World Agroforestry Centre

TRANSFORMING LIVES AND LANDSCAPES

Medium-Term Plan 2007-2009

June 2006

INTERNATIONAL CENTRE FOR RESEARCH IN AGROFORESTRY

Table of Contents

Tables

Abbreviations

AAMPS	Association for African Medicinal Plants Standards
ADG	Assistant Director General
AEZ	Agroecological zones
AF	Agroforestry
AGM	Annual General Meeting
AHI	African Highlands Initiative
AI	Amazon Initiative
AIDS	Acquired Immuno Deficiency Syndrome
APAARI	Asia Pacific Association of Agricultural Research Institutions
ARARI	Amhara Regional Agricultural Research Institute
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASB	Alternatives to Slash-and-Burn
ASNAPP	Agribusiness in Sustainable Natural African Plant Products
ATFP	Agroforestry Tree Products
BOT	Board of Trustees
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CAPRi	Collective Action and Property Rights
CBO	Consumer Based Organization
CDM	Clean Development Mechanism
CGIAR	Consultative Group on International Agricultural Research
CIAT	International Center for Tropical Agriculture
CIFOR	Center for International Forestry Research
CIMMYT	International Maize and Wheat Improvement Center
CIP	International Potato Center
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement
CORAF/WECARD	West and Central African Council for Agricultural Research and Development
CP	Challenge Programme
CPWILD	Commercial Products from the Wild
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DG	Director General
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária
EPMR	External Programme and Management Review
ES	Environmental Services
ESA	East and Southern Africa
ETFRN	European Tropical Forest Research Network
FAO	Food and Agricultural Organization
FARA	Forum for Agricultural Research in Africa
FASID	Foundation for Advanced Studies on International Development
FORNESSA	Forestry Research Network for sub-Saharan Africa
FORRI	Forestry Resources Research Institute
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
HR	Human Resources
ICRAF	International Centre for Research in Agroforestry
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IER	Institut d'Economie Rurale du MALI
IFPRI	International Food Policy Research Institute
IPCC	Inter-Governmental Panel on Climate Change

IISD	International Institute for Sustainable Development
IITA	International Institute of Tropical Agriculture
ILRI	International Livestock Research Institute
INERA	Institut de l'Environnement et Recherches Agricoles
INRAN	Institut National de Recherches Agronomiques du Niger
IPG	International Public Good
IPGRI	International Plant Genetic Resources Institute
IRAD	Institutional Research and Application Development
IRD	Institut de recherche pour le développement
IRRI	International Rice Research Institute
ISAR	Institut des Sciences Agronomiques du Rwanda
ISRIC	International Soil Reference Information Centre
IT	Information Technology
ITTO	International Tropical Timber Organization
IUCN	World Conservation Union
IWMI	International Water Management Institute
KARI	Kenya Agricultural Research Institute
KEFRI	Kenya Forestry Research Institute
LP	Land and People
LULUCF	Land Use, Land-Use Change and Forestry
MTP	Medium Term Plan
NARO	National Agricultural Research Organisation
NARS	National Agricultural Research Systems
NASA	National Aeronautics and Space Administration
NEPAD	The New Partnership for Africa's Development
NGARA	The Network for Natural Gums and Resins in Africa
NGO	Non Governmental Organizations
NRM	Natural Resource Management
R&D	Research and Development
RAEZ	Regional Agro Ecological Zone
RUPES	Rewarding Upland Poor for Environmental Services
SADC	Southern African Development Cooperation
SI	Strengthening Institutions
SLT	Senior Leadership Team
SPIA	Standing Panel on Impact Assessment
STCP	Sustainable Tree Crops Program
SWEP	Systemwide and Ecoregional Programmes
PGR	Plant Genetic Resources
THETA	Traditional Health for the Treatment of AIDS
TM	Trees and Markets
TOFNET	Trees on Farm Network
TSBF	Tropical Soil Biology and Fertility Institute
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
USA	United States of America
USDA	United States Department of Agriculture
WARDA	Africa Rice Center
WCA	West and Central Africa

MTP Overview

MTP Overview

The principal events and circumstances which influence ICRAF's research for development in 2007-2009 include:

a) The Science Council's comments on our Medium Term Plan (MTP) 2006-2008
b) ICRAF's decisions to modify its internal regional structure
c) ICRAF's observations on research performance indicators for year 2005
d) Recommendations and suggestions in the External Program and Management Review (EPMR) 2005-2006
e) The CGIAR's new System Priorities promulgated in 2005.

Section 1 will highlight the first three factors; Section 2 addresses the EPMR; and Section 3 considers the System Priorities.

1. Introduction, Context, and Program Discussion

a) The Science Council's Comments on ICRAF's MTP 2006-2008

The principal positive observations conveyed to us by the Science Council were praise for using agroforestry approaches to sustain farm productivity and address poverty alleviation, and for our strategic linkages with various partners to achieve those goals. Where the Science Council was more critical included its interpretations that ICRAF engages in training and related capacity building which would be more appropriately implemented by development-oriented Non Governmental Organizations (NGOs) and the National Agricultural Research Systems (NARS); that our output targets are too numerous; and that our production of international public goods should be raised.

In our reply to the Science Council, we pointed out that agroforestry often has no institutional home, and that we are thus obliged to engage in at least a certain amount of capacity building. Moreover, our data in the MTP 2006-2008 on numbers of farmers trained in agroforestry technologies refers mainly to the training done by partners, and catalyzed by ICRAF via strategic capacity building. On international public goods, ICRAF's decentralized structure is not an inherent obstacle to the extent we are able to synthesize across countries and sites within a framework of planned coordination and delivery.

At the same time, ICRAF understands the encouragement by the Science Council for us to shift our capacity-building towards research (e.g., comparative methods of diffusing agroforestry knowledge, assessment of the niche of distance learning in agroforestry and natural resources, exploration of supply and demand for different knowledge-building opportunities in agroforestry, etc.). ICRAF's MTP 2007-2009 reflects that we understand and accept the rationale for this evolution in our mission. This is evidenced in particular by the revised content for 2007-2009 of our theme on Strengthening Institutions.

b) Modified Regional Structure

In 2005-2006, ICRAF is modifying its regional structure to increase critical mass in numbers of scientists per region, and to trim administrative costs. Our intentions along these lines were reinforced by the EPMR.

