which constrain sustainable and productive tree planting; and
- develop technological and incentive options to enhance the sustainability and productivity of small-scale plantations on degraded and low-potential sites.

Socio-economic research in China, Indonesia, Philippines and other highly populated countries in Asia will focus on smallholder plantations. Diversification of local economies and increased access to fuelwood, local building materials and non-timber tree products will improve the livelihoods of rural people. Biophysical research will address problems associated with site management of fast-growing plantations and disease assessment.

### **Project 6. Conservation of Biodiversity and Genetic Resources**

The degradation and loss of tropical forests around the world is widely recognised as a problem of global significance. Efforts to conserve tropical forests require methods for assessing the current status of forests, and monitoring changes over time. Levels of biodiversity provide one criterion for assessing the status of forests and sustainability of forest management. Levels of genetic diversity are potentially very useful early warning indicators of changes in biodiversity as a whole. Thus, research on genetic diversity can contribute to conservation of genetic resources and to methods for “early-warning” monitoring of conservation of biodiversity, and of sustainability of forest management.

CIFOR's research is focusing on the two landscape-scale processes that cause loss of biodiversity, namely forest degradation (or disturbance) and deforestation (or habitat fragmentation). Commercial logging is a disturbance that has a very high public and political profile, and so will receive particular attention in studies on disturbance. Because of the human impacts on forests, the research inevitably involves a role for the social sciences.

*In situ* conservation of forest genetic resources is basic to both increasing the productivity of plantations and to the conservation of forest biodiversity. New activities are planned on the effect of disturbance, logging and fragmentation on genetic diversity of forests in Brazil, Costa Rica, Cameroon and Zimbabwe.

### **Project 7. Local Livelihoods, Community-Based Management and Devolution**

CIFOR's research on local people's well-being and role in forest management has been driven by a trend world-wide to promote systems of local management, both through the devolution of centralised structures of control and by strengthening so-called "traditional" forest management systems. Hundreds of millions of rural people depend on forests for their basic needs, others for crucial food, fibre or medicinal products, yet the institutions, policies and incentives necessary to resolve their needs with other demands for use or conservation of forests remain unclear. What factors influence peoples' incentives to use, protect or exploit a forest resource? How can multiple interests or objectives be accommodated in decision making about forests when some of those interests are less powerful? Under what institutional and tenurial arrangements are local forest management and economic development objectives compatible? Do devolution policies contribute to enhanced equity, economic productivity and environmental sustainability?

The focus of this Project is to seek information to inform and sharpen understanding about these debates in ways that also have practical implications for improving local people's well-being. With the overall objective of seeking to improve the understanding of the relationship between the forms of local forest management and its impacts, research activities examine the question "how do incentive structures, institutional arrangements and policies affect household well-being and local forest sustainability?" The research is supported by models of local people's decision making and the construction of future policy scenarios. In addition to ongoing work in Madagascar and Indonesia, activities will be expanded to include research on how different policies influence people-woodland interactions in the Miombo Woodlands in Zimbabwe, Tanzania, Mozambique and Malawi, and to initiate research on extractive reserves in the Western Amazon.

### **Project 8. Sustainable Use and Development of Non-Timber Forest Products**

Non-Timber Forest Products have become a focus in sustainable development and biodiversity conservation because of their importance to the rural poor and the apparently benign way they can be sometimes exploited while conserving forests. Millions of people rely on NTFPs to satisfy daily needs, or harvest them to earn cash. These products contribute significantly to employment and income in many countries. Their economic significance and potential for low-impact exploitation has fostered the expectation that NTFP development can improve the livelihoods of the people who collect and use them.

This project is undertaking research in tropical and sub-tropical forests in Asia, Africa and Latin America to improve our understanding of the dynamics of people-forest interactions, using NTFPs as a convenient entry point between people and forests. The project will:

- identify dynamics and patterns in the utilisation of NTFPs;
- analyse the causal relationships between different factors influencing that utilisation; and
- develop theories and scenario-based models for most likely directions of change and their implications for people livelihood and forest conservation.

### **Project 9. Research Impact, Information and Capacity Building**

Many forestry NARS have weak research capacity, poor access to information and lack means for the efficient dissemination of research findings. These combine to reduce research impact. The project will address these problems with partners in Africa, Asia and Latin America.

One component of this project is concerned with research evaluation; the assessment of CIFOR's efficiency and effectiveness through the development of rigorous priority-setting and impact assessment procedures and methodologies. Another component explores ways to provide access to information to national research systems, and efficient dissemination of research results using the latest electronic technologies. The use of CD ROMs has exciting possibilities for the cheap and very efficient storage and transfer of information. Other activities will address co-operative information sharing and training programmes linking national, regional and international research organisations, baseline research capacity assessment for NARS in CIFOR's regional focal areas and the establishment of world-wide standards on forestry information services.

CIFOR envisions that it will fulfil its aims with respect to capacity building largely through the collaborative research activities with partner institutions in each of CIFOR's projects. Project 9 will, however, retain an overview and provide guidance to the other CIFOR projects. Specific capacity-building activities will also be undertaken, but only where CIFOR has a comparative advantage and alternative sources of supply are lacking.

### **Project 10. Policies, Technologies and Global Changes**

CIFOR needs to maintain an active knowledge of global trends in the supply of, and changing social demands for, all kinds of forest products, in order to both contribute effectively in the international policy debates about forests, and to ensure that our long-term research directions accurately address important and emerging problems.

One objective of this project is to analyse major global trends in the patterns and structure of international supply and demand (in the broadest sense, including all goods and services that societies derive from tropical forests). These analyses will contribute to the international policy debates on tropical forests, and provide a synthesis of CIFOR's collective understanding of the causes of deforestation and the role of forests in the well-being and quality of life of forest-dependent communities; the major socio-economic and demographic transitions that shape the diverse demands that societies place upon their forests. They will involve close collaboration with the World Conservation Monitoring Centre,



European Forest Institute, World Resources Institute, FAO, UNEP, World Bank; IUCN, WWF and many universities and multi-national forest products corporations.

### **3. PRIORITY SETTING AND IMPLEMENTATION**

#### **The Planning Process**

We started in 1993 with a Medium Term Plan which was the product of broad consultation with all identifiable CIFOR stakeholders. The MTP identified twenty-seven specific research problems to be solved in the first five years, a distillation from over 1200 topics proposed to the Board as “priority”. The list had been set against the perceived comparative advantages of the CGIAR system and a degree of prioritisation was possible. However, even at the time it was recognised that this was arbitrary and dictated largely by expediency.

CIFOR, therefore, began in 1993 with a sub-optimal research agenda. We approached the 1993 Medium Term Plan with the realisation that it was only by addressing a sample of the problems that had been identified as priority, that it would be possible to gather the experience necessary to achieve the sort of focused research agenda which is expected of a CGIAR center. The first three years of CIFOR's existence have, therefore, been a period of intense learning. We have work on a broad range of research problems with diverse partners and through a variety of collaborative mechanisms. We have built a significant constituency amongst the forest research community both in the south and the north. Some of these experiences have been highly productive, others less so. We have conducted a large-scale experiment both on “what to do” and on “how to do it”.

**The real challenge of CIFOR's early years was not to provide answers to the twenty-seven questions in the MTP, but rather to establish and consolidate a CGIAR Center practising the emerging type of forest science – strongly grounded in partnerships with developing-country scientists – whose applications will only begin to have relevance and impact in the twenty-first century.**

At the time of CIFOR's establishment an accelerating evolution was taking place in forest research to deal with the complexity and uncertainties surrounding many aspects of science related to forests. The existence of these uncertainties made it necessary for CIFOR to allocate significant resources, in its early years, to defining its own strategic position. This was achieved by inputs from CIFOR's staff, further discussions with stakeholders and a series of internally commissioned external reviews.

CIFOR's first Strategic Plan was published in 1996. It went far beyond the horizons of the Medium Term Plan approved by the CGIAR in 1993. It is on the basis of this Strategic Plan with its portfolio of ten Research Projects that the 1998-2000 Medium Term Plan has been developed. Projects have evolved in the light of experience and reflect increasing emphasis on disciplinary needs to enhance probability of success. The substance of the plan is dictated by the need to adapt to changing circumstances in the recipient countries and to changing capacities and perspectives of donor organisations.

## Priority Setting

CIFOR's framework for priority setting is based on the established CGIAR goals which emphasise poverty alleviation and natural resource conservation in developing countries and which, in conjunction, aim to promote sustainable food security.

CIFOR recognises four inter-related phases of research planning and evaluation:

- Strategic Priority Setting
- Project Screening and (*ex ante*) Evaluation
- Project Monitoring
- Impact Assessment

The most fundamental challenge remains to identify those issues that deserve research investment and the relative investment levels needed to maximise impact for given research resources. CIFOR has the following mechanisms in place to allow progress in addressing priorities to be measured; and priorities to be reassessed with changing circumstances and opportunities. There are several steps in this process:

**CIFOR's Strategic Plan (1996).** This includes appraisal of our organisational values and distinctive approach to achieving our aims – policy focus, partnership research and inter-disciplinarity:

- Periodic review, with stakeholders, of the Mission and Objectives of CIFOR and checking that the priorities and strategies developed are congruent with those of the CGIAR.
- Defining and characterising the potential beneficiaries of CIFOR's research and capacity-building activities.
- Identifying the location and status of CIFOR's defined beneficiaries, e.g. "threatened" forests, "degraded" lands, "forest-dependent poor" people, "national forest research systems".
- Identifying the issues and constraints that make the potential beneficiaries "threatened", "degraded", "forest-dependent" or "poor".

- Assessing the extent to which research can help to address the issues and to overcome the constraints that most directly impinge upon the target beneficiaries.
- Evaluating which research topics are most appropriate to, or help define, CIFOR's Mission and areas of comparative advantage.
- Assessing the economic, environmental and gender impacts of specific research activities.

In preparation for the 1998-2000 MTP and as part of the on-going strategic planning process, CIFOR has pursued an intense dialogue with NARS partners throughout the tropics. This process of joint priority setting culminated in regional meetings with NARS held in the following locations:

- Bogor, Indonesia, for the Asian region (March 1995).
- Kumasi, Ghana, for the West African region (May 1995).
- Cairns, Australia: Plantation research, PNG and Pacific Island NARS (February 1996).
- Manaus, Brazil, for the Latin American region (March 1996).
- Nelspruit, South Africa, for southern and eastern Africa (April 1996).
- Bangui, Central African Republic, for Francophone Central Africa (May 1996).

**In-house screening of Research Activities within Projects.** As part of our review of project content we have assessed each research activity within each Project for its strategic linkage to CIFOR's Objectives and the extent to which it contributes to the TAC programmes of increasing productivity, protecting the environment, saving biodiversity, improving policies and strengthening national programmes. The potential impact of the research and beneficiaries has also been reviewed. The following criteria are used to assess new research activities.

## **CHECKLIST FOR EVALUATION OF NEW AND EXISTING RESEARCH ACTIVITY**

### **STRATEGIC REQUIREMENTS/CONSIDERATIONS**

- Has the problem been clearly defined and appropriate hypotheses generated?
- Does CIFOR have comparative advantage for the proposed activity?
- Is the research of global or regional significance?
- Will the research outputs be generalisable?
- Have the intended “targets” and beneficiaries of the activity been clearly identified?
- Is there a clear linkage between research output and the intended impact?
- Congruence with CIFOR eco-regional foci ?
- Congruence with TAC priorities?
- To what extent will the outputs/outcomes of the activity contribute to the project objectives?  
What will the activity contribute to other CIFOR projects?

### **OPERATIONAL REQUIREMENTS/CONSIDERATIONS**

- Have all potential inputs from CIFOR staff been identified?
- Are suitable research partners available? (Do they have a comparative advantage?  
Do they have “latent” capacity?)
- Is the scientific and statistical design appropriate to test the hypotheses?
- Extent of stakeholder and partner consultation in project design.
- Probability of producing stated research “deliverables” in the specified time-frame.
- Will the scientific design account for the counter-factual? (Assessing what would happen in the absence of interventions resulting from research: “before/after” or “with/without”).
- What are the verifiable “milestones” to indicate research progress?
- What is the anticipated time required (in CIFOR SSYs).
- What is the anticipated cost of the activity? (Total cost to CIFOR, funds from CIFOR to partners and partner contributions).
- What is the likelihood of obtaining sufficient funds? (CIFOR core or donor specific?).

### **ADOPTION/IMPLEMENTATION**

- What are the requirements and assumptions regarding dissemination, adoption and use of research outputs relating to the extent and distribution of direct targets or beneficiaries?
- Probability of adoption (likely relevance and acceptability to intended target group).
- What is the estimated extent of adoption? (e.g. numbers of potential users, area or numbers of people influenced by policy change).
- What is the potential for dissemination, who?, where?, how many?, how?
- Likely research and development lag-time.

## IMPACT

- Is the intended impact consistent with the CIFOR strategy
  - improved forest ecosystem management
  - mitigation of rural poverty?
- Has the likelihood of achieving a positive impact been articulated?
- Have inter-generational issues been considered
- Has the mechanism by which impact will result been examined?

**Gender and Poor Women:** CIFOR recognises that poor women form one of the most important groups of beneficiaries of our research. The anticipated impact on gender of new research activities is specifically addressed in project planning documentation considered prior to the activity being approved. Poverty alleviation and especially that of women is considered perhaps less explicitly in deciding the overall thrust of research in a project. For example in Project 5 the research has been deliberately targeted at smallholder plantations, where the variety of products has far greater potential to directly benefit the rural poor, including women. There are no specific Projects directly related to poor women but some projects have a specific gender component.

### **Women and Non-Timber Forest Products**

Non-Timber Forest Products (NTFPs) provide substantial inputs into the livelihoods of very large numbers of people in developing countries and have particular relevance to poor women in rural areas. CIFOR's research in Africa, Asia and Latin America is addressing a range of issues related to the collection, use and marketing of NTFPs.