ICRAF's teams in the Sahel and the African Humid Tropics are now under a single regional coordinator, and those budgets will be combined starting in 2007. ICRAF forecasts that regional budgets for our research teams in Eastern Africa and Southern Africa may decline in 2007 relative to 2005-2006. This underlines a rationale for closer programmatic discussions and possible structural integration between those two groups. With respect to the CGIAR's emerging regional alignments for Africa, ICRAF's actions are consistent with joint planning for Western and Central Africa on the

one hand, and Eastern and Southern Africa on the other. In Asia, ICRAF is encouraging and monitoring stronger programmatic alignment between our small team in South Asia with our larger team in Southeast Asia.

These changes in regional alignment will take a few years to develop, which is why they are not totally reflected in this current version of the MTP. Yet we anticipate that ICRAF's research for development planning will increasingly show fewer region-specific differences in research outputs. Rather, ICRAF will produce international public goods from a smaller base of regions as a prospect of research integration (i.e., a structure of fewer organizational units allows for greater internal coordination).

c) Research Performance Indicators for the year 2005

ICRAF is satisfied with its research performance in 2005. We intend to use the performance indicators for 2004 and 2005 as benchmarks against which to measure research achievements in 2006 and beyond.

ICRAF achieved 88 percent of its output targets in 2005. Of the 17 targets we did not achieve, they are distributed across five of the six thematic plus systemwide/ecoregional areas. One theme accounts for seven of the 17 "not achieved," which gives ICRAF a basis for where to focus for improvements.

Here we highlight a few of the research accomplishments in 2005:

- ICRAF and key partners were able to develop the science of moving agroforestry innovations to scale as a newly important research focus for the center, drawing on experiences in multiple sites and circumstances, and resulting in several manuscripts (to be published in 2006). While this area of research has been embedded within ICRAF's framework for some time, year 2005 was especially important for greater formalization of this line of inquiry and its positioning for international public knowledge. The EPMR cited this as an example of an "emerging research area" for ICRAF.

- ICRAF completed two major impact syntheses in 2005 on improved fallow systems, both contributing to Standing Panel on Impact Assessment (SPIA)-related initiatives. The output in the Kenya study is a major IFPRI-ICRAF research report and journal paper on the use of quantitative-qualitative methods for poverty analysis. The output in Zambia was a compilation of economic and ecological impacts, plus an estimate of returns to research. Comparing Kenya and Zambia, impacts are larger in the latter, where the size of fallows is significantly greater, and where phosphorous is not a soil constraint.

- Our regional team in Southeast Asia used the opportunity of editing a special edition of the European Tropical Forest Research Network (ETFRN) newsletter to publish much of its research on watershed functions, biodiversity, and reward mechanisms for upland farmers who provide environmental services. The ICRAF team in Southeast Asia published 12 peer-reviewed papers on these subjects in 2005, in addition to 13 working papers and edited project reports. ICRAF made good progress in transferring the intellectual foundations for this area of research to Africa.

- Last year ICRAF produced an impact study reflecting 12 years of research on land and tree tenure in Indonesia. The coffee frontier is the main cause of the 84% loss of forest cover in western Lampung in the last 30 years. Comparative studies of farmers in two areas of land conflict and without community forestry tenure show that they have low incomes and less land security, discernible in lower land values. The review concluded that ICRAF has been able to influence improvements in community forestry regulations and secure recognition in

the 1999 Forestry Law of 'customary forests' and 'special-purpose management areas' as special management categories in Indonesia's state forests.

- China's State Forest Administration, the Regional Development Research Center, and ICRAF examined a subset of payment schemes for environmental services in Anhui, Guizhou, Sichuan, and Yunnan Provinces in order to provide guidance for the design and operation of payment schemes for environmental services in greater China. The main points are the need for clear objectives, adequacy of funds for the duration of the contract period, and early stakeholder participation in order to reduce transactions costs and ensure that contracts are realistic.
- Last year was important for major advances on ICRAF's research with *Allanblackia*, an African tree which produces very high-quality vegetable oil. The germination period of 24 months was brought down to 7 months by treating the seed with Gibberellic acid, and germination rates rose to 48 percent from a previously insignificant level. Moreover, a technique was developed to obtain rooting of over 70 percent of vegetative cuttings. These are highly important results for future supply and market chains in selected parts of West Africa, with special relevance to an international food products company (Unilever) as ICRAF's partner and client for the research.

- In Mali and Niger, ICRAF worked with the NARS and NGOs to provide over 500 accessions of more than 40 agroforestry tree species for collection, storage, and testing. Over 70 "plus trees" of indigenous fruit trees (ber, tamarind, and karite) were selected in Burkina Faso, Mali, Niger, and Senegal – and 12 cultivars of sweet ber were introduced. These were established in a gene bank in Bamako to ensure safe conservation, and as a source of germplasm for further research.

- Research protocols to most effectively propagate high-value trees in West Africa have been evolving through the years at ICRAF. In 2005, these protocols have been successfully applied to a multi-purpose medicinal species, *Annickia chlorantha*. Extracts of the bark of this species are used to treat malaria, jaundice, and urinary tract infections. However, serious threats impede the regeneration of this species: unsustainable harvesting, lack of quality seed, and slow growth of its seedlings. ICRAF's research to propagate the tree vegetatively offers an opportunity to overcome these limitations.

- Standard horticultural techniques such as grafting for improving fruit trees has seldom been applied for the indigenous fruit species of humid West Africa. However, in 2005 ICRAF developed grafting protocols for *Irvingia gabonensis*, *Ricinodendron heudelotii*, *Garcinia kola*, *Cola spp*., and *Allanblackia spp*. This approach can lead to fruiting on small farms in under five years.

- ICRAF has been researching the use of infrared spectroscopy for rapid, reliable, and low-cost soil analysis. In 2005, we produced a spectral library of world soils in collaboration with the University of Montana, the United States Department of Agriculture (USDA), and the International Soil Reference Information Centre (ISRIC). The spectral library consists of visible-near-infrared diffuse reflectance spectra of over 4,000 soils sampled to characterize the diversity in 55,000 soils archived by the USDA National Soil Survey -- including soils from 36 countries outside the USA -- and over 6,000 samples from 754 soil profiles from ISRIC's world soils collection. The spectral library is being used to develop global reference ranges for soil properties, conditioned on environmental factors, and global spectral indicators of soil condition which will allow soil constraints to be predicted from a rapid near-infrared scan of a soil sample. This will in turn help rapid diagnosis and early warning of land degradation and appropriate targeting of agroforestry interventions.