NTFP gathering, processing and marketing are a major source of employment and incomes for women in tropical Africa such that expanded markets will in principle empower them within the household. However, because of the economic crisis that prevails in many countries (which brings men to look for various alternative income opportunities), the increased commercial value of NTFPs may involve men more and more in the gathering and marketing, which could displace women. This calls for a continuous monitoring of NTFP markets and gender roles to increase our understanding of these dynamics.

In the Humid Forest Zone of Africa, women work full time helping their husbands harvesting cocoa from plantations. During this period they cannot gather, process and market NTFPs. Although women are compensated by their husbands for their effort, their work in their husbands' cocoa fields reduces the supply of NTFPs in the markets. Thus there is a need to assess the extent to which women's compensation for working in men's fields matches the revenue they forgo by not gathering and marketing NTFPs, and also the welfare impact of women's involvement in cocoa fields on consumers of NTFPs who depend on the markets.

## Congruence with TAC Priorities

CIFOR is a centre which is not strongly commodity oriented and so proposes to apply only about one quarter of its budget to increasing the productivity of tree production systems. The greater part of the funding is applied to the forestry component of natural resource management of which the CGIAR Programs of Protection of the Environment, Biodiversity and Policy are critical elements. CIFOR's principal *modus operandi* is through collaboration with NARS and a significant portion of the budget is thus directed to strengthening NARS. The proposed research agenda therefore supports strongly the thrusts of the 1995 Lucerne Action Program.

In terms of the CGIAR Programs, core funds will be allocated to CIFOR's Projects as below in 1998 and similarly in 1999 and 2000 (Tables 1a, 1b, 1c):

<b>Protection of the Environment</b>	<b>(30.5%)</b>
<b>Increasing Productivity of Trees</b>	<b>(24.3%)</b>
<b>Policy</b>	<b>(19.2%)</b>
<b>Strengthening NARS – Training, Information</b>	<b>(12.1%)</b>
<b>Biodiversity</b>	<b>(13.9%)</b>

### Protecting the Environment

Protection of the environment through the effective management of natural resources, especially forest lands, is a concern of most developed nations and is gaining priority in developing countries. It is recognised as an important area by TAC 1996. **All of CIFOR's activities are designed to have a positive impact on protection of the environment** and we have allocated 31% of the Center's budget to it.

CIFOR's policy and biophysical research will directly or indirectly impact on protection of the environment. This has caused some difficulty in the attribution of the research budget for particular projects. For example, in Project 6 which is concerned with conservation of biodiversity and genetic resources *in situ* the budget has been arbitrarily allocated as 75% to the Biodiversity category and 25% to Protection of the Environment.

## **Increasing Productivity of Trees**

**Research to increase forest productivity through production system development and management will continue to have high priority**, in line with the recommendation that the tree production system research in forestry (and agroforestry) needs to expand (TAC 1996). It is proposed during this MTP period to significantly expand activities in Project 3 Multiple Resource Management of Natural Forests and Project 5 Plantation Forestry on Degraded or Low-Potential Sites. Research in Project 4 Assessing the Sustainability of Forest Management: Developing Criteria and Indicators and Project 8 Sustainable Use and Development of Non-Timber Forest Products will also contribute significantly the goal of increasing productivity while ensuring the sustainability of forests.

Many NARS have shown strong interest in collaborating with CIFOR on activities which improve or at least maintain the productivity of natural forests and fast-growing plantations. In natural forests the need to devise more appropriate management techniques, such as low-impact logging, the management of secondary forests and the opportunities to recognise and enhance the role of non-timber forest products, are evident. Research on these topics has begun in tropical Asia and Latin America and will be expanded in West Africa. There is also recognition that, as large areas of land for industrial plantations are limited or not available in many countries, there will be an increasing role for smallholders to benefit from participation in tree planting to produce industrial wood products as well as products for local, non-industrial uses. Policies and technologies to support this change will be pursued in the plantation research project (Project 5). CIFOR's proposed activities recognise that research is needed to overcome biophysical constraints on low-potential sites but at the same time elucidation of appropriate policies and incentives will be essential if smallholder participation in tree growing is to increase and become economic and sustainable. So far CIFOR's plantation research has been concentrated initially in the densely populated Asian countries where non-industrial plantations have been expanding rapidly but similar problems exist in Africa and Latin America and there will be a gradual increase in activities embracing these regions.

Globally the forestry sector's share of production of CGIAR commodities is forecast to rise from 22% in 1992-94 to 24% in 2010 (TAC 1996). **Forest products are clearly very important but, unlike agricultural crops, forests usually produce many products and services throughout their long production cycle.** Large-scale industrial forestry is usually focused on producing the maximum volume of a uniform product such as pulpwood or sawn timber. This is particularly the case in plantations. However, since CIFOR aims to conduct research which alleviates poverty and protects the environment, research which specifically benefits large-scale commercial plantations has been given low priority. Emphasis has instead been placed on assisting smallholders to grow productive and sustainable plantations or naturally regenerated secondary forests. Their preference is generally to spread their risks by growing complex forests comprising several species producing a range of products. In natural forests the research priorities have been to assist local communities to improve their livelihoods through increased access to forest resources and to the concurrent sustainable management of forests irrespective of the type of product or products they are yielding. Hence CIFOR is not strongly commodity oriented and has not formulated its priorities by commodity.



TAC (1996) recognised that **commodities such as fuelwood and charcoal appear to have greater value to the poor**. Nevertheless plantations are rarely established with the prime objective of producing fuelwood, usually this a byproduct from the production of a more valuable commodity such as timber or fruit. Similarly natural forests are only occasionally managed for fuelwood production although they may often be an important source of firewood for local communities. CIFOR has considered how it might assist poor people to meet their fuelwood needs. Our conclusion is that this may best be achieved by supporting research on policies and non-timber forest products with the aim of increasing the accessibility of forests through joint forest management by local communities and other mechanisms. Similarly our focus on non-industrial plantation management in Project 5 is aimed at improving the livelihoods of smallholders through the identification of policies and technologies which are appropriate for small-scale tree planting in which the production of fuelwood can be expected to have greater priority than it would in a large industrial plantation.

**To what extent should CIFOR be involved in tree breeding to increase the productivity of forests?**

Opportunities for improvement lie in identifying and testing elite materials, and selection and cloning these materials. For the relatively small number of tree species currently used for industrial forestry in the tropics, location-specific breeding is already in progress by the private sector. Furthermore with the increased demand of farmers and other small-scale growers for multi-purpose tree species, especially locally indigenous species, hundreds if not thousands of species require field evaluation as a fore-runner to a domestication programme. We have a very low probability of making a significant impact by being involved in tree breeding and for this reason CIFOR has not developed a tree breeding programme and does not intend to be involved in the collection, storage and distribution of forest tree germplasm. We consider the programmes of ICRAF, IPGRI and other non-CGIAR agencies (including some in developing countries) in these activities, while very worthwhile, would not be enhanced by CIFOR's involvement. We have concluded that rather than studying specific species the conservation of genetic diversity and the deployment of better adapted and more productive planting material are more likely to be enhanced through the study of processes and development of new research tools. This is reflected in our research activities, for example, in testing and adapting computer software such as PLANT-GRO which can assist in species-site matching and the prediction of tree growth rates.

**Improving Policies**

It is recognised that a variety of new institutional arrangements, at all levels from household, local community, nation, region to the global community, are needed if there are to be improvements in the productivity, sustainability and equitable distribution of forest benefits. These issues will be addressed in the MTP at the community and household level in Project 7, at a national or regional level in Project 1, and at the global level in Project 10. It is proposed to expand activities in these Projects.

TAC (1996) strongly supported research to improve policies, particularly in the area of natural resource management. A strong policy focus for its research has been a feature of CIFOR since its inception and CIFOR will continue to support policy research with about 20% of resources being allocated in this

area. While this percentage shows a slight reduction relative to some other CGIAR activity categories, it is not because this activity is considered lower priority but because it is already relatively well staffed and resourced.

CIFOR's socio-economic and public policy research is concentrated in the following CGIAR activity categories:

- **4.1(c) Microeconomic and social analysis** through Project 7 Local Livelihoods, Community-Based Management and Devolution and Project 8 Sustainable Use and Development of Non-Timber Forest Products.
- **4.1(e) Impact assessment and priority setting**, which is a component of Project 9 Research Impact, Information and Capacity Building.
- **4.2 Policy analysis** through Project 1 Underlying Causes of Deforestation, Forest Degradation and Poverty in Forest Margins and Project 10 Policies, Technologies and Global Changes.

## **Biodiversity**

There has been a growing recognition of the importance of biodiversity conservation through the Convention on Biodiversity and at the Lucerne Conference (1995). The CGIAR has noted the value of biodiversity of natural complex ecosystems, such as indigenous forests, as part of natural resource management and TAC (1996) favoured increased work on *in situ* conservation for forestry. It is planned to expand CIFOR's research on biodiversity during 1998-2000 by strengthening the research on *in situ* conservation to which only limited resources were allocated in the previous MTP. This will enable CIFOR to take advantage of new technological developments, such as airborne radar systems, to further its research on the rapid assessment of biodiversity.

An external review of biodiversity research in CIFOR (McNeely and Stork 1996) stated that **biodiversity has become a much more important issue than when CIFOR prepared its 1994-1998 MTP**. They noted that biodiversity is a cross-cutting theme in CIFOR's programme and all projects have, or could have, elements of biodiversity research in them. These are most prominent in Project 2 Forest Ecosystem Management, where integrated survey design and sampling procedures are being developed for estimating biodiversity in forests at the landscape level, and in Project 6 Conservation of Biodiversity and Genetic Resources, where the focus is primarily at the gene level. Some of CIFOR's policy research also has a direct link to the management of forests for biodiversity conservation and utilisation.

CIFOR's research on genetic conservation will focus on the two landscape-scale processes that cause loss of biodiversity, namely forest degradation (or disturbance) and deforestation (or habitat fragmentation). Commercial logging is a disturbance that has a very high public and political profile, and so will receive particular attention in studies on disturbance.

## Strengthening National Programmes

Strengthening of NARS is an important element of CIFOR's programme. **The primary vehicle for capacity building will continue to be scientist-to-scientist collaboration in research activities.** This is generally viewed as a two-way learning process with the international scientist gaining a better appreciation of local problems and conditions and the NARS' scientist gaining scientific expertise. This accords fully with the TAC (1996) recommendation for "a continuing reduction in training until such time as the more evident limitations on NARS performance has been resolved" but notes the continuing importance of training through collaborative research efforts. Specific activities to improve the research capacity of NARS are included in Project 9. Information dissemination is another key area on which we will place high priority and implement it through devising and promoting the use of modern communication technology, new and more efficient products and services for access to and dissemination of scientific information. This effort will be supported in Project 10 with analyses of global trends affecting tropical forests and a guide to available data sources. Other projects have important, but lesser, roles in information dissemination through activities which promote the use of networking, GIS and development of collaborative databases.

## Participation in System-wide Initiatives

CIFOR will continue to participate actively in CGIAR System-wide Initiatives and Programs. In the **Alternatives to Slash and Burn Agriculture Programme** it is anticipated that CIFOR will have a greater role to play in identifying alternative land-use practices and policies with increased environmental benefits. In particular, the evaluation of above ground biodiversity in forests and development of geographically referenced databases will link land-use changes and practices to carbon dioxide emission inventories and environmental policy work being undertaken by other partners in the Initiative. CIFOR will take the lead in co-ordinating the research related to biodiversity in the Alternatives to Slash and Burn Agriculture Programme.

CIFOR will be active in the CGIAR **System-wide Genetic Resources Programme**. CIFOR will be a major collaborator with IPGRI and several NARS in expanding research on *in situ* conservation of forest genetic resources in Asia and Central America.

There are several other CGIAR system-wide initiatives which have relevance to CIFOR's research programme. These include the **Soil, Water and Nutrient Management Initiative** and the **Integrated Pest Management Initiative**. Given our limited resources and the high transaction costs of participation in these initiatives we have not sought formal involvement. Nevertheless with our partners in the NARS, ARIs and private sector we have prepared a book "*Soil, Water and Nutrient Management in Tropical Plantations*" and developed a global network of research partners to examine the effects of site management on the sustainability of tropical tree plantations, particularly addressing nutrient availability and movement. We are also supporting research on pests and diseases in fast-growing plantations in Asia although the lack of resources has limited the extent of this activity.

## **Internal Review Processes**

During 1997, CIFOR will commission a number of external reviews of projects and cross-cutting themes as a way of fine tuning the research agenda. In addition, CIFOR's first External Programme Management Review (EPMR) is scheduled for late 1997 and early 1998. By the time the EPMR occurs, CIFOR will have more or less doubled the amount of experience it has of implementing its programme. The MTP process is, therefore, out of phase with the reality of CIFOR's development. Nonetheless, CIFOR's Board of Trustees and Management feel very confident that the programme outlined in this MTP represents a best approximation of what is feasible and relevant in the context of information available to us in late 1996. It is manifest that societies' perspectives on the requirements of the use of forest land are passing through a period of great dynamism. The needs for, and capacity to produce, relevant science are also evolving rapidly. It seems almost inevitable that the agenda will progress more rapidly than the three-year planning cycle of the CGIAR. Perhaps the single most important message of this MTP is that CIFOR has to be the sort of organisation that can respond very rapidly to changes in its external environment. Again, we believe that the provisions that we outline in this Plan for 1998-2000 maximise our ability to be flexible and responsive.

## **Collaboration Highlights**

All CIFOR projects have developed collaborative research arrangements. **The partnership approach is fundamental to CIFOR's research and outreach activities.** The collaboration includes working with NARS, ARIs, NGOs, other CGIAR Centers and the private sector.