2. EPMR Recommendations

The latest EPMR of ICRAF began in the last quarter of 2005, with the panel's report delivered to the Science Council in the first half of 2006. The Science Council has since provided its observations on the EPMR. ICRAF expects a final review and approval of our responses to the EPMR at the AGM in Washington, December 2006.

The EPMR is laudatory of ICRAF's mission, goals, and themes. It contains solid praise for the center's research outputs. However, the panel recommends among other things that ICRAF should narrow its research for development portfolio to a more limited number of emerging agroforestry science priorities; that we should consolidate and integrate programmatically by operating in fewer countries and field sites; and that we should seek to raise the average size of our research for development projects. The EPMR endorsed a clearer identification of priorities, and an enhanced critical mass of researchers and financial packages to implement them.

Consistent with the intent and general direction of EPMR's recommendations, this MTP 2007-2009 reflects a move towards greater focus and fewer output targets. The MTP submitted by ICRAF last year comprised 19 projects and 144 output targets for year 2006. This current MTP comprises 13 projects and 74 output targets for year 2007. We have aggregated certain research areas while terminating others, as discussed in Section C. This means that average project size in ICRAF has increased substantially, in accord with Systemwide recommendations as well as the EPMR's guidance to ICRAF. We anticipate continued MTP consolidation through the next 1-2 years.

Consolidation of the agenda is only one dimension advocated by the EPMR. Another is identifying and implementing emerging agroforestry science priorities. To this end, ICRAF recently established a Strategic Alignment Committee to generate a process and criteria for achieving sharper focus; to strengthen thematic/regional alignment; and to improve how to screen future projects in relation to ICRAF's stated priorities. The timing of this current MTP cannot reflect the influence of this nascent Committee, but next year will show its initial fruit.

Because the EPMR in ICRAF was completed only a few months ago, ICRAF is not able to give an annual progress report on our implementation of the recommendations. However, Table 1 lists the 15 recommendations and a few elements of ICRAF's broad responses to them.

Table 1: Progress Report on Implementation of EPMR Recommendations

Name of Centre: World Agroforestry Centre (ICRAF)

Dates of EPMR Report Presentation and Discussion:

Science Council: May 10th 2006 – WARDA – Cotonou, Benin
Executive Council: May 18th 2006 – The Hague, Netherlands
CGIAR Annual General Meeting: To be presented at 2006 CGIAR AGM in December.

Recommendations[1]	Centre's Response
Recommendation 1 *ICRAF consolidate its strategic research priorities into a long-term workable strategic plan that directs more effort towards a small number of relevant emerging research topics. (page 93)*	ICRAF's Board and management fully agree. We are cognizant of the need for investment in emerging sciences as part of our research portfolio, and acknowledge the panel's reference to a number of emerging research topics deserving more investment. The completion of our strategic planning framework in 2005 and its endorsement by the Board provides the opportunity to finalize a new strategic plan that sharpens the Centre's priorities, priority-setting processes, the vetting of initiatives, and the definition of a smaller number of emerging research issues for long-term impact. These processes will be further developed and reviewed on a regular basis. We will examine the balance between strategic, applied and adaptive research, and develop metrics for each. And we will be conducting further scenario analyses along the lines suggested by the panel to underpin these efforts. With this clearer focus, our prime task will be to harmonise it with the dynamic operational implementation realities and opportunities.
Recommendation 2 *An analysis be undertaken of the likely impacts of involvement in large development projects, including the Millennium Villages Project, on ICRAF's overall balance between research and development, staff commitments and administrative costs; it is also important to ensure that projects with restricted funds be aligned with ICRAF's strategic research goals (page 40)*	The Board and management fully agree. We recognize the importance of defining the Centre's role as a partner in large development-oriented projects, and will exercise greater care in defining and articulating the linkages between development-support and our strategic research. Our participation in development projects generates international public goods. The guiding principle is that ICRAF does research for development, not development itself. We will develop a new policy guideline and practical implementation plan for ICRAF's future involvement with development partners. We will review our involvement in the Millennium Research Villages Project to examine scientific and financial risks. We recognize, however, that the project has the potential to develop a major new methodological approach for achieving the Millennium Development Goals. This approach involves elucidating a framework for integrated rural development in Africa based on the CGIAR's platform of Integrated Natural Resource Management (INRM).
Recommendation 3 *ICRAF merges its south Asia and South East Asia programs into an Asia Region, with liaison units posted in India and*	ICRAF accepts the need to focus its regional efforts to ensure strategic research impacts. The Board has already initiated a number of steps in this direction, and has approved a decision to integrate our Sahelian and African Humid Tropics Regional Programmes into a West and Central Africa Regional Programme. The Programmes Office will examine further

[1] Source of Recommendations: Burley J, Brooks K, Ehui S, Engida G, Harwood C, Strawhorn J, Excheverría. 2006. Report of the Third External Program and Management Review (EPMR) of the World Agroforestry Center (ICRAF).

Recommendations[1]	**Centre's Response**
China with clearly stated roles. (page 46	ways to balance the need to meet our mandate in diverse environments with considerations of operational efficiency. The Centre will engage in a thorough analysis to determine the full implications of the Panel's recommendation to consolidate work in the two Asian regions, taking into consideration other viable options, as well as the views of our partners at the national and subregional levels in South and Southeast Asia. The cross-Asia programmatic integration begins with the details of these R&D agendas -- down to questions of focus, supporting resources, and partnerships. Where possibilities for synergy are greatest, ICRAF will organize for cross-regional project proposals, jointly-produced publications, jointly-supported capacity building, and other shared efforts. Programmatic integration will suggest the feasibility or not of a structural realignment between South Asia and Southeast Asia in ICRAF.
Recommendation 4 *ICRAF ceases to maintain Latin America as a Region but instead retains a liaison unit there, associated with the Amazon Initiative. (page 48)*	Board and management conducted an analysis on the future of the Centre's work in Latin America in April 2005. Three options were reviewed in depth at the Board of Trustees meeting in January 2006, including the solution indicated by the Panel. The panel's recommendation is the favored option, to be implemented through the process of establishing the business plan of the forthcoming Amazon Initiative Ecoregional Program. Decisions on this issue will be finalized after necessary consultations with AI partners.
Recommendation 5 *ICRAF maintains its role in Alternative to Slash-and Burn (ASB). The Panel concurs that the capacity developed in ASB should be sustained and strengthened to maintain a global platform in which ICRAF's innovative research can be validated and implemented (page 55)*	We agree. ICRAF and ASB partners look forward to working closely with the CGIAR secretariat, the Science Council, and other partners to secure necessary funding to sustain and strengthen this valuable global platform.
Recommendation 6 *the CGIAR commission an external review of the African Highlands Initiative (AHI) Systemwide Program to seek answers to the questions raised by the Panel and make recommendations on the future role of ICRAF in the AHI. (page 57)*	We agree. AHI is both a CGIAR Systemwide Programme and a network of ASARECA. We support the commissioning of an external review of AHI that could be implemented as a review jointly-commissioned by the CGIAR and ASARECA. We will consult with ASARECA on this. The Executive Secretary of ASARECA is a member of the ICRAF Board. We will initiate discussions with donors and other stakeholders on the issue. We recognize that AHI can do more to articulate its role in the development of International Public Goods (IPGs), and to illustrate how these methods have led to impact in benchmark sites. An internal impact assessment of AHI is already scheduled for 2006, and will complement the external review.
Recommendation 7 *ICRAF Board and management strictly enforce their "zero-tolerance" approach to staff and service providers who transgress the rules and procedures governing the use of the Center's resources, taking prompt, decisive and unambiguous*	ICRAF's policy manual has explicit and detailed processes for pursuing disciplinary measures, and these will be further clarified where any ambiguities exist. The Board and management will continue to vigorously implement these policies. The Centre will move to ensure that when such cases come to our attention they will be resolved as soon as possible and within a maximum of three months whenever possible. We recognise that we have not shared our decisive action in some cases with all staff and this will be remedied in future. The Internal Audit Unit has a strong mandate to guide and manage

Recommendations[1]	Centre's Response
action when malfeasance has been established; the results should be communicated (with appropriate safeguards) to all Center staff and other parties affected. (page 78)	this aspect of our personnel policy. Where there is credible evidence of malfeasance staff members will be immediately suspended during investigation of the case.
Recommendation 8 *major risk factors be discussed thoroughly at the Board of Trustees (BoT) level and risk management becomes a standing agenda item for each session of the full BoT. (page 78)*	We welcome this recommendation. ICRAF has made significant progress in developing its risk management system, and is further strengthening it under the guidance of the CGIAR Internal Audit and the Centre's Internal Audit Unit. Risk management has become and will continue to be a regular agenda item at every Board meeting.
Recommendation 9 *a review by the CGIAR audit unit of ICRAF management's BOT secretariat policies and management's procedures including, but not limited to, the production and dissemination of documents for all board meetings, to provide a foundation for the most expeditious possible improvement program. (page 80)*	We accept this recommendation, and will commission such a review by the CGIAR Internal Audit Unit.
Recommendation 10 *ICRAF engage the services of an independent, appropriately qualified and experienced management consultant to work with the three most senior levels of management to clarify and strengthen their respective roles and responsibilities, and to establish appropriate managerial processes. (page 82)*	We fully support this recommendation. The Senior Leadership Team (SLT) has already embarked on such a process. This will now be extended to the top three levels of senior management. We believe that the inputs of a management consultant will provide valuable support to ICRAF to clarify the respective roles and responsibilities of all management personnel.
Recommendation 11 *ICRAF urgently recruits a qualified and experienced professional Human Resources(HR) manager, whose training and experience cover the entire spectrum of HR services, including staff management, staff development, but also compensation and benefits. (page 63).*	We agree that this is important and urgent. Our recent experiment to manage our complex human resources with a nationally-recruited professional did not produce the desired result. We are currently recruiting a fully-qualified and experienced HR manager to provide vigorous, innovative leadership across the full range of HR services.
Recommendation 12 *ICRAF appoints a suitably qualified and experienced Chief Operations Officer (at the level of ADG-Operations) with overall responsibility for Financial Services, Human Resources, Operations, a Joint Services Unit to be established with ILRI and all other administrative services. (page 102)*	The response to this recommendation will be addressed jointly with the response to recommendation 15 (see below).

Recommendations[1]	Centre's Response
Recommendation 13 *the Office of Strategic Initiatives be repositioned as a unit reporting directly to the Director General (DG) and assisting the Office of the DG principally in resource mobilization and external relations. (page 101)*	We agree with the intent of this recommendation to focus the Office's role principally on strategic resource mobilization and external relations, including our partnerships and alliances. This office also spearheads our linkages with international policy, science dialogues and our strategic planning processes. The Board and management will fully reflect on the ways that these functions can be further strengthened, within the context of any eventual structural changes. The Director of Strategic Initiatives is a position with leadership responsibilities that the Board has endorsed at the SLT level. The position already reports directly to the DG and will continue to do so, while sustaining strong connections to the global themes and regional programmes.
Recommendation 14 *A Joint ICRAF-ILRI Corporate Services Unit be established as soon as possible, including IT, Research Support and Communications. (page 58, 59, 66, 69)*	We agree, and are currently pursuing the establishment of a joint services platform with ILRI in the context of the Eastern and Southern Africa MTP process. Naturally, the composition of any joint ICRAF/ILRI Services Unit is a matter that will require sustained discussion and agreement with ILRI. The IT Unit is already a joint resource of the two Centres. Research Support is currently in advanced stages of implementation as a joint resource. The possibility of managing Communications and other corporate and research services in this way will also be considered.
Recommendation 15 *ICRAF moves to the following revised organizational structure and staffs it appropriately. (page 102)*	This response relates to both recommendations 12 and 15. We understand and agree with the broad intent of these recommendations to further clarify roles, improve corporate services, consolidate units, and strengthen the cohesion of cross-unit linkages. The Board and management will fully analyze the advantages and disadvantages of the proposed structure and modifications or other alternatives that may meet the intent of this recommendation. We believe that final organizational changes should be derived from the informed knowledge and insights that Board and management obtain from these analyses.

3. ICRAF's Project Portfolio for 2007

As in all years since 2003, ICRAF's project portfolio for the MTP 2007-2009 is organized under four themes and two systemwide/ecoregional programmes. Key details to understand the current portfolio include:

a) ICRAF's alignment 2007-2009 with the CGIAR System Priorities 2005-2015;
b) A summary of ICRAF's new research directions for 2007; and
c) Highlights of ICRAF's collaborative strategies for research with other centers and partners.