To effectively conduct the research required to solve important multi-country problems, CIFOR must be decentralised. From the outset, the intention has been that the majority of CIFOR's research will be conducted away from the Headquarters in Indonesia. This requires us to have complex and extensive networks of interactions with scientists and organisations throughout the world. The primary network of contacts are with scientists conducting research in the tropics. During the period of the MTP CIFOR will establish a small presence in Brazil and Zimbabwe, and will strengthen its presence in West Africa and Central America.

The nature of CIFOR's relationship with its partner scientists will be determined by the needs of the research problem being addressed. In general our research collaboration is *informal, flexible, interactive, time limited and demand driven.*

The above considerations apply to those scientists and institutions with whom CIFOR has links. There is a much broader scientific and management community who will require access to CIFOR information. In the short term, CIFOR has an important role in helping our potential partners in tropical developing countries to access electronic networks. The dissemination of electronic information and training in the use of the tools for information exchange will be important spin-offs from research

collaboration. Electronic communications will reduce the transaction costs of maintaining the partnerships, especially over long distances.

### **National Agricultural Research Systems (NARS)**

As already stated, collaboration through partnerships is integral to conducting CIFOR's research activities and each project has developed partnerships with NARS. A key challenge in implementing partnerships with the NARS is to minimise transaction costs, particularly those incurred in working with less well-established forestry research systems. Measures to continually enhance the scientific quality of partnership research will be a high priority. CIFOR realises that research activities with a high capacity-building component may require more time and effort. While partnerships do take time to mature, and not all will work as well or as quickly as mutually hoped, we are committed to the intellectual and operational advantages of this approach. Joint decision making in a partnership may be less efficient than direct control by one party, but we recognise that not only efficiency but eventual empowerment of these partners is central to this strategy.

By definition and design, results of CIFOR's strategic research will have wide potential application to countries and regions, as well as the country in which fieldwork takes place. The beneficiaries of CIFOR research will not only be those institutions or countries directly engaged in the conduct of the research at specific sites. Nevertheless, much of the "capacity building" impact will accrue to those partner institutions participating directly in the joint research activities. Therefore, CIFOR will endeavour to involve additional developing country institutions and researchers in training activities, workshops and dissemination of results, including programmes run by strong regional and developing-country institutions.

As a result of our interactions with NARS partners we have developed a significant volume of collaborative research within ten projects. We have signed MOUs and contracts with institutions in important forest countries in Asia, Africa and Latin America. Most of the studies are inter-country comparisons of key strategic issues, comprising replicated national case studies. We believe that the very positive response from the NARS, and the progress we have made in developing collaborative research, provides grounds for the expansion of our core programme for 1998-2000.

### **Advanced Research Institutes (ARIs)**

CIFOR recognises that some ARIs (universities and national research organisations) in developed countries have expertise and access to high levels of technology that can be applied to understanding the natural and social processes related to internationally significant problems of forest use, development or degradation. CIFOR has been building its partnerships with ARIs in Australia, Europe, North America and Japan to address problems identified in most of its projects. It is planned to continue to involve ARIs in CIFOR's research activities whenever they have a comparative advantage.

## **Non-Governmental Organisations (NGOs)**

There are many NGOs concerned with the environment and natural resource management at global, regional and local levels. Some of these organisations can assist CIFOR in identifying problems, participating actively in research and in training and technology transfer. CIFOR has hosted a meeting of the CGIAR NGO Committee and has developed working relationships with a range of international and national NGOs. Umbrella MOUs have been signed with organisations such as the World Wide Fund for Nature and there is active collaboration with the Ford Foundation, IUCN, CARE, etc. The involvement of selected NGOs in CIFOR research is considered very beneficial and in particular provides a mechanism for communicating with those involved in natural resource management at the grass roots level.

## **Private Sector**

Collaborative research between CIFOR and the private sector is taking place based on the partners recognising mutual benefits from the co-operation. Its role in contributing to CIFOR's goals depends very much on the research outputs being freely available in the public arena. CIFOR is working collaboratively with forest concessionaires in Malaysia and Indonesia on reduced impact logging techniques, and with private pulp and paper companies on a tree disease survey and the sustainability of fast-growing plantations. As part of Project 10, there is frequent interaction with multi-national forestry corporations to determine long-term strategic shifts in supply and demand for forest products, the location of forestry activities and the changes in the application of forestry technologies. These arrangements are viewed as mutually beneficial and CIFOR will continue to seek opportunities for collaboration with the private forestry sector.

Collaborators for each project are listed in Annex 2.

## **Collaboration with other CGIAR Centers**

**ICRAF:** CIFOR and ICRAF each has a unique mandate and its own distinctive approach to research. The two centres do share some common objectives, priorities and values, and take advantage of opportunities to work together on areas of mutual interest. These include: policies to reduce deforestation and enhance rural well-being; viable alternatives to, or improvements in, shifting cultivation; and markets for, and prospects for domestication of, non-timber forest products. There is active collaboration in the *Global Alternatives to Slash and Burn Programme (ASB)*.

**ICLARM:** Despite the fact that they deal with different natural resources, there are very strong parallels between CIFOR and ICLARM. Each deals with the conservation and management of very complex ecosystems, interacting with hierarchies of social, economic and institutional systems. Co-operative research between CIFOR and ICLARM is being explored in ecosystem management of coastal forests, especially the mangrove forests. In these ecosystems, not only are there very strong



mutual inter-dependencies between the forests and the aquatic resources (as elements of the same ecosystem) but the users (or misusers) of the resources, and the research beneficiaries, are frequently the same.

**IFPRI:** In general, CIFOR addresses those policy research issues which are best dealt with at the level of the resource, or the specific technology applied, while IFPRI tends to address the overall economic policy concerns. A good example is the *Inter-Center Initiative on Local Community Management of Natural Resources*, led by IFPRI, which transcends and builds upon the more specific “socio-economic and public policy” findings in forestry, fisheries, rangelands and water resources. IFPRI, like CIFOR, is active in the socio-economic and policy research of the ASB Programme led by ICRAF.

**IPGRI:** CIFOR and IPGRI have developed a programme on *in situ* conservation of forest genetic resources. CIFOR works with IPGRI on *in situ* conservation in a truly collaborative fashion. CIFOR has taken the lead in Asia, IPGRI in Africa, and the two share responsibility in Latin America, with a jointly appointed staff-member based there. Links with IPGRI, ICRAF and other CGIAR Centers are strengthened through participation in the *Inter-Center Working Group on Genetic Resources*.

**IITA:** IITA has been active for many years in the Humid Forest Zone of West Africa, an area of great interest to CIFOR. In particular, IITA and CIFOR are collaborating on the ASB benchmark site near Mbalmayo, in Cameroon.

**IIMI:** This centre has a parallel interest to CIFOR's Project 7 Local Livelihoods, Community-Based Management and Devolution because of its many years of innovative research on devolved local management regimes for irrigation systems, and the management of small-scale water resources as common property. Like CIFOR, IIMI is also a member of the *Inter-Center Initiative on Local Community Management of Natural Resources*, led by IFPRI.

## Center Outputs

CIFOR's principal outputs are international public goods in the form of its research results and its contribution to capacity building. The Project descriptions in Annex 1 include specific outputs and milestones.

While the outputs are relatively easily measured, we are more concerned about the outcomes in terms of the adoption, use and benefits to our target groups from application of the outputs. These impacts are the ultimate measure of our success but paradoxically they are difficult to measure in natural resource management. Project 9 Research Impact, Information and Capacity Building will develop new methodologies and analyses for assessment of “non-commodity” research impact and assemble baseline research capacity data for forestry NARS.



## **General Statement on Reduced Funding**

CIFOR considers that it has developed a balanced portfolio of projects as a result of very extensive consultation. To a large degree these are not distinct entities but have many cross linkages. Thus, should it not be possible to obtain the funding required in this Medium Term Plan, CIFOR will make appropriate reductions in expenditure by cutting resources to each project. This would reduce the scope of the research being undertaken and probably slow its rate of progress but should not compromise our ability to produce quality outputs. In some instances we might be able to compensate for some short-fall by increasing our reliance on our partners. However, as much of our research now depends heavily on restricted funding the source of the cut might determine, at least in the short term, the activities that would be reduced.

## FINANCE

### Funding Requirements and Financing Plan

CIFOR was established with the intention that there would be steady growth over a number years until CIFOR reached a size where it could effectively address its global mandate. This gradual growth pattern was necessary to ensure that CIFOR's research programmes and support services were developed in a logical and organised way, in other words, not to reach too far, too fast.

During the first three years, the growth was rapid in percentage terms but less so in dollar terms. CIFOR believes that this steady growth should continue at a rate of about of 15% per year during the period of the 1998-2000 Medium Term Plan and the MTP has been developed on this basis. It should be noted that we believe that continued but modest growth will be required beyond 2000 to meet our global agenda. CIFOR is requesting an Approved Research Agenda for the following amounts in 1997 and for the MTP period:

<u>Year</u>	<u>USD (millions)</u>
1997	11.495
1998	12.750
1999	14.650
2000	16.825

It is clear that opportunities for future funding will be increasingly in the form of restricted grants. This pattern is evident in CIFOR as the percentage of restricted funds as a proportion of total funds has been steadily increasing since CIFOR was established.

### Operating Budget (see Table 5)

A key feature of CIFOR's method of operating is the dependence on partners. This means that the proportion of our resources spent on staff salaries should be relatively low. CIFOR has chosen to limit the percentage of the budget that is spent on personnel costs to about 45% of the total budget.

Another result of this method of operating is that we have a budget category called "Collaborative Activities" which represents about 30% of the budget. These funds are used for sub-contracted research activities at NARS or ARI partners, or for other activities which are necessary to operationalise a partnership mode of operation (e.g. partner consultations, travel by partners, etc.). Up to 1996, these costs were budgeted separately within CIFOR but reported externally as supplies and services.

CIFOR's partnership mode of operation means that the funds provided by our donors for the Agreed Research Agenda create considerable leverage with our partners and encourages them to also invest in those issues of importance to the global forestry community resulting in the needed critical mass. These investments by our partners take many forms including scientific time and resources for fieldwork. CIFOR is not yet able to put a precise value on these investments but there is little doubt that they are substantial.

During the first three years of existence, CIFOR's efforts were devoted to establishing the research programme and the necessary partnerships with research institutions and donors to implement the programme. As a result, the recovery of overhead on restricted/complementary activities was a lower priority than establishing a "buy in". However, during the new MTP period, we will continue the efforts started in 1996 to ensuring that activities funded by restricted sources are funded on a full cost basis.

The portion of the budget devoted to non-research functions (Director General's Office, Finance and Administration, Board of Trustees) will be kept at approximately 20% of the total budget.

## **Personnel Inputs (see Table 7)**

As mentioned previously, the partnership mode of operation has major implications for CIFOR's staffing. Many of the roles traditionally filled by in-house scientific staff at other centres are performed by our partners. Our research partners are primarily located in NARS but there are a significant number located with ARIs and NGOs.

Annex 3 provides a list of the MOUs currently in effect or being negotiated as at December 1996. It is expected that this number of MOUs will increase during the MTP period and is a graphic illustration of the extent of CIFOR's partners. MOUs tend to be of 5 years' duration and are often supplemented by contracts for specific activities (see below).

Annex 4 is a list of the sub-contracted research activities agreed to in 1995 and 1996. Most of these specific research tasks are of relatively short duration and will not exist when the new MTP period begins. However, there will certainly be many contracts in effect at that time.

Given the partnership mode of operation, and CIFOR's policy to out-source as many tasks as possible, CIFOR is able to discharge its mandate with a low ratio of support staff to professional staff. This pattern will be maintained through the MTP period. Staff numbers are projected to increase on a basis commensurate with the increase in funding.

Over the next MTP period, it is expected that there will be a greatly increased number of visiting scientists at CIFOR. In the past, the ability to absorb visiting scientists was constrained by space and by the fact that CIFOR core staff were fully extended in establishing effective research partnerships and

therefore had limited time to interact with a significant number of visiting scientists. However, the situation is more stable now, given that CIFOR is established and the new facilities donated by the Government of Indonesia provide sufficient space.

Most growth in staff during the MTP period will occur away from Bogor. CIFOR will have established small offices in Belém (Brazil), Harare (Zimbabwe) and Libreville (Gabon) by the end of 1997. It is expected that during the MTP period that the number of staff located in each of these locations will increase by about 2 or 3 per location. A final determination will be made in each case after consultations with our partners.

### **Capital Budget (see Table 6)**

The new Headquarters building was occupied in 1997 and CIFOR was required to finance the interior fit up, most of these capital costs will be incurred by the end of 1997.

CIFOR will not become capital intensive in its operations. Therefore, capital costs incurred during the MTP period will be to replace vehicles, office equipment and computers in addition to moderate leasehold improvements. CIFOR maintains a capital fund adequate to finance the capital programme. It should be noted that CIFOR does not yet know how well vehicles will continue to be serviceable in the Bogor area but they should last beyond the four-year depreciation period. Similarly, CIFOR wishes to be up to date vis-à-vis information technology so it is expected that the useful life of a computer will be about three years.

The capital fund will decline during the MTP period due to the costs of the new building, and due to the need to begin replacing assets purchased during the start-up period as mentioned above. It will also be necessary to provide computers for the visiting scientists.

Staff located away from CIFOR Headquarters with partner organisations will be housed in space provided by the partners. This limits the capital requirements to basics such as vehicles and computers.

### **Financial Ratios (see Table 9)**

CIFOR has constructed this MTP in order to maintain the operating fund at a level that will provide a strategic reserve to ensure liquidity in the event of short term cash flow problems or longer term funding variations.

Working capital and the current ratio will be strong during the MTP period but will decline from the levels of 1996. This is a result of the capital expenditures required to make the new Headquarters facility suitable for occupation. Maintaining a healthy financial situation is important to the Board.