While ICRAF maintains the same themes as previously, the extent of project re-organization and consolidation between the last MTP and this one is extensive. We display these changes in Tables 2 to 6, which link the former structure to the new one.

Table 2: Mapping of New Outputs verses Old Outputs for Theme: Land and People

New Outputs / Old Outputs	LP.1: Land and soil health		LP.2: Smallholder production systems			LP.3: Institutional innovations and incentives	
	LP.1.1 land degradation	**LP.1.2 Land rehabilitation**	**LP.2.1 Smallholder resources, livelihoods and strategies**	**LP.2.2 Integrated tree-crop-livestock systems**	**LP.2.3 Water Productivity**	**LP.3.1 Collective action innovations**	**LP.3.2 Incentives for smallholder agroforestry**
LP.1.1: Soil fertility problem assessment							
LP.1.2: Analyzing soil fertility options							
LP.1.3: Methods and tools for wider use of soil fertility options							
LP.2.1: Land degradation assessment							
LP.2.2: Analyzing options for land management							
LP.2.3: Methods and tools for wider use of land management options							
LP.3.1: Identify problems and opportunities for integrated tree-crop-livestock systems							
LP.3.2: Analyze tradeoffs in productivity, resilience and profits in integrated tree crop livestock systems							
LP.3.3: Methods and tools for wider use of integrated systems							
LP.4.1: Identify the poor, their needs and agroforestry opportunities							
LP.4.2: To identify and strengthen processes by which the poor can benefit from agroforestry							
LP.4.3: Identify and disseminate options for policy to improve incentives							
LP.4.4: To develop and implement impact assessment methods	(diffused throughout L.P.1.2, 2.2, 2.3, 3.1 and 3.2 where applicable)						

Table 3: Mapping of New Outputs verses Old Outputs for Theme: Trees and Markets

New Outputs / Old Outputs	TM.1: Tree Genetic Diversity			TM.2: Tree Domestication			TM.3: Tree Product Markets		Other
	TM.1.1 Tree Genetic Resources and Information	**TM.1.2** Seed and Seedling Systems	**TM.1.3** On-farm management of tree genetic diversity	**TM.2.1** Participatory evaluation and analysis	**TM.2.2** Tree improvement and management	**TM.2.3** Improving dissemination and scaling up	**TM.3.1** Market Research	**TM.3.2** Tree Product Development	
TM.1.1: Market awareness							■		
TM.1.2: Market analysis and intelligence							■		
TM.1.3: Agroforestry Tree Products (AFTP) promotion								■	
TM.1.4: Farmer enterprise improvement								■	
TM.2.1: Seed systems	■								
TM.2.2: Seedling systems		■							
TM.2.3: Germplasm provision		■							
TM.2.4: Tree and germplasm knowledge	■								
TM.3.1: Tree evaluation				■					
TM.3.2: Tree improvement and selection					■				
TM.3.3: Tree propagation and management					■				
TM.4.1: Participatory evaluation and analysis				■					
TM.4.2: Improving extension, dissemination and scaling up						■			
TM.4.3: Impact assessment						■			
TM.5.1: Inter-specific landscape tree diversity			■						
TM.5.2: Intra-specific landscape tree diversity			■						
TM.5.3: Diversity-Stability-Productivity links									**ES**

Table 4: Mapping of New Outputs verses Old Outputs for Theme: Environmental Services

New Outputs / Old Outputs	ES.1: Landscape Interactions: Enhancing Agroforestry contributions to sustainable landscape management			ES.2: Climate Change: Fostering smallholder Agroforestry as a pro-poor strategy for adaptation and mitigation of climate change		ES.3: Environment Policy: Harmonizing policy for environmental stewardship and rural development		
	ES.1.1: Watershed management	**ES.1.2: Biodiversity conservation**	**ES.1.3: Trees in Multifunctional Landscapes:**	**ES.2.1: Climate Change Mitigation**	**ES.2.2 Climate Change Adaptation**	**ES.3.1 Harmonizing policy for environment and poverty goals**	**ES.3.2 Rewards for environmental services**	**ES.3.3 Agroforestry in international policy**
ES.1.1: Contributions of agroforestry (AF) to watershed functions								
ES.1.2: Landscape configurations on watershed function								
ES.1.3: Incentives between upstream downstream communities								
ES.2.1: Contributions of AF to the conservation and enrichment of biodiversity								
ES.2.2: AF contribute to increasing biodiversity in priority agroecosystems								
ES.2.3: Forestry and conservation policies								
ES.3.1: Contributions of AF to buffering against climate variability								
ES.3.2: Contributions of agriculture to atmospheric greenhouse gas loading								
ES.3.3: Environmental service projects rural development and carbon sequestration								
ES.3.4: Developing country national plans for emission reduction								
ES.4.1: National and regional expertise in negotiation support								
ES.4.2: Indigenous people, agroforestry, property rights								
ES.4.3: Policy and institutional options								
ES.4.4: Governments, environmental governance, multi-functional landscapes.								
ES.4.5: International and regional conventions, agreements and action plans								

Table 5: Mapping of New Outputs verses Old Outputs for Theme: Strengthening Institutions

New Outputs / Old Outputs		SI.1 To strengthen the capacity for Agroforestry and NRM Science at national institutions and systems			SI.2 Knowledge Management: To enhance capacity for sharing Agroforestry and NRM innovations to leverage scaling up		Other
		SI.1.1 Understanding policies and institutions	SI.1.2 Agroforestry research and teaching capacity	SI.1.3 Agroforestry and NRM institutionalized	SI.2.1 Characterization of and partnering with development institutions	SI.2.2 Collaboration and Networking	
SI-1 Strengthening Research Institutions	**SI.1.1.1**: Viable, institutionalized capacity building strategies and plans						
	SI.1.1.2: Tangible research activities within institutions, and good partnership with ICRAF						
	SI.1.1.3: Increased research output by national partners						
SI-2 Strengthening Development institutions	**SI.2.1.1:** Pathways for dissemination of innovations identified						
	SI.2.1.2: Strategic alliances and plans with key institutions for scaling up innovations						
	SI.2.1.3: Improved flow of knowledge and skills to users						
	SI.2.1.4: Quality AF/INRM development programmes institutionalized						
SI-3 Strengthening Educational Institutions	**SI.3.1.1:** Strategies and plans to enhance human resource capacity al all levels						
	SI.3.1.2: Integrative curricula and teaching & learning approaches						
	SI.3.1.3: Skilled future farmers						
	SI.3.1.4: Improved link between education and practice						
SI-4 Knowledge management	**SI.4.1.1**: Integrated, cross thematic consistency, efficiency and integrity in capacity building work						
	SI.4.1.2: Improved integration and knowledge sharing						
	SI.4.3.1: A "one-stop shop" for AF & INRM knowledge						
	SI.4.1.3: Demonstrable effectiveness of ICRAF's work						
	SI.4.2.4: Improved research quality and diversity of innovations						

Table 6: Mapping of Old Outputs to New Outputs for Eco-regional Programme: African Highlands Initiative (AHI)

New Outputs / Old Outputs	**AHI.1: INRM Innovations in Pilot Watersheds** (to Balance Income Generation with Conservation)		**AHI.2: Scaling Up and Institutionalization** (of INRM Methods Tested in Pilot Sites)	
	AHI.1.1 Pilot Implementation of Integrated Watershed Interventions	**AHI.1.2** Pilot Implementation of District Institutional Innovations for INRM	**AHI.2.1** Institutional Change in Support of INRM	**AHI.2.2** Knowledge Management
AHI.2.1.1: An integrated set of relevant technical and management options and the context of their applicability are locally available and documented by research partners.				
AHI.2.1.2: Methodological and technical data that address multiple goals of local residents in a sustainable way synthesized, organized and made available to local, national, regional and global users.				
AHI.2.1.3: Methods and approaches available that improve innovativeness and organizational capacity of local community, stakeholder groups and service providers' ability to make better management decisions and/or provide better support regarding inclusion and their ability to meet environment and development goals of diverse groups.				
AHI.2.1.4: Trade-off analyses of different management and institutional arrangement scenarios improves decision making concerning land use and NRM at local, national and regional levels.				
AHI.2.1.5: Methods and techniques related to using an integrated, participatory NRM approach that increase the efficiency, relevance and speed uptake and promotion of better practices.				
AHI.2.2.1: Local policy makers and stakeholder groups are provided with information that will improve understanding of the multiple causes of degradation, the links between land management and sustainable livelihoods, and improve their priority setting and decision making.				
AHI.2.2.2: Participatory methods facilitating conflict resolution and stakeholders with differing interests to evolve better resource sharing arrangements.				
AHI.2.2.3: Local leaders, service providers and constituents mobilized to envision and implement self-led development scenarios that improve livelihoods and provide incentives to maintain the resource base.				
AHI.2.2.4: Implementation and assessment of new or improved policies and institutional arrangements enhanced by use of participatory monitoring and performance assessment methods.				
AHI.2.3.1: AHI partners have improved their ability to implement participatory INRM.				
AHI.2.3.2: AHI partners and others have access to and use information on NRM issues, technological and management solutions, and methods.				
AHI.2.3.3: AHI partners have shared information among them, and have provided information and advice using presentations, publications and participation in pertinent fora at local, national, regional and global levels.				
AHI.2.3.4: Management and coordination enhances multi-institutional efforts in AHI at regional and pilot site levels.				
AHI.2.3.5: Principles of institutional change understood and assist research organizations in their change and capacity building processes.				
AHI MTP - ASARECA New Outputs Mapped to AHI Projects & Outputs under ASARECA	Project 1 / Output 1	Project 2 / Output 2	Project 2 / Output 2 (development partners) Project 3 / Output 3 (research)	Project 4 / Output 4

a) Alignment with the System Priorities 2005-2015

As reflected in Tables 7 to 12, ICRAF's agenda fits well with the newly established System Priorities. ICRAF is present in nine of the 20 sub priorities at a level of over US$1M, which we maintain is an appropriate range of research areas for a medium-size center which straddles both agriculture and natural resources. Our top five commitments on the financial scale in 2006 are for sub priorities 5C, 4A, 5D, 5A, and 2D (in descending order).

The Science Council explicitly cautioned the centers on the highly preliminary character of these data. That serves as the caveat in relating ICRAF to the other 14 centers. However, a few broad findings are in order.

Thus ICRAF's strong commitment to Priority 5 (40 percent of our 2006 investment) may surprise observers who identify ICRAF mainly or even exclusively with biophysical research. In terms of investment levels, ICRAF is at or near the top in subpriority 5C ("rural institutions and their governance"), with CIAT, IFPRI, and IPGRI as other key actors. Regarding subpriority 5A ("science and technology policy and institutions"), ICRAF is in the upper ranks with IITA and IPGRI. Subpriority 5D is a large one, and while ICRAF invests heavily in it, so do many other centers.

Subpriority 4A ("integrated land, water, and forest management at a landscape level") is obviously important for ICRAF, where the center's investment in 2006 is over US$5 million. Other major programmes in Priority 4 are found in CIAT, IWMI, CIFOR, ICRISAT, and the Challenge Programme for Water and Food.

ICRAF's "non-aligned" activities are only 4% of our 2007 portfolio in financial terms, and they occur in only three outputs: TM.1.2 ("seed and seedling systems"), SI.2.1 ("strategic targeting of agroforestry/NRM innovations"), and SI.2.2 ("knowledge management"). ICRAF understands the directive from the Science Council that seed production and distribution are not central in the CGIAR's mission. We are also clear that stand-alone training is outside of the System Priorities, even though ICRAF is unable to avoid a certain amount of that in order to achieve other objectives.