**Table 1a: 1998 Research Agenda Requirements**

(expenditure in \$ '000)

CGIAR Undertakings	I					II	III	IV	V				Total
	Increasing Productivity					Protecting Environment	Saving Biodiversity	Improving Policies	Strengthening NARS				
CGIAR Programs	Germplasm Enhance/Breed	Production Systems Dev & Mgmt											
		Crops	Livestock	Trees	Fish				Training	Info.	Org/ Mgmt	Networks	
Center Projects	1	2	3	4	5	6	7	8	9	10	11	12	
Project 1 Underlying Causes of Deforestation						673		822					1,495
Project 2 Forest Ecosystem Management						333	442						775
Project 3 Natural Forest Management				931		1,139							2,070
Project 4 Criteria and Indicators				341		1,024							1,365
Project 5 Plantations				1,209			121	645	40				2,015
Project 6 Biodiversity and Genetic Resources						239	716						955
Project 7 Community Forestry						466	206	380	33				1,085
Project 8 Non-Timber Forest Products				603			193	409					1,205
Project 9 Impact and Information								74	215	866			1,155
Project 10 Policies, Technologies and Global Changes								114		241			355
External Programme and Management Review											150		150
System-Wide Programme - Genetic Resources							25						25
System-Wide Programme - Alternatives to Slash and Burn						25	75						100
<b>Programme Totals</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,084</b>	<b>0</b>	<b>3,899</b>	<b>1,778</b>	<b>2,444</b>	<b>288</b>	<b>1,107</b>	<b>150</b>	<b>0</b>	<b>12,750</b>

**Total Research Agenda Requiremen** 12,750

**less: Center Income**

Investment Income 225

**Total Funding Requirement** 12,525

**Table 1b: 1999 Research Agenda Requirements**

(expenditure in \$ '000)

CGIAR Undertakings	I Increasing Productivity					II Protecting Environment	III Saving Biodiversity	IV Improving Policies	V Strengthening NARS				Total
	CGIAR Programs		Production Systems Dev & Mgmt							Training	Info.	Org/ Mgmt	
	Germplasm Enhance/Breed	Crops	Livestock	Trees	Fish								
Center Projects	1	2	3	4	5	6	7	8	9	10	11	12	
Project 1 Underlying Causes of Deforestation						922		1,128					2,050
Project 2 Forest Ecosystem Management						340	450						790
Project 3 Natural Forest Management				1,114		1,361							2,475
Project 4 Criteria and Indicators				345		1,035							1,380
Project 5 Plantations				1,488			149	793	50				2,480
Project 6 Biodiversity and Genetic Resources						300	900						1,200
Project 7 Community Forestry						533	236	434	37				1,240
Project 8 Non-Timber Forest Products				620			198	422					1,240
Project 9 Impact and Information								75	218	877			1,170
Project 10 Policies, Technologies and Global Changes								160		340			500
System-Wide Programme - Genetic Resources							25						25
System-Wide Programme - Alternatives to Slash and Burn						25	75						100
<b>Programme Totals</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,567</b>	<b>0</b>	<b>4,516</b>	<b>2,033</b>	<b>3,012</b>	<b>305</b>	<b>1,217</b>	<b>0</b>	<b>0</b>	<b>14,650</b>

**Total Research Agenda Requireme** 14,650

**less: Center Income**

Investment Income 225

**Total Funding Requirement** 14,425



**Table 1c: 2000 Research Agenda Requirements**

(expenditure in \$ '000)

CGIAR Undertakings	I Increasing Productivity					II Protecting Environment	III Saving Biodiversity	IV Improving Policies	V Strengthening NARS				Total	
	CGIAR Programs													
	Germplasm Enhance/Breed	Production Systems Dev & Mgmt							Training	Info.	Org/ Mgmt	Networks		
Center Projects		1	2	3	4	5	6	7	8	9	10	11	12	
Project 1 Underlying Causes of Deforestation							1,076		1,314					2,390
Project 2 Forest Ecosystem Management							340	450						790
Project 3 Natural Forest Management					1,328		1,622							2,950
Project 4 Criteria and Indicators					345		1,035							1,380
Project 5 Plantations					1,770			177	944	59				2,950
Project 6 Biodiversity and Genetic Resources							362	1,088						1,450
Project 7 Community Forestry							667	294	543	46				1,550
Project 8 Non-Timber Forest Products					675			216	459					1,350
Project 9 Impact and Information									75	218	877			1,170
Project 10 Policies, Technologies and Global Changes									230		490			720
System-Wide Programme - Genetic Resources								25						25
System-Wide Programme - Alternatives to Slash and Burn							25	75						100
<b>Programme Totals</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>4,118</b>	<b>0</b>	<b>5,127</b>	<b>2,325</b>	<b>3,565</b>	<b>323</b>	<b>1,367</b>	<b>0</b>	<b>0</b>	<b>16,825</b>

**Total Research Agenda Requireme** 16,825

**less: Center Income**

Investment Income 225

**Total Funding Requirement** 16,600

**Table 2: CENTER RESEARCH AGENDA - BY CGIAR ACTIVITY, 1996-2000**

(expenditure in \$ '000)

		<b>(actual) 1996</b>	<b>(est) 1997</b>	<b>(plan) 1998</b>	<b>(plan) 1999</b>	<b>(plan) 2000</b>
<b>Undertaking I</b>	<b><i>Increasing Productivity</i></b>					
	1 Germplasm Enhancement & Breeding	_____	_____	_____	_____	_____
	2 Production Systems Development & Mgm CROPS	_____	_____	_____	_____	_____
	3 Production Systems Development & Mgm LIVESTOCK	_____	_____	_____	_____	_____
	4 Production Systems Development & Mgm TREES	<u>2,094</u>	<u>2,661</u>	<u>3,084</u>	<u>3,567</u>	<u>4,118</u>
	5 Production Systems Development & Mgm FISH	_____	_____	_____	_____	_____
	<b><i>Total: Increasing Productivity</i></b>	<u>2,094</u>	<u>2,661</u>	<u>3,084</u>	<u>3,567</u>	<u>4,118</u>
<b>Undertaking II</b>	6 <b><i>Protecting the Environment</i></b>	<u>3,177</u>	<u>3,568</u>	<u>3,899</u>	<u>4,516</u>	<u>5,127</u>
<b>Undertaking III</b>	7 <b><i>Saving Biodiversity</i></b>	<u>1,544</u>	<u>1,660</u>	<u>1,778</u>	<u>2,033</u>	<u>2,325</u>
<b>Undertaking IV</b>	8 <b><i>Improving Policies</i></b>	<u>1,692</u>	<u>2,142</u>	<u>2,444</u>	<u>3,012</u>	<u>3,565</u>
<b>Undertaking V</b>	<b><i>Strengthening NARS</i></b>					
	9 Training	<u>199</u>	<u>279</u>	<u>288</u>	<u>305</u>	<u>323</u>
	10 Documentation, Publications, Information Dissemination	<u>680</u>	<u>1,035</u>	<u>1,107</u>	<u>1,217</u>	<u>1,367</u>
	11 Organisation & Management Counselling	<u>0</u>	<u>150</u>	<u>150</u>	<u>0</u>	<u>0</u>
	12 Networks	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	<b><i>Total: Strengthening NARS</i></b>	<u>879</u>	<u>1,464</u>	<u>1,545</u>	<u>1,522</u>	<u>1,690</u>
	<b>TOTAL</b>	<u>9,386</u>	<u>11,495</u>	<u>12,750</u>	<u>14,650</u>	<u>16,825</u>
	<i>of which:</i>					
	System-wide Programmes convened by the Center	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

**Table 3: CENTER RESEARCH AGENDA - BY PROJECT, 1996-2000**

(expenditure in \$ '000)

<b>Project Number and Title</b>	<b>(actual) 1996</b>	<b>(est) 1997</b>	<b>(plan) 1998</b>	<b>(plan) 1999</b>	<b>(plan) 2000</b>
1 Underlying Causes of Deforestation	1,027	1,395	1,495	2,050	2,390
2 Forest Ecosystem Management	645	805	775	790	790
3 Natural Forest Management	1,201	1,690	2,070	2,475	2,950
4 Criteria and Indicators	1,500	1,395	1,365	1,380	1,380
5 Plantations	1,199	1,590	2,015	2,480	2,950
6 Biodiversity and Genetic Resources	925	755	955	1,200	1,450
7 Community Forestry	966	900	1,085	1,240	1,550
8 Non-Timber Forest Products	919	1,195	1,205	1,240	1,350
9 Impact and Information	784	1,185	1,155	1,170	1,170
10 Policies, Technologies and Global Changes	135	215	355	500	720
11 External Programme and Management Review	0	150	150	0	0
12 System-Wide Programme - Genetic Resources	63	50	25	25	25
13 System-Wide Programme - Alternatives to Slash and Burn	22	170	100	100	100
<b>Total</b>	<u>9,386</u>	<u>11,495</u>	<u>12,750</u>	<u>14,650</u>	<u>16,825</u>

**Table 4: EXPENDITURE BY REGION 1996-2000**

(in \$'000)

	<b>(actual) 1996</b>	<b>(est) 1997</b>	<b>(plan) 1998</b>	<b>(plan) 1999</b>	<b>(plan) 2000</b>
Sub-Saharan Africa	<u>2,346</u>	<u>3,104</u>	<u>3,570</u>	<u>4,248</u>	<u>5,047</u>
Asia	<u>4,318</u>	<u>4,713</u>	<u>4,972</u>	<u>5,421</u>	<u>5,889</u>
Latin America / Caribbean	<u>2,722</u>	<u>3,678</u>	<u>4,208</u>	<u>4,981</u>	<u>5,889</u>
	<u><u>9,386</u></u>	<u><u>11,495</u></u>	<u><u>12,750</u></u>	<u><u>14,650</u></u>	<u><u>16,825</u></u>

**Table 5: OBJECT OF EXPENDITURE 1996-2000**

(in \$'000)

	<b>(actual) 1996</b>	<b>(est) 1997</b>	<b>(plan) 1998</b>	<b>(plan) 1999</b>	<b>(plan) 2000</b>
Personnel	<u>4,055</u>	<u>4,791</u>	<u>5,681</u>	<u>6,536</u>	<u>7,515</u>
Supplies and Services	<u>2,076</u>	<u>2,123</u>	<u>1,981</u>	<u>2,360</u>	<u>2,796</u>
Collaborative Activities	<u>2,231</u>	<u>3,343</u>	<u>3,664</u>	<u>4,198</u>	<u>4,807</u>
Operational Travel	<u>609</u>	<u>708</u>	<u>814</u>	<u>936</u>	<u>1,077</u>
Depreciation	<u>415</u>	<u>530</u>	<u>610</u>	<u>620</u>	<u>630</u>
	<u><u>9,386</u></u>	<u><u>11,495</u></u>	<u><u>12,750</u></u>	<u><u>14,650</u></u>	<u><u>16,825</u></u>

**Table 6: CAPITAL BUDGET, 1996-2000**

(in \$ '000)

<b>Asset Acquisition Expenditure</b>					
	(actual) 1996	(est) 1997	(plan) 1998	(plan) 1999	(plan) 2000
<b>I Physical Facilities</b>					
Research	_____	_____	_____	_____	_____
Training	_____	_____	_____	_____	_____
Administration	_____	_____	_____	_____	_____
Housing	_____	_____	_____	_____	_____
Auxiliary Units	_____	_____	_____	_____	_____
sub-total	_____	_____	_____	_____	_____
<b>II Infrastructure &amp; Leasehold</b>	245	765	200	200	150
<b>III Furnishing &amp; Equipment</b>					
Farming	_____	_____	_____	_____	_____
Laboratory & Scientific	_____	_____	_____	_____	_____
Office	200	217	200	150	120
Housing	_____	_____	_____	_____	_____
Auxiliary Units	_____	_____	_____	_____	_____
Computers	188	334	100	100	200
Vehicles	116	44	100	300	250
sub-total	504	595	400	550	570
<b>TOTAL</b>	<u>749</u>	<u>1,360</u>	<u>600</u>	<u>750</u>	<u>720</u>

<b>Asset Financing &amp; Capital Fund Reconciliation</b>					
	(actual) 1996	(est) 1997	(plan) 1998	(plan) 1999	(plan) 2000
<b>I Sources of Asset Financing</b>					
Capital Fund	749	1,360	600	750	720
Other	_____	_____	_____	_____	_____
<b>TOTAL</b>	<u>749</u>	<u>1,360</u>	<u>600</u>	<u>750</u>	<u>720</u>
<b>II Capital Fund Reconciliation</b>					
<i>Balance, January 1</i>	<u>2,215</u>	<u>1,911</u>	<u>1,101</u>	<u>1,136</u>	<u>1,036</u>
plus: depreciation amount	415	530	610	620	630
plus / minus: disposal gains/(losses)	30	20	25	30	35
plus: other allocations	_____	_____	_____	_____	_____
minus: (asset acquisition)	-749	-1,360	-600	-750	-720
<i>equals: Balance, December 31</i>	<u>1,911</u>	<u>1,101</u>	<u>1,136</u>	<u>1,036</u>	<u>981</u>

**Table 7: RESEARCH AGENDA STAFF COMPOSITION 1996-2000**

	<b>(actual)</b> 1996		<b>(est)</b> 1997		<b>(plan)</b> 1998		<b>(plan)</b> 1999		<b>(plan)</b> 2000	
	<b>Center Hired</b>	<b>Other Hired</b>	<b>Center Hired</b>	<b>Other Hired</b>	<b>Center Hired</b>	<b>Other Hired</b>	<b>Center Hired</b>	<b>Other Hired</b>	<b>Center Hired</b>	<b>Other Hired</b>
<b><u>Internationally-Recruited Staff</u></b>										
Research and Research Support	23	14	29	14	32	15	35	19	38	23
<i>of which, Post-doctoral Fellows</i>	4		8	1	9	1	10	2	11	3
<i>of which, Interns</i>		5		5		5		6		7
Training / Communications	4		3		4		5		5	
Research Management	5	1	5	1	6	1	6	1	6	1
Total	32	15	37	15	42	16	46	20	49	24
<b><u>Supervisory Staff (locally hired)</u></b>	14		15		18		21		24	
<b><u>Support Staff (locally hired)</u></b>	49		44		51		59		68	