Table 7: Mapping of New Trees and Markets Outputs to the CGIAR System Priorities

New Outputs / CGIAR System Priorities	TM.1: Tree Genetic Diversity			TM.2: Tree Domestication			TM.3: Tree Product Markets	
	TM.1.1: Tree Genetic Resources and Information	**TM.1.2 Seed and Seedling Systems**	**TM.1.3 On-farm management of tree genetic diversity**	**TM.2.1 Participatory evaluation and analysis**	**TM.2.2 Tree improvement and management**	**TM.2.3 Improving dissemination and scaling up**	**TM.3.1 Market Research**	**TM.3.2 Tree Product Development**
1a Conservation and characterisation of staple crops								
1b Conservation and characterisation of under-utilised Plant Genetic Resources (PGR)	Primary							
1c Conservation of indigenous livestock								
1d Conservation of aquatic animal genetic resources								
2a Maintaining and enhancing yields of staple crops								
2b Tolerance to selected abiotic stress								
2c Enhancing nutritional quality and safety								
2d Genetic enhancement of selected species to increase incomes				Primary	Primary			
3a Increasing income from fruit and vegetables							Primary	Primary
3b Increase income from livestock								
3c Enhancing income through increased productivity of fisheries								
3d Sustainable income from forests and trees							Secondary	Secondary
4a Integrated land, water and forest management			Primary					
4b Sustaining and managing aquatic ecosystems for food and livelihoods								
4c Improved water productivity								
4d Sustainable agro-ecol.intensification in low- and high-potential areas								
5a Science and technology policies and institutions								
5b Making international and domestic markets work for the poor							Secondary	Secondary
5c Rural institutions and their governance								
5d Improving R&D options to reduce rural poverty and vulnerability						Primary		
OTHER		Primary						

Table 8: Mapping of New Environmental Services Outputs to the CGIAR System Priorities

New Outputs / CGIAR System Priorities	ES.1: Landscape interactions			ES.2: Climate change		ES.3: Environment policy		
	ES.1.1 Watershed management	**ES.1.2 Biodiversity conservation**	**ES.1.3 Trees in multi-functional landscapes**	**ES.2.1 Climate change mitigation**	**ES.2.2 Climate change adaptation**	**ES.3.1 Harmonizing policy**	**ES.3.2 Rewards for ES**	**ES.3.3 AF in international policy**
1a Conservation and characterisation of staple crops								
1b Conservation and characterisation of under-utilised PGR								
1c Conservation of indigenous livestock								
1d Conservation of aquatic animal genetic resources								
2a Maintaining and enhancing yields of staple crops								
2b Tolerance to selected abiotic stress								
2c Enhancing nutritional quality and safety								
2d Genetic enhancement of selected species to increase incomes								
3a Increasing income from fruit and vegetables								
3b Increase income from livestock								
3c Enhancing income through increased productivity of fisheries								
3d Sustainable income from forests and trees			Secondary				Primary	
4a Integrated land, water and forest management	Primary	Primary	Primary	Primary	Secondary	Primary	Secondary	
4b Sustaining and managing aquatic ecosystems for food and livelihoods								
4c Improved water productivity	Primary							
4d Sustainable agro-ecol.intensification in low- and high-potential areas		Secondary			Primary			**Primary**
5a Science and technology policies and institutions								
5b Making international and domestic markets work for the poor								
5c Rural institutions and their governance				Secondary				**Primary**
5d Improving R&D options to reduce rural poverty and vulnerability						Secondary		

Table 9: Mapping of New Land and People Outputs to the CGIAR System Priorities

New Outputs / CGIAR System Priorities	LP.1: Land and soil health		LP.2: Smallholder production systems			LP.3: Institutional innovations and incentives	
	LP.1.1 Land degradation and soil fertility problems	**LP.1.2** Land rehabilitation and enrichment	**LP.2.1** Smallholder resources, livelihoods and strategies	**LP.2.2** Integrated tree-crop-livestock systems	**LP.2.3** Improved water productivity	**LP.3.1** Collective action innovations	**LP.3.2** Incentives for smallholder agroforestry
1a Conservation and characterisation of staple crops							
1b Conservation and characterisation of under-utilised PGR							
1c Conservation of indigenous livestock							
1d Conservation of aquatic animal genetic resources							
2a Maintaining and enhancing yields of staple crops							
2b Tolerance to selected abiotic stress							
2c Enhancing nutritional quality and safety							
2d Genetic enhancement of selected species to increase incomes							
3a Increasing income from fruit and vegetables							
3b Increase income from livestock							
3c Enhancing income through increased productivity of fisheries				Primary			
3d Sustainable income from forests and trees							
4a Integrated land, water and forest management							
4b Sustaining and managing aquatic ecosystems for food and livelihoods					Primary		
4c Improved water productivity	Primary	Primary					
4d Sustainable agro-ecol.intensification in low- and high-potential areas							
5a Science and technology policies and institutions							
5b Making international and domestic markets work for the poor						Primary	Primary
5c Rural institutions and their governance			Primary				
5d Improving R&D options to reduce rural poverty and vulnerability							

Table 10: Mapping of New Strengthening Institutions Outputs to the CGIAR System Priorities

New Outputs / CGIAR System Priorities	SI.1 To strengthen the capacity for Agroforestry and NRM Science at national institutions and systems			SI.2 Knowledge Management: To enhance capacity for sharing Agroforestry and NRM innovations to leverage scaling up	
	SI.1.1 Understanding policies and institutions	**SI.1.2 Agroforestry research and teaching capacity**	**SI.1.3 Agroforestry and NRM institutionalized**	**SI.2.1 Strategic targeting of Agroforestry/NRM innovations**	**SI.2.2 Knowledge management**
1a Conservation and characterisation of staple crops					
1b Conservation and characterisation of under-utilised PGR					
1c Conservation of indigenous livestock					
1d Conservation of aquatic animal genetic resources					
2a Maintaining and enhancing yields of staple crops					
2b Tolerance to selected abiotic stress					
2c Enhancing nutritional quality and safety					
2d Genetic enhancement of selected species to increase incomes					
3a Increasing income from fruit and vegetables					
3b Increase income from livestock					
3c Enhancing income through increased productivity of fisheries					
3d Sustainable income from forests and trees					
4a Integrated land, water and forest management		Secondary	Secondary		
4b Sustaining and managing aquatic ecosystems for food and livelihoods					
4c Improved water productivity					
4d Sustainable agro-ecol.intensification in low- and high-potential areas					
5a Science and technology policies and institutions	Primary	Primary	Primary		
5b Making international and domestic markets work for the poor					
5c Rural institutions and their governance				Primary	
5d Improving R&D options to reduce rural poverty and vulnerability					
OTHER				Secondary	Primary

Table 11: Mapping of New African Highlands Initiative Outputs to the CGIAR System Priorities