**Table 8: Research Agenda Project Financing, 1998**

(in \$'000)

CGIAR Member	Austl	Aust	Can	Dmrk	EU	Finld	Frnce	Ford	Germ	Indon	IADB	IDRC	ITTO	Japan	Nethl	Norwy	MF	Phil	Spain	Swed	Switz	UK	UNDP	USA	WB	SWI	Other	UNRESTRICTED POOL		
																												Total Funding	+ Center Income	= Total Unrestricted
Unrestricted Funding	348	80	246	260		362			332	500				1,429	592	221		25	50	227	270			432	1,329		1,273	7,976	225	8,201
(1)																											Project Financing Summary			
Agenda Projects	Members' Restricted Funding to Projects (\$'000)																									Restricted	Unrestricted Share	TOTAL		
1) Underlying Causes of Deforestation					288											80						107	150					625	870	1,495
2) Forest Ecosystem Management					43																							43	732	775
3) Natural Forest Management					252		64				125	700							50									1,191	879	2,070
4) Criteria and Indicators					516			73	220			115					20					30						974	391	1,365
5) Plantations	60						64							400														524	1,491	2,015
6) Biodiversity and Genetic Resources					31																	118						149	806	955
7) Community Forestry					240																							240	845	1,085
8) Non-Timber Forest Products									172														16					188	1,017	1,205
9) Impact and Information					194																		140					334	821	1,155
10) Policies, Technologies and Global Changes					56																			100				156	199	355
External Programme and Management Review																												0	150	150
System-Wide Programme - Genetic Resources																										25		25	0	25
System-Wide Programme - Alternatives to Slash & Burn																										100		100	0	100
<b>MEMBER TOTALS</b>	408	80	246	260	1,620	362	128	73	724	500	125	115	700	1,829	592	301	20	25	100	227	300	381	250	432	1,329	125	1,273	4,549	8,201	12,750

(1) Negotiations are under way with a number of existing and potential new donors.



**Table 9: Statement of Financial Position, 1996-2000**

(in \$'000)

	(actual) 1996	(estimate) 1997	(plan) 1998	(plan) 1999	(plan) 2000
<b><u>Assets</u></b>					
<b><u>Current Assets</u></b>					
Cash & Cash Equivalents	6,936	6,100	6,100	6,100	6,100
Accounts Receivable					
Donors	2,418	2,000	2,000	2,000	2,000
Employees	94	100	100	100	100
Other	384	400	400	400	400
Prepaid Expenses	376	398	433	433	478
<b>Total Current Assets</b>	<b>10,208</b>	<b>8,998</b>	<b>9,033</b>	<b>9,033</b>	<b>9,078</b>
<b><u>Fixed Assets</u></b>					
Property, Plant, & Equipment	1,969	3,309	3,884	4,604	5,289
Less: Accumulated Depreciation	877	1,407	2,017	2,637	3,267
<b>Total Fixed Assets - Net</b>	<b>1,092</b>	<b>1,902</b>	<b>1,867</b>	<b>1,967</b>	<b>2,022</b>
<b>Total Assets</b>	<b>11,300</b>	<b>10,900</b>	<b>10,900</b>	<b>11,000</b>	<b>11,100</b>
<b><u>Liabilities and Net Assets</u></b>					
<b><u>Current Liabilities</u></b>					
Bank Indebtedness					
Accounts Payable					
Donors	1,815	1,400	1,400	1,400	1,400
Others	53	100	100	100	100
In-Trust Accounts	115	85	85	85	85
Accruals and Provisions	1,802	1,800	1,800	1,900	2,000
<b>Total Current Liabilities</b>	<b>3,785</b>	<b>3,385</b>	<b>3,385</b>	<b>3,485</b>	<b>3,585</b>
<b><u>Net Assets</u></b>					
Capital Invested in Fixed Assets					
Center Owned	1,092	1,902	1,867	1,967	2,022
Capital Fund	1,911	1,101	1,136	1,036	981
Operating Fund	4,512	4,512	4,512	4,512	4,512
<b>Total Net Assets</b>	<b>7,515</b>	<b>7,515</b>	<b>7,515</b>	<b>7,515</b>	<b>7,515</b>
<b>Total Liabilities &amp; Net Assets</b>	<b>11,300</b>	<b>10,900</b>	<b>10,900</b>	<b>11,000</b>	<b>11,100</b>

## ANNEXES

### Annex 1: Project Portfolio

#### **Project 1. Underlying Causes of Deforestation, Forest Degradation and Poverty in Forest Margins**

**The problem:** Latest estimates suggest that 15.4 million hectares of tropical forest annually were converted to non-forest uses in the 1980s and millions more were severely degraded. Some of this conversion was appropriate from an economic, social and environmental viewpoint, but much was not. Meanwhile, forest-dwelling people face increasing threats to their livelihoods from a variety of sources. The immediate causes of deforestation and forest degradation are well known: agricultural conversion, livestock expansion and inappropriate logging practices. Similarly, forest dwellers suffer from insecure tenure over forest resources, declining terms of trade and limited access to education, technology and capital markets.

These phenomena, however, have their origins in more general patterns of resource distribution and incentive structures which, in turn are influenced by government macro-economic and sectoral policies, market fluctuations and changes in population and technology. Compared to the direct causes of deforestation and poverty in forested areas, these broader trends – such as structural adjustment, trade liberalisation, population growth and growth in public infrastructure investment which affect land clearing, timber extraction and forest dwelling people – are still poorly understood.

**Objectives:** This project will analyse the underlying causes of changes in forest conditions to enable improved prediction of policy impacts on forests and people in forest margins, under different social and economic conditions, and the formulation of more appropriate policies.

Research will focus on Bolivia, Cameroon, Indonesia, Central America, Tanzania, Zimbabwe, Malawi and Mozambique.

**Outputs:** The project will produce information to facilitate the formulation and implementation of informed policies that affect forest clearing and degradation and poverty in forest areas. This information will be disseminated through case study and synthesis documents, workshop proceedings, seminars, and in-service training of research collaborators. The project will improve institutional research capacity to analyse these issues.

**Expected gains:** In the short term the gains will be changes in attitudes regarding forestry issues, as well as changes in policies and means for their implementation. These changes should contribute simultaneously to the goals of poverty alleviation, environmental conservation and food security, and also to a better understanding of the possible trade-offs between them. Changes in attitudes will be reflected in declarations and actions by the private sector and by governments that demonstrate a clear understanding of how different factors affect forest resources and their utilisation. Regarding poverty alleviation, these changes will be reflected in measures that give local communities (and particularly disadvantaged groups within them) greater access to forest resources, and services such as extension and credit. They will also be reflected in steps to protect poor people's livelihoods from the negative effects of forest degradation. The project will contribute to food security by helping to improve poor people's income as well as their access to forest products used for food.

**Duration:** Ongoing (5+ years)

Milestones: 1: A series of comparative case studies on how non-forestry policies and general social trends affect tropical forests (1997); 2: Network of Central American forestry policy analysts established and fully functioning (1998) and another network of analysts of forestry and related policies for Eastern and Southern Africa (1998/99); 3: Long-term research sites established in three sites in each of the countries of Tanzania, Malawi, Mozambique and Zimbabwe to monitor the effects of policies on forests and forest utilisation (1997/98); 4: High-level international policy seminar conducted to discuss how policies outside the forest sector affect forests (1998); 5: Book published synthesising what has been learned about how non-forestry policies and other social trends affect forests (1999).

**Users:** Policy makers, notably those involved in forest conservation and management, general land-use and environmental planning, agriculture and livestock, population and migration, energy, rural infrastructure, and overall economic planning; relevant international and national NGOs, and relevant educational institutions.

**System Linkages:** Protection of the Environment (45%), Policy (55%).

## **Project 2. Forest Ecosystem Management**

**The problem:** As utilisation of, and other pressures on, natural resources increase steadily as a result of population increase, rising living standards, pollutants and other factors, it becomes critical that we gain a thorough understanding of ecosystem function. In particular, we need to know how natural systems behave under pressure, and whether functional impairment will be manifested as a gradual deterioration in productivity, or whether behaviour may become chaotic at some threshold. In particular, we need to know how to predict short- and long-term impacts of perturbations such as the introduction or removal (complete or partial) of genotypes (e.g. seeds or species), structural components (e.g. big trees), nutrients, etc., on a single occasion (cf. species extinction), repeatedly at irregular intervals (cf. timber harvest), or

continually over a prolonged period (cf. harvesting non-timber forest products; nitrogen deposition). We also need to know how best to manage a system to minimise the impact of such a perturbation.

The complexity of this problem requires an eclectic approach spanning both social and ecological aspects. Existing information and data should be compiled into lucid models, which must be tested systematically to reveal gaps in existing knowledge, areas for further research, as well as feasible management options. To further the overall objective, two subordinate aspects must be addressed. They are enduring issues in natural resource management: conflict resolution and the valuation of diverse goods and services.

**Objectives:** Specific objectives are:

- Improve understanding of forest ecosystem function and its relationship with human well-being.
- Devise and promote sustainable, productive and equitable management options for forest lands.
- Offer more factual and efficient ways to resolve land-use conflicts.
- Enhance national capacities to monitor and research forest ecosystem function.

**Outputs:** The project will develop: (a) models at various spatial and temporal scales to allow the efficiency of management and policy options to be investigated in terms of both ecological and social objectives; (b) standardised procedures to evaluate forest goods and services; (c) generalised decision support systems that can be customised and used as a basis for resolving land-use conflicts; (d) survey techniques for efficient diagnosis and inventory of forested ecosystems; and (e) integrated survey design and sampling procedures especially for estimating biodiversity and related productivity for human needs.

**Expected gains:** Better understanding of the potential of alternatives, and the short- and long-term consequences of present procedures should contribute to better management of natural resources. This should help to maintain ecosystem function and, in turn, lead to better food security, conservation of biodiversity, and indirectly to alleviation of poverty.

**Duration:** Ongoing, with significant gains before 2000.

**Milestones:** **1997:** Empirical tests of reliability of innovative survey techniques currently under development confirmed. Valuation studies (with NTFP). Efficient indicators of forest well-being (with Projects 3 and 4; and Alternatives to Slash and Burn) devised. Training manual and CDROM for Plant Functional Attributes completed. Workshop on biodiversity assessment manual completed and draft manuscript completed together with CDROM. **1998:** Prototypes of ecosystem models at local and regional scale.

**Users:** International and national planning agencies involved in resource management and policy development.

**System Linkages:** Protection of the Environment (43%), Biodiversity (57%)

### **Project 3. Multiple Resource Management of Natural Forests**

**The problem:** Forests, including those designated for industrial timber production, must be managed so that all values will be sustained at levels acceptable to present and future generations. Thus we need management systems which explicitly consider how both commodity and non-timber values will be affected by management operations. Societies also seek participatory and equitable approaches that ensure people living on or near the forest margins share in making decisions and benefit from forest operations.

Specific areas offering high potential returns from research include:

*Reduced-impact harvesting practices.* In industrialised countries, knowledge of how to undertake forest operations such as harvesting and road construction developed slowly; mistakes and environmental mishaps occurred. Most of those countries have now adopted forest-practice codes which specify the acceptable practices under various conditions and the results expected from forest operators. Very few developing countries have yet adopted such codes. Because timber harvesting can seriously impair forests' ecosystem functions, technologies must be developed to minimise such impacts. Policies and incentives are equally essential to ensure that these are widely adopted.

*Secondary forests.* Forests which have re-grown (for example, after abandonment of land cleared for agriculture or pasture) are rapidly expanding in several tropical areas. Although similar in some ways to older natural forests, they typically have less biodiversity and degraded soils. Thus they present special problems but they also provide a potential resource which might relieve some pressure on primary forests. They are often close to markets and therefore may justify intensive management.

*Tropical silviculture.* Silviculture is potentially critical for sustainable forest management. Such knowledge has not been satisfactorily brought together for large regions and has tended to focus on logged-over forests, ignoring the potentially important economic contribution of secondary forests. CIFOR's research on tropical silviculture aims to contribute to improved resource management by integrating production from secondary and logged-over forests into the overall context of land use, especially for resource-poor people on the forest margins. Initial emphasis in tropical silviculture is to synthesise research results for the three major regions of the tropics, with later work to integrate "pure" silviculture into socio-economic, ecological and managerial research.

**Objectives:** The aim of the project is to improve silvicultural practices in natural tropical forests, including secondary forests which have grown on lands originally logged or cleared for agriculture in order to:

- contribute to the development and evaluation of technologies and management options which will help ensure the sustainable, simultaneous production of both commodities and environmental values from natural forests in the tropics; and
- quantify the environmental services and other benefits resulting from reduced-impact forest harvesting and management practices.

Research will focus on the humid and sub-humid tropical lowlands and uplands in Latin America, Africa and Asia.

**Outputs:** Technologies to help countries achieve the ITTO Target 2000. It will produce: (a) guidelines and technologies which reduce environmental impacts associated with timber harvesting while retaining economic efficiency; (b) policies and incentives which will encourage timber concessionaires and loggers to utilise reduced-impact logging techniques; (c) software to improve the efficiency of planning harvesting operations to reduce impacts; (d) publications on improved, ecologically based forest management; and (e) guidelines for the management of secondary forests to produce both timber and non-timber forest products and optimise biological diversity.

**Expected gains:**

(a) By the year 2000, adoption of reduced-impact harvesting techniques in 20% of all harvesting operations in tropical forests would result in a 10% increase in carbon sequestration by residual vegetation in all tropical forests harvested for timber, and a 5% reduction in soil impacts caused by logging equipment in those forests; (b) a significant increase in the biological productivity and commercial value of logged-over forests through the application of ecologically based silvicultural practice; and (c) improved economics of secondary forests compared to other land-use alternatives and greater potential for income generation by rural households and communities.

**Duration:** Ongoing (5 years+).

**Milestones:** **1997:** A global synthesis of research on reduced-impact logging and its potential for improving management of natural forests in the tropics. **1998:** A global synthesis of research on silviculture as a tool for multi-resource forest management in the tropics. A book documenting technologies and incentives for sustainable forest management in West and Central Africa (a CIFOR-CIRAD monograph). The biological and socio-economic potential for the sustainable management of neotropical secondary forests for timber production documented on scientific publications and technical guidelines, and demonstration forest stands in at least four Latin American countries. Annotated bibliographies on selected topics on natural forest management in the American tropics available in CDROM and hard text. **1998-2000:** A book on the ecological basis and the technologies for the sustainable management of secondary (successional) forests in tropical humid lowlands, and a number of demonstration sites actively being used by NARS for promotion and research. The concept and application of multi-resource management in natural forests widely disseminated and documented. A book based on a major conference.

**Users:** Policy makers; industrial and community foresters; environmental auditors and organisations involved in certifying the sustainability of forest management; forestry research institutes; universities and forestry technical institutes; extension forestry specialists; NGOs involved in tropical forest policy and management; regional and international forestry and environment projects.

**System Linkages:** Increasing Productivity in Trees (45%), Protection of the Environment (55%).

## **Project 4. Assessing the Sustainability of Forest Management: Developing Criteria and Indicators**

**The problem:** In many countries, policy makers, forestry agencies, owners and managers are anxious to assess whether their forests are being managed sustainably. Recent moves towards certification are also a powerful incentive to bring forests under active management in order to maintain access to international markets. Market niches may develop in which products from certified forests bring higher prices than those from non-certified forests. However, few of the proposed standards for assessing sustainable forest management or carrying out certification have been independently tested in the field. Little is known about how to define and assess important social and ecological criteria relating to sustainable forest management.

**Objectives:** The research will contribute to the development and evaluation of technologies to determine objectively whether forests are being managed on a sustainable basis. The following are specific objectives:

- undertake investigations to ensure that criteria and indicators used to assess forest management are objective, relevant, and can be applied on a cost-effective basis at the level of the individual forest management unit;
- develop and field-test criteria and indicators related to the socio-economic impacts of forest management;
- develop and field-test criteria and indicators which are specifically useful for assessing forests that are under the management of local communities, together with Project 7;
- develop and field-test criteria and indicators related to the impacts of forest management on the conservation of biodiversity, together with Project 6;
- develop and field-test criteria and indicators which are specifically useful for assessing plantation forests, together with Project 5; and
- improve the utility of criteria and indicators as information and decision-support tools by optimising internal coherency, trade-offs and flow of information between them, especially using qualitative modelling techniques.

**Outputs:** The project will develop: (a) criteria and indicators which are objective, cost-effective and relevant for assessing aspects of sustainable forest management which have not received sufficient attention, such as social impacts of forest management and biodiversity; (b) criteria and indicators for sustainable management of forests managed by local communities; (c) guidelines on decision-support methodologies for evaluation of the sustainability of forest management based on qualitative models of the interactions of criteria and indicators; and (d) generalised methods and technologies for developing performance thresholds for key indicators.

**Expected gains:** (a) The most important primary gain is to be able to discern clearly between sustainable and unsustainable forest management practices and so reduce uncertainty concerning environmental and social costs of logging and other kinds of forest use. This will enable greater productive use to be made of forests; (b) preferential treatment or better prices for forest products especially timber from sustainable sources through certification; (c) reduction in environmental impacts and degradation through an improved ability to diagnose the factors affecting sustainability of management practices; and (d) reduction in social inequities and enhancement of opportunities for income generation and improved quality of life.

**Duration:** Ongoing with significant gains by 2000.

**Users:** Policy makers; government agencies and other organisations involved in assessing, controlling or certifying the sustainability of forest management; industrial and community foresters; NGOs such as the Forest Stewardship Council (FSC) involved in tropical forest policy and management; intergovernmental organizations such as FAO, ATO and ITTO; development assistance organisations such as the GTZ, World Bank and the European Union.

**System Linkages:** Protection of the Environment (75%), Increasing Productivity in Trees (25%).

## **Project 5. Plantation Forestry on Degraded or Low Potential Sites**

**The problem:** Plantations of trees on abandoned, little-used or low-productivity lands (communal or private) are increasingly common. These low-potential lands are often the only areas available for tree planting. Strategies for sustainable plantation forestry which will enhance national economies and people's livelihoods include:

- plantations of fast-growing pioneer species, which do not displace important ecosystems or occupy rich agricultural land, for national industrial timber requirements and possible export;
- planting of multi-purpose species at the community or village level, where the household controls what, where and how to plant;
- planting to augment farming systems to increase diversity, robustness and multiple benefits flowing from more complex systems;



- planting to provide environmental services to reduce erosion, provide shelter or re-vegetate waste or degraded ground; and
- enrichment planting of degraded natural forests.

Very high growth rates in the tropics require sites with suitable soils, precipitation and temperatures, plus timely, appropriate management practices. Major challenges include nutrient management, tree improvement and control of pests and diseases, and socio-economic questions of policies and markets to promote greater participation of rural populations in tree growing. If smallholders are to sustainably manage fast-growing trees on low-nutrient soils, questions include: the dynamic interaction of trees and soil; the role and management of symbiotic micro-organisms, and of soil organic matter.

For small-scale growers it will be important to develop low-cost technologies and options to improve tree productivity. Plant bio-technology innovations can enhance plantation production and utilisation, but bio-technology or even more traditional tree breeding probably will not flow through to tree growers. The genetic material used by smallholders has to be improved as much as possible at very low cost. As plantation areas increase, special vigilance will be necessary to ensure that new pests are not introduced. If this happens, small-scale plantings with a diversity of species will require integrated pest management techniques. Questions of long-term productivity are important because it is the spectacular short-term productivity in the tropics that encourages development of many industrial plantations as well as influencing decisions in small-scale and social-forestry activities.

**Objectives:** Increasing amounts of wood are now being produced in plantations, especially in areas where there is high population density. The sites available for the plantations are frequently degraded and of low fertility and there is a question about whether they can sustain a high level of productivity with large inputs of fertiliser, weedicides, etc. It may not be feasible for smallholders to provide these inputs. Specific objectives are to:

- identify and analyse priority problems which constrain sustainable and productive tree planting;
- develop technological and incentive options to enhance the sustainability and productivity of small-scale plantations on degraded and low-potential sites in the tropics.

Research will focus on degraded lands in the humid tropical lowlands and sub-humid tropical uplands, especially in highly populated countries in Asia.

**Outputs:** The project will: (a) develop site management and policy options which improve the choices and chance of success for smallholder involvement in plantation forestry; (b) develop technologies which improve production and sustainability of fast-growing plantations on low potential sites; (c) increase awareness about existing growth data and enable this information to be used more efficiently; and (d) together with project 4, develop criteria and indicators which are objective, cost-effective and relevant for assessing aspects of sustainable forest management in planted forests, with special attention to social impacts of forest management and biodiversity.

**Expected gains:** (a) Where improved management practices are identified and adopted in fast-growing plantations it is estimated that increased growth rates of 10-40% in the second and subsequent rotations will be achieved; and (b) improved economics of small-scale plantations compared to other land-use alternatives should result in a reduction of the pressure on natural forests and increased opportunities for households and communities to generate income from forest products.

**Duration:** Ongoing (5+ years)

**Users:** Industrial and community forest managers and smallholders; forestry research institutes; universities and forestry technical institutes; policy makers; extension forestry specialists; NGOs involved in community forestry policy and management; regional and international forestry and environment projects.

**System Linkages:** Increasing Productivity in Trees (60%), Policy (32%), Biodiversity (6%), Training (2%).

## **Project 6. Conservation of Biodiversity and Genetic Resources**

**The problem:** Tropical forests contain well over half the world's plant and animal species. The degradation and loss of tropical forests represents the single greatest threat to the world's biodiversity. Biodiversity is important firstly because the enormous range of genes and species offers the potential for new and improved varieties of crops, medicines and other valuable commodities. Loss of biodiversity permanently reduces that potential. Losses of tropical forest biodiversity also reduce ecosystem stability and ultimately lead to loss of tropical forest ecosystems, impairing global climate, hydrological cycles, soils and other environmental services.

The forest-dependent peoples of the tropics are users and stewards of this biodiversity, often with an intimate knowledge and sophisticated forest management systems to maintain it. Conservation of forest biodiversity will be most efficient if local skills and knowledge are incorporated and if forest-dependent communities receive economic benefits from agricultural and pharmaceutical developments resulting from use of biodiversity, or their knowledge of it.

The CGIAR Centers have a distinguished record in conserving and using plant genetic resources of just a few taxa. CIFOR addresses global biodiversity loss, and the conservation and use of genetic resources of innumerable forest taxa.

**Objectives:** Research will focus on the interaction of processes at two scales – the landscape-scale processes that reduce biological diversity, especially degradation (disturbance) and deforestation (fragmentation), and the micro-scale processes such as gene flow, inbreeding, pollination, seed predation, recruitment-mortality ratios, genetic drift, etc., in order to:

- determine the impacts of major threats to *in situ* conservation of forest biodiversity and genetic resources, especially by human disturbance, logging and fragmentation; and
- develop tools which are needed for measuring and monitoring biodiversity.

The original focus of research activities was on genetic resources but the focus has begun to move towards a more comprehensive coverage of all levels of biodiversity. This process will continue during the period 1998-2000. Research will focus on the humid and sub-humid tropical lowlands and uplands in Asia, Africa and Latin America, and on the seasonally dry forests of Indochina, India and Central America.

**Outputs:** The project will determine the impacts of human disturbance, logging and fragmentation on *in situ* conservation of biodiversity, and produce tools for measuring and monitoring diversity. Establishment of a relationship between the intensity of disturbance and diversity for species and ecosystems with different characteristics will result in the production of management prescriptions for managed and protected areas. The tools for measuring biodiversity will include molecular markers, computer software and geographic information systems and remote sensing applications.

The approach to investigation of impacts of human activities has envisaged the generation of generalisable data from representative research sites, followed by spatial and process modeling. Towards the end of the 1998-2000 period, the focus of research should shift more from field experimentation to modeling and model verification.

**Expected gains:** Improved cost effectiveness in conservation programmes and increased multiple-use production potential of managed forests. Improved capability in measuring genetic diversity and biodiversity.

**Duration:** Ongoing (5+ years)

**Users:** Policy makers and managers concerned about forest conservation and management; general land-use and environmental planners; forest researchers; international and national environmental NGOs.

**System Linkages:** Biodiversity (75%), Protection of the Environment (25%).

## **Project 7. Local Livelihoods, Community Based-Management and Devolution**

**The problem:** Hundreds of millions of rural people depend on forests for their basic needs, others for crucial food, fibre or medicinal products. Yet most lack formal access to forest resources and must

compete with more powerful interests. Pressures for conservation or industrial use limit their access to and use of forests. As forest areas continue shrinking and competition for forest resources increases, livelihood opportunities among forest-dependent people are becoming more limited.

During the last twenty years, policy experiments devolved management decision making and sharing of benefits from central bureaucracies to local communities, including “joint forest management” in India, “community forestry” and integrated conservation and development projects in many countries. The locally based models are potentially less costly, more effective contributors to local economic development. These programmes use collaborative forest management to jointly meet the needs of local communities as well as national goals such as timber production and forest conservation. The impacts of these policy experiments need to be analysed to yield lessons for their improvement and broader application.

**Objectives:** The project addresses the problem of how to improve local people’s livelihoods and forest management practices. By gaining a better understanding of the relationships among incentive structures and institutional arrangements for local forest management, forest people’s livelihoods and forest management, the research will identify policy and institutional options for reconciling management objectives with local people’s needs. The research will be supported by models of local people’s decision-making and analysis of projected trends in rural development and forest condition. Specific objectives are to:

- identify factors affecting behaviour among people living in and near forests, especially incentives for forest use and management;
- analyse and develop institutional arrangements and policies for jointly improving livelihood options and forest management by local communities;
- examine the impact of policies on community management; and
- develop policy options based on scenarios that demonstrate how hypothesised changes in economic growth, rural development and the forest condition will affect livelihood opportunities and forest sustainability.

Research will focus on lowland forests in Asia, Africa and Latin America.

**Outputs:** This project will seek to improve the livelihoods of for people living in forest areas by identifying policies and institutional arrangements for successfully integrating forest management and rural development. Research will focus on analysis of opportunities for improving the security of local people’s access and control over forests, raising local incomes and increasing local involvement in decision making. The project will produce methods for the rapid measurement of forest incomes and assessment of income opportunities compatible with conservation; scenarios describing the impacts of different policy alternatives; and systems for modeling the people-forest interface.

**Expected gains:** The application of the research results should provide improved information to policy makers and other decision makers for improving the well-being of communities in forest areas, especially concerning their tenure over forest resources, livelihoods and participation in decision making.

**Duration:** Ongoing (5+ years)

**Milestones:** **1997:** Case studies on Miombo Woodlands; Typology of forms of local forest management; Publication on methods for assessing income opportunities.

**1998:** Synthesis of Miombo Woodlands case studies; Scenario workshops.

**1999:** Scenarios and models of decision making.

**Users:** Forest and rural development policy makers, including local decision makers; practitioners such as intermediary NGOs or government agencies and researchers concerned with well-being of people living in and near forests.

**System Linkages:** Policy (35%), Protection of the Environment (43%), Biodiversity (19%), Training (3%).

## **Project 8. Sustainable Use and Development of Non-Timber Forest Products**

**The problem:** NTFPs have become a focus in sustainable development and biodiversity conservation because of their importance in low-income economies and the apparently benign way they can be exploited while conserving forests. Millions of people rely on NTFPs to satisfy daily needs, or harvest them to earn cash. NTFP trade contributes significantly to employment and incomes in many countries. Their significance, and potential for low-impact exploitation, has fostered the expectation that NTFP development can improve the livelihoods of the people who collect and use them. Two common propositions are:

- a) If new products can be found, if market demands are increased, and if marketing imperfections are removed, then NTFP collectors could expand their output and increase their incomes; and
- b) Developing NTFPs will increase the value of standing forest as a source of NTFPs, relative to agriculture, which should be a strong incentive to preserve forests and slow the conversion to other uses.

The tremendous variety of NTFPs makes generalised conclusions difficult. Adequate policies to assure sustained use or to promote NTFP-based socio-economic development have been difficult to define. Most research on NTFPs has used case studies. Little progress has been made in formulating general

theories or testable models that explain or predict outcomes of NTFP development. Future trends of NTFPs in local, regional, national and international economies, and determinants of their use for subsistence or income generation must be evaluated. Theories and models can then become important tools for NTFP policy formulation.

**Objectives:** Many communities have traditionally benefited from a variety of forest products as part of a diversified and household and community economy. Data are very scarce on the bio-economics of production cycles but many marketed non-timber forest products are being seriously depleted. Small returns to the harvester have so far provided little incentive for conservation. The project will:

- identify global trends and patterns in the utilisation of non-timber forest products and develop theories and models that permit improved projections of future trends;
- develop projections of likely changes in forests and biodiversity which will result from increased utilisation of NTFPs; and
- provide improved estimates of the number of people in tropical developing countries who depend on NTFPs, and determine the nature of this dependency and how it is changing.

The research will take place in tropical and sub-tropical forests in Asia, Africa and Latin America.

**Outputs:** (a) Theories and models that explain trends in NTFP utilisation; (b) procedures to assess the potential for NTFP-based development in any given circumstance; (c) estimates of impact as a result of NTFP-based development on forests and biodiversity; (d) accurate estimates of the number of people who depend on NTFPs, and the nature of this dependency; and (e) options for improved institutional arrangements.

**Expected gains:** The theories and models on NTFP utilisation will allow for an improved assessment of options of NTFP-based development, and the possible impact that this will have on forests and biodiversity. They can be used at the policy making level, and for specific rural development cases. Procedures for assessing the potential of NTFP development will become important tools in projects where NTFP-based development is being considered.

**Duration:** Ongoing (5+ years).

**Users:** Policy makers and government agencies concerned with rural development and nature conservation; environmental and development scientists and specialists; conservationists; agricultural and social forestry development project staff; rural development NGOs; university faculty and students.

**System Linkages:** Policy (34%), Increasing Productivity in Trees (50%), Biodiversity (16%).

## **Project 9. Research Impact, Information and Capacity Building**

**The problem:** Many forestry NARS have weak research capacity and poor access to information. Few have developed methodologies for research priority setting and impact assessment.

**Objectives:** This project aims to:

- build capacities among CIFOR's partner institutions;
- provide access to information, both for CIFOR staff and national research systems, and efficient dissemination of research results; and
- develop methodologies for impact assessment and research priority setting appropriate for the evaluation of research for natural resources management.

The research will take place in the tropical lowlands and uplands of Africa, Asia and Latin America.

**Outputs:** (a) Improved research and research management capacities; (b) new and more efficient products and services for access to and dissemination of scientific information; (c) co-operative information sharing and training programmes linking national, regional and international research organisations; (d) established world-wide standards on forestry information services; (e) new methodologies and analyses for strategic priority setting of major researchable issues and assessment of "non-commodity" research impact; and (f) baseline research capacity data for forestry NARS.

**Expected gains:** Stronger capacities will improve the research process as a whole. On the input side, better access to information will lead to improved research planning, design and priority setting. Collaboration increases knowledge about similar activities, data sharing, integration and harmonisation. Better planning methods will lead to improved research outputs and procedures for their dissemination will be strengthened including the application of new dissemination media. Assessment of CIFOR's efficiency and effectiveness; increased transparency and accountability in the identification and selection of research both at the "macro" and project levels. Using research capacity baselines to guide the development of collaborative research partnerships thereby enabling high-quality "capacity-building" research.

**Duration:** Ongoing (5+ years)

**Users:** The principal users will be forestry NARS, research managers concerned with setting priorities and allocating resources; scientists; university staff; development project staff; and field managers as information consumers, managers of information services in research organisations and universities.

**System Linkages:** Information (75%), Training, Organisation and Management and Networks (19%), Policy (6%).



## **Project 10. Policies, Technologies and Global Changes**

**The problem:** CIFOR needs to maintain an active knowledge of global trends in the supply of, and changing social demands for, all kinds of forest products, in order to both contribute effectively in the international policy debates about forests, and to ensure that our long-term research directions accurately address important and emerging problems.

**Objectives:** The aims of this project are to:

- maintain a comprehensive overview of the state of the world's tropical forests and of international institutions addressing their development and conservation; and
- analyse major global trends in the patterns and structure of international supply and demand (in the broadest sense, including all goods and services that societies derive from tropical forests).

**Outputs:** These analyses will contribute to the international policy debates on tropical forests, and provide the global context within which CIFOR's more specific thematic research is undertaken.

They will provide a synthesis of CIFOR's collective understanding of the causes of deforestation and forest degradation (and therefore potential remedial policy interventions on a global scale); the role of forests in the well-being and quality of life of forest-dependent communities; the major socio-economic and demographic transitions that shape the diverse demands that societies place upon their forests, in both the tropical and non-tropical countries. The outputs will provide another vehicle for contributing to forest conservation and management, through direct communication with key opinion leaders and donor agencies.

**Expected gains:** Improved quality of international policy initiatives through provision of information and analysis. Major impacts are expected to be through policy reforms world-wide, based on comprehensive monitoring, assessment and analysis. Improved CIFOR capacity to set priorities and assess impacts.

**Duration:** Ongoing (5+ years).

**Users:** Policy makers, notably those involved in forest conservation and management; multilateral and donor agencies; international and national environmental NGOs.

**System Linkages:** Policy (32%), Information (68%).



## Annex 2: CIFOR Collaborators

### Project 1 Collaborators

*Bolivia:* CEDLA and TIERRA; *Cameroon:* IITA, IRAD, ICRAF; *Indonesia:* ICRAF, Ministry of Forestry, CASER; *Central America:* Central America Forestry Council (CCAB), Agricultural Frontier Program (PFA); *Tanzania:* Sokoine University of Agriculture and University of Dar es Salaam; *Zimbabwe:* University of Zimbabwe; *Malawi:* University of Malawi and Forestry Research Institute of Malawi; *Mozambique:* Eduardo Mondlane University, IUCN Regional Office for Southern Africa; *European Universities:* University of York, University of East Anglia; *International:* Tropenbos, IIED, USDA-FS, UNEP, World Bank.

### Project 2 Collaborators

*Indonesia:* University of Gadjah Mada; *Bolivia:* BOLFOR; *Brazil:* EMBRAPA, INPA; *Peru:* IIAP, INIA; *Cameroon:* ONADEF; *Australia:* CSIRO Division of Forestry and Forest Products, CSIRO Division of Wildlife and Ecology, Tropical Rainforest Ecology and Management, Cooperative Research Centre, Queensland Forest Research Institute, University of Queensland, Dept. of Agriculture; *United Kingdom:* Natural History Museum; *Netherlands:* Wageningen Agriculture Univ., Utrecht University Botany Dept.; *United States:* Cornell University Dept. of Soil and Agronomy, US Forest Service Puerto Rico; *Regional and International:* BIOTROP, IWB, WWF, ICRAF, ICLARM, CIRAD Forêt, IITA, CIAT, ONADEF, STRI (Panama).

### Project 3 Collaborators

*Indonesia:* Ministry of Forestry, FORDA, Inhutani 1 and 2, several universities and NGOs; *Malaysia:* Innoprise Corporation, Universiti Pertanian, FRIM, Sabah Forestry Department; *Bolivia:* BOLFOR, several NGOs; *Brazil:* IBAMA, EMBRAPA, FCAP, University of Parana, UFAC; *Costa Rica:* CATIE; *Nicaragua:* UCA; *Panama:* CTFS, INRENARE; *Peru:* IIAP, INIA, UNALM; *Venezuela:* ULA; *Cameroon:* INRA, IITA; *Tanzania:* Sokoine University, TAFORI; *United States:* New England Power Company, USDA-FS, IITF, University of Florida; *Gabon:* INRA; *Regional and International:* ATO, CATIE, CIRAD-Forêt, FAO, ICRAF, IICA/PROCITROPICOS, TCA, TFF, Tropenbos, UNEP, World Bank.

### Project 4 Collaborators

*Indonesia:* Ministry of Forestry, LEI, Univ. of Indonesia; *West Africa:* SODEFOR (Côte d'Ivoire), African Timber Organization (Gabon), ONADEF (Cameroon); *Brazil:* IBAMA, IPEF; *Austria:*

Ministry of Environment; *Germany*: Institute of World Forestry, Initiative Tropenwald; *France*: CIRAD-Forêt; *United Kingdom*: Soil Association, ODI; *Netherlands*: Directorate General for International Cooperation (DGIS), TROPENBOS Foundation; *Both Ends*; *United States*: USDA Forest Service, Rainforest Alliance; *International*: FAO, ITTO, Forest Stewardship Council (FSC, Mexico).

### **Project 5 Collaborators**

*Indonesia*: Centre for Agro- and Socio-economic Research (Caser), Institute Pertanian Bogor, April Forestry Services; *Malaysia*: Innoprise Corporation Sabah, Forest Research Institute of Malaysia; *Philippines*: SEARCA; *Thailand*: Royal Forest Department of Thailand; *Vietnam*: Forest Science Institute of Vietnam; *India*: Kerala Forest Research Institute; *China*: Chinese Academy of Forestry, Central South Forestry College, Zhejiang Forestry College, South China Agricultural University, Yunnan Academy of Social Sciences; *Congo*: CIRAD-Forêt; *South Africa*: ICFR; *Brazil*: EMBRAPA; *Costa Rica*: CATIE; *Australia*: CSIRO Division of Forestry and Forest Products, Queensland Forest Research Institute, ANU Centre for Resource and Environmental Studies (CRES); *France*: CIRAD-Forêt; *United Kingdom*: Oxford Forestry Institute; *United States*: US Forest Service, Puerto Rico; *International*: ICRAF.

### **Project 6 Collaborators**

*Indonesia*: FORDA, Puslitbang Bioteknologi, LIPI, BIOTROP, Ministry of Forestry; *Malaysia*: Forest Research Institute of Malaysia; *Thailand*: Royal Forest Department, ASEAN Forest Tree Seed Centre; *Vietnam*: Forest Science Institute of Vietnam; *India*: Bangalore University of Agriculture Sciences; *China*: to be determined; *Australia*: CSIRO Division of Plant Industry, Cooperative Research Centre for Tropical Rainforest Ecology and Management, Australian National University; *United Kingdom*: Oxford Forestry Institute, Institute of Terrestrial Ecology, Natural History Museum, University of Edinburgh; *Netherlands*: Wageningen University, University of Utrecht; *France*: CIRAD-Forêt; *Canada*: University of Alberta; *United States*: Massachusetts University, US Forest Service; *International*: IPGRI, FAO.

### **Project 7 Collaborators**

*Indonesia*: World Wide Fund for Nature-Indonesia Programme, University of Indonesia, Lembaga Alam Tropika Indonesia (LATIN), WATALA; *Madagascar*: CARE-Madagascar, Atananarivo University, University of Fianarantsoa, Association Nationale Pour La Gestion Des Aires Protegees (ANGAP), Ramanofana National Park Project, Department of Water and Forestry; *Southern and Eastern Africa*: University of Zimbabwe, Sokoine University of Agriculture; *Tanzania*: University of Dare es Salaam; *Tanzania*: University of Malawi; *Malawi*: Forestry Research Institute of Malawi; *United States*: University of Florida, Rutgers University, Cornell University, University of Indiana; *International*: ORSTOM, ICRAF, Biodiversity Conservation Network, IUCN, Rajindra Puri (East-West Center).

## **Project 8 Collaborators**

*Brazil:* State University of Campinas; *Bolivia:* CIMAR-Santa Cruz; *Central Coastal Africa:* IITA-Cameroon; *China:* Research Institute for Subtropical Forestry; *Germany:* Institute for World Forestry, Federal Research Centre for Forestry and Forest Products, Institute for Forest Policy, University of Freiburg; *India:* University of Agricultural Sciences, Bangalore; *Indonesia:* FORDA; *Netherlands:* Agricultural University Wageningen, Department of Vegetation Ecology-University of Utrecht, Tropenbos; *Zimbabwe:* Institute for Environmental Studies-University of Zimbabwe; *International:* ICRAF, IFPRI, INBAR, IUCN.

## **Project 9 Collaborators**

*Bangladesh:* Forest Research Institute; *Brazil:* Centro Nacional de Pesquisa de Florestas/EMBRAPA, Instituto de Pesquisas e Estudos Florestais; *China:* Chinese Academy of Forestry, Nanjing Forestry University; *Ghana:* Forestry Research Institute of Ghana; *India:* Centre of Minor Forest Products, YS Parmar University, Kerala Forest Research Institute; *Indonesia:* Forestry Research and Development Agency, Bogor Agricultural University, University of Gadjah Mada, Mulawarman University, Cenderawasih University; *Malaysia:* Forest Research Institute Malaysia; *Nepal:* Forest Research and Survey Center; *Peru:* Instituto de Investigaciones de la Amazonia Peruana; *South Africa:* Forest Science and Technology; *Sri Lanka:* University of Peradeniya; *Tanzania:* Forestry Research Institute, Sokoine University; *Uganda:* Makerere University; *United Kingdom:* Oxford Forestry Institute; *United States:* US Forest Service; *Venezuela:* Instituto Forestal Latinoamericano; *Regional:* Forestry Research Support Programme for Asia Pacific, Asean Institute for Forest Management, Asean Forest Tree Seed Centre, Centro Agronomico Tropical de Investigacion y Ensenanza, European Tropical Forestry Research Network, Asia Pacific Association of Forestry Research Institutes; *International:* CAB International, World Conservation and Monitoring Centre, FAO, International Union of Forestry Research Organizations.

## **Project 10 Collaborators**

World Conservation Monitoring Centre, European Forest Institute, World Resources Institute, FAO, UNEP, World Bank, IUCN, WWF, various universities, multi-national forest products corporations.

### Annex 3: Memoranda of Understanding with Partners

INSTITUTION	COUNTRY	DATE SIGNED	TERM
AFOCEL (Association Foret Cellulose)	France	10-Oct-96	End of 97
CATIE (Tropical Agriculture Research and Higher Education Center)	Costa Rica	11-May-95	renewable after 5 yrs
CIIFAD (The Cornell International Institute for Food, Agriculture and development)	USA	8-Apr-94	5 yrs
CIRAD-forêt	France	12-Feb-96	5 yrs
DRN (The National Research Council)	Indonesia	5-May-95	1 yr
EFI (The European Forest Institute)	Finland	awaiting EFI signature	5 yrs
EMBRAPA (Empresa Brasileira de Pesquisa Agropecuaria)	Brazil	10-Jan-95	unlimited
	Brazil	awaiting EMBRAPA signature	5 yrs
GAMA, Faculty of Forestry (University of Gajah Mada)	Indonesia	final negotiation	
IIAP (The Peruvian Research Institute for the Amazon)	Peru	9-Oct-95	unlimited
IICA (The Inter-American Institute for Cooperation on Agriculture)	Costa Rica	20-Dec-95	5 yrs
IITA (The International Institute of Tropical Agriculture)	Nigeria	12-Feb-96	renewable after 3 yrs
IPB (Bogor Agricultural University)	Indonesia	final negotiation	5 yrs
IPEF (Instituto de Pesquisas e Estudos Florestais)	Brazil	26-Jul-95	unlimited
Kayu Mas & BPK Samarinda	Indonesia	17-Dec-96	unlimited

<b>INSTITUTION</b>	<b>COUNTRY</b>	<b>DATE SIGNED</b>	<b>TERM</b>
MOF (Ministry of Forestry)	Indonesia	23-Jan-96	20 yrs
ODA (Overseas Development Administration)	UK	final negotiation	unlimited
PBC (Prince Bernhard Centre)	The Netherlands	30-Oct-96	until 1 Aug 2000
PCARRD (The Philippine Council for Agriculture, Forestry and Natural Resources Res. and Dev.)	The Philippines	21-Nov-96	5 yrs
PFA (The Central American Agricultural Frontier Program)	Panama	final negotiation	unlimited
SACCAR (The Southern African Centre for Cooperation in Agricultural and Natural Resources Research and Training)	Bostwana	final negotiation	renewable every 5 yrs
SADC (The Southern African Dev. Community)	Bostwana	awaiting SADC signature	renewable every 5 yrs
SEAMEO BIOTROP (Southeast Asian Regional Centre for Tropical Biology)	Indonesia	22-May-96	unlimited
SUA (Sokoine University of Agriculture)	Tanzania	final negotiation	renewable every 5 yrs
TAFORI (Tanzania Forestry Research Institute)	Tanzania	final negotiation	renewable every 5 yrs
TROPENBOS (The Tropenbos Foundation)	The Netherlands	final negotiation	5 yrs
USDA Forest Service (United States Department of Agriculture) for Dr. Moad & Dr. Tiarks	USA	2-Nov-95 6-Apr-95	30-Sep-96 30-Sep-98
UZIM (University of Zimbabwe)	Zimbabwe	20-Jul-96	renewable every 5 yrs
Wetlands International	Indonesia	19-Apr-96	unlimited
WWF-IP (The World Wide Fund for Nature - Indonesia Program)	Indonesia	19-Apr-96	unlimited

## Annex 4: CIFOR Out-sourcing 1995-1996

COUNTRY	INSTITUTION/INDIVIDUAL	PURPOSE	AMOUNT USD
Australia	Plantsoft Services	For further development of the PLANTGRO system consistent with the requirements of the TROPIS project	10,000
	CSIRO	To be used for a research activity titled Fungal pathogens as a potential threat to tropical acacias	8,850
Bolivia	CEDLA (Centro para el desarrollo laboral y agrario)	For preparation of a case study on how changes in policies, markets, and other social factors not directly related to forestry have influenced deforestation, forest degradation and the livelihoods of people living near forests in the Bolivian Amazon	30,000
	Dr. Carlos Tovar-Moyano	For preparation of two research papers on the formulation of the recent Bolivian forestry law, in support of CIFOR's Comparative International Study of Extra-Sectoral Influences in Bolivia, Cameroon and Indonesia	10,000
	Frank D. Merry	For preparation of two research papers in support of CIFOR's Comparative International Study of Extra-Sectoral Influences in Bolivia, Cameroon and Indonesia	5,000
Brazil	FFT (Fundacao Floresta Tropical), a Brazilian subsidiary of the Tropical Forest Foundation (TFF), USA	To support work to be carried out by FFT in Brazil	28,000
	State University of Campinas	For research expenses: 1. To assess the stability of current forest uses and possible evolutionary trends at the Upper Juruá Extractive Reserve in Acre focusing on the economic actions of households 2. To complete the information currently existing and analyse it in order to prepare scenario-based models	50,000

COUNTRY	INSTITUTION/INDIVIDUAL	PURPOSE	AMOUNT USD
Cameroon	TROPENBOS Cameroon Programme	In support of a research activity entitled The Economic Importance of the Logging Industry in Cameroon and the Effects of the Devaluation of the CFA Franc on it	14,100
Canada	IFGRA (International Forest Genetics Research Associate)	To convene a group of eminent forest geneticists to conduct a field test of proposed genetic criteria, indicators and verifiers for sustainably managed forests, in order to identify weaknesses, propose improvements, and identify a programme of supporting research	29,000
	UoA (The University of Alberta)	To cover purchase of chemical in support of the CIFOR-CATIE project	12,000
China	CAF (The Chinese Academy of Forestry)	To support activities in the INFOTRACE (CAF) project Alternative socio-economic approaches to reclaiming degraded lands	184,000
	The Nanjing Forestry University	For the establishment of e-mail facility	2,310
	RISF-CAF (The Research Institute of Subtropical Forestry - The Chinese Academy of Forestry)	For the following research activities: 1. To provide a basis for a micro-level description and analysis of social, economic and policy aspects pertinent to sustainable development based on the bamboo sector in three provinces in China and for recommendations to facilitate that development 2. To prepare a scenario-based model of the likely trends in the sector	30,000
	Institute of Sciencetech Information, The Chinese Academy of Forestry	To support the publication of Chinese Forestry Selected Abstracts for one year, 1996	8,000
Congo	UR2PI (The Unite de Recherche sur la Productivite des Plantations Industrielles)	For the research project on Site Management and Productivity in Tropical Forest Plantations	4,000
Costa Rica	CATIE (Centro Agronomico Tropical de Investigacion y Ensenanza)	For the publication of a book: Manejo de Bosques Naturales Latifoliados en el Neotropico/ Management of Neotropical Natural Broadleaved Forests)	20,000

COUNTRY	INSTITUTION/INDIVIDUAL	PURPOSE	AMOUNT USD
	CATIE	For the publication of a document: Productos no moderables del bosque para el desarrollo de Talamanca	6,375
	CATIE	As advance funds for the implementation of initial activities under the project funded by IADB: Secondary forest management in the American tropics. A collaborative research with emphasis on the forest margin	30,000
	CATIE	For printing and distributing CIFOR special publication: Memorias de la Consulta Regional sobre Prioridades de la Investigacion Forestal Colaborativa en America Latina	1,700
	CATIE	For implementing a research project on the Management of Secondary Forests in the Lowland Humid Tropics of Latin America	205,000
	CATIE	To be used for the publication of the CIFOR/CATIE special publication titled Memorias del Seminario - Taller Sobre Experiencias Practicas y Prioridades de Investigacion en Silvicultura de Bosques Naturales en America Tropical	3,500
	IICA (Inter-American Institute for Cooperation on Agriculture)	For studies on Forest Policy in Central America	40,000
France	Laboratoire D'ethnobiologic-Bio geographie, Museum National d'Histoire Naturelle	To conduct a market study of C. Africa forest and agroforest products in the main French cities and in Brazil	5,500
	ENGREF (Ecole nationale du genie rural des eaux et des forêts)	To support the completion of a technical report on the methods of forest survey on selected private concession in Sumatra	Rp. 1,200,000
Ghana	FORIG (The Forest Research Institute of Ghana)	To describe the mutual understanding between the two parties on the management of funds and responsibilities in connection with the organisation and execution of a conference and workshop on Growth studies in tropical moist forests in Africa	30,000



COUNTRY	INSTITUTION/INDIVIDUAL	PURPOSE	AMOUNT USD
India	TERI (The Tata Energy Research Institute)	For laboratory and field research expenses, and administrative expenses	24,000
Indonesia	WATALA (Friends of Nature and Environment)	For support of field-based research in Krui-Lampung, Indonesia on income generation and incentives for forest conservation among forest villagers	7,000
	LIPI - Puslitbang Bioteknologi	For laboratory and field research expenses	30,000
	YDT (Yayasan Dian Tama)	For research activity: generating community income through rehabilitation of degraded lands: production of <i>Vitex pubescens</i> on <i>Imperata cylindrica</i> grasslands	45,000
	WWF - IP	For field-based research in Indonesia on income generation & incentives for forest conservation among forest villagers	11,000
Malawi	APRU (The Agricultural Policy Research Unit), University Malawi	To describe the mutual understanding between the two parties on the management of funds and responsibilities in connection with the undertaking of the Malawian component of the research on impacts of some macro-economic policies and other interventions on household livelihood strategies in the Miombo region	19,680
Malaysia	FRIM ( Forest Research Institute of Malaysia)	For laboratory and field research expenses	10,000
Netherlands	Utrecht University	For the research activity titled "Contribution of Non-wood Forest products to Socio-economic Development"	DM 42,500
Philippines	Ifugao State College of Agriculture and Forestry	For the establishment of an e-mail facility for the editorial office of the ISCAF Journal	452
Thailand	Dr. Jaboury Ghazoul	For field research expenses	4,500
	Dr. Chaweewan Hutacharoen	For field research expenses	1,500

COUNTRY	INSTITUTION/INDIVIDUAL	PURPOSE	AMOUNT USD
UK	NHM (The National History Museum)	For field and laboratory research expenses, and consultancies	10,000 GBP 40,000
	Dr. Paul Tompsett	To prepare a text contribution for a multi-authored book on an overview of the state of knowledge on Dipterocarps and identification of priorities and needs for future research	7,000
USA	CIIFAD (Cornell Institute for Food, Agriculture and Development)	To enable direct access to funds allocated for Devolution Study Group	20,000
	Patti Anderson	To prepare a text contribution for a multi-authored book on "Methods for Non-timber Forest product Conservation and Development: An overview of the state of knowledge and identification of priorities and needs for future action"	1,000
	Andrew Mittleman	To prepare a text contribution for a multi-authored book on "Methods for Non-timber Forest product Conservation and Development: An overview of the state of knowledge and identification of priorities and needs for future action"	1,500
Venezuela	ULA (University of Los Andes)	As part of the preparation of a case study describing the silvicultural experiences in the Caparo forest experiment station	1,000
Vietnam	The Forest Science Institute of Vietnam	For the publication of the first two issues of Vietnamese Forestry Abstracts in English	4,125

## **CIFOR at a Glance**

<b>Organisation</b>	An international forestry research institute, governed by an autonomous Board of Trustees; established in 1993; one of the institutes of the Consultative Group on International Agricultural Research (CGIAR); Headquarters in Bogor, Indonesia.
<b>Mission</b>	CIFOR's Mission is to contribute to the sustained well-being of people in developing countries, particularly in the tropics, through collaborative strategic and applied research and related activities in forest systems and forestry, and by promoting the transfer of appropriate new technologies and the adoption of new methods of social organisation, for national development.
<b>Objectives</b>	<p>Understanding the biophysical and socio-economic environments of present and potential forest systems and forestry, and their functional relationships</p> <p>Creating the potential for sustainable improved productivity of forest systems for the benefit of people in developing countries.</p> <p>Providing analysis, information and advice to assist in making policy decisions about forests and land use.</p> <p>Increasing national forestry research capacity.</p>
<b>Mode of operation</b>	Collaborative partnerships with researchers in tropical developing countries and other institutions with relevant expertise; a center without walls. The nature and duration of partnerships depend on the specific research problems; emphasis is on the active involvement of national scientists from government forestry agencies, universities, NGOs and the private sector. The research outputs are of the highest scientific quality, of national and international significance, and address priority socio-economic and environmental concerns.
<b>Staffing</b>	Approximately 25 internationally recruited scientists at Bogor, plus five scientists in regional research institutes, in 1996. Most additional staff positions will be also away from Headquarters. Numerous associates and partners in National Research Systems in countries with tropical forests.
<b>Budget</b>	The current budget is about US\$ 8 million annually, with expansion planned over coming years. The 1997 programme of Work and Budget plans for approximately US\$ 11 million