New Outputs / CGIAR System Priorities	**AHI.1: INRM Innovations in Pilot Watersheds** (to Balance Income Generation with Conservation)		**AHI.2: Scaling Up and Institutionalization** (of INRM Methods Tested in Pilot Sites)	
	AHI.1.1 Pilot Implementation of Integrated Watershed Interventions	**AHI.1.2** Pilot Implementation of District Institutional Innovations for INRM	**AHI.1.1** Pilot Implementation of Integrated Watershed Interventions	**AHI.1.2** Pilot Implementation of District Institutional Innovations for INRM
1a Conservation and characterisation of staple crops				
1b Conservation and characterisation of under-utilised PGR				
1c Conservation of indigenous livestock				
1d Conservation of aquatic animal genetic resources				
2a Maintaining and enhancing yields of staple crops	Secondary			Secondary
2b Tolerance to selected abiotic stress				
2c Enhancing nutritional quality and safety	Secondary			Secondary
2d Genetic enhancement of selected species to increase incomes				
3a Increasing income from fruit and vegetables	Secondary			Secondary
3b Increase income from livestock	Secondary			Secondary
3c Enhancing income through increased productivity of fisheries				
3d Sustainable income from forests and trees	Secondary			Secondary
4a Integrated land, water and forest management	Primary	Primary	Primary	Primary
4b Sustaining and managing aquatic ecosystems for food and livelihoods				
4c Improved water productivity	Secondary			Secondary
4d Sustainable agro-ecol.intensification in low- and high-potential areas	Primary			Primary
5a Science and technology policies and institutions			Primary	Primary
5b Making international and domestic markets work for the poor	Secondary	Secondary		Secondary
5c Rural institutions and their governance	Primary			Primary
5d Improving R&D options to reduce rural poverty and vulnerability	Primary	Primary	Primary	Primary
OTHER				

Table 12: Mapping of Alternative to Slash-and Burn Outputs to the CGIAR System Priorities

New Outputs / CGIAR System Priorities	ASB-1: Action- oriented iRNM research in the tropical forests margins		
	ASB.1.1 Knowledge on development-conservation tradeoffs in the tropical forest margins	**ASB.1.2** Global network for the tropical forest margins	**ASB.1.3** Enhanced capacity of partners to generate knowledge and develop workable interventions
1a Conservation and characterisation of staple crops			
1b Conservation and characterisation of under-utilised PGR			
1c Conservation of indigenous livestock			
1d Conservation of aquatic animal genetic resources			
2a Maintaining and enhancing yields of staple crops			
2b Tolerance to selected abiotic stress			
2c Enhancing nutritional quality and safety			
2d Genetic enhancement of selected species to increase incomes			
3a Increasing income from fruit and vegetables			
3b Increase income from livestock			
3c Enhancing income through increased productivity of fisheries			
3d Sustainable income from forests and trees	Secondary	Secondary	Secondary
4a Integrated land, water and forest management	Primary	Primary	Primary
4b Sustaining and managing aquatic ecosystems for food and livelihoods			
4c Improved water productivity			
4d Sustainable agro-ecol.intensification in low- and high-potential areas	Primary	Primary	Primary
5a Science and technology policies and institutions	Secondary	Secondary	Secondary
5b Making international and domestic markets work for the poor	Secondary	Secondary	Secondary
5c Rural institutions and their governance	Secondary	Secondary	Secondary
5d Improving R&D options to reduce rural poverty and vulnerability	Secondary	Secondary	Secondary

Table 13: ICRAF's Role in the CGIAR's System Priorities, by Estimated Investment Levels in 2006

System Subpriority	ICRAF Investment (USD 000)	Other Main CGIAR Actors
1A	0	
1B	954	IPGRI, IRRI, CIFOR, ILRI, CIAT
1C	0	
1D	0	
2A	22	
2B	0	
2C	22	
2D	1,533	ILRI, CIP, IPGRI, IFPRI
3A	2,116	ICARDA, ICRISAT, CIAT, IFPRI, IPGRI
3B	22	
3C	0	
3D	2,417	CIFOR, WORLD FISH
4A	5,510	IWMI, CIAT, CIFOR, ICRISAT, IITA
4B	0	
4C	1,563	
4D	1,668	IITA, ICARDA, IRRI, IWMI, CIAT, CIMMYT
5A	2,888	IITA, IPGRI, IFPRI, CIP, CIFOR
5B	822	
5C	4,281	CIAT, IFPRI, IPGRI, CIFOR, CIP, ILRI, ICARDA, CPWF
5D	2,690	ILRI, CIP, IFPRI, CIFOR, IITA, IPGRI, IRRI, IWMI, WARDA, GENERATION CP
New Activities	286	
Stand Alone Training	871	
New Research Area	1	
Totals	28,663	

Source: Preliminary data circulated from Science Council among all CGIAR centers as 'Project Budgets by System Priorities 2006,' April 2006.

b) New research components and directions for 2007

ICRAF's theme leaders produce annually updated theme outlooks that link with the three-year MTP, providing background and guidance for the continuous evolution of the MTP. Below we summarize from current outlooks for each of the projects in the 2007 portfolio:

- Project TM.1: Regarding agroforestry germplasm, research elements we are expanding include molecular characterization of priority tree species using new automated techniques; tree diversity and abundance baselines in Southern Africa and South Asia; research on decentralized methods for scaling-up germplasm collection; and conceptualization of links between farm trees and environmental services (e.g., soil and water management, carbon sequestration, microclimate effects, biodiversity strategies, etc).

- Project TM.2: In research on tree domestication, increased emphasis is going towards comparative trials of improved propagules versus controls (genetic gain and farm compatibility); production economics of agroforestry products; mycorrhizal infections and dependency for *Allanblackia*; research on biodiesel species (*Jatropha*, *Moringa*, *Pongamia*); links between health and agroforestry fruits as an influence on species and cultivar selection; and management of agroforestry fruit trees in terms of spacing, watering, pruning, fertilization, and harvesting methods.

- Project TM.3: In research on markets for agroforestry tree products, ICRAF's choices of growth areas include cocoa agroforestry; methods to compare winners and losers from cultivating previously wild-harvested tree products; quality characterization of tree products across their geographical ranges (e.g., shea butter in West Africa); and research related to aspects of agroforestry enterprise in tree nurseries, tree growing/harvesting, and marketing.

- Project LP.1: Regarding land degradation and soil fertility, new research directions are in land/soils problems and rehabilitation/enrichment interventions. The use of near infrared technology for research on land degradation will be expanded. Research on interventions for land/soils is moving increasingly towards an integrated production ecology approach for testing wide-area options.

- Project LP2. Recognizing that the choices of integrating trees and crops are determined by local conditions, ICRAF's emerging research emphasis on constraints faced by smallholder agroforestry is *ex ante* investigative approaches which estimate likely impacts.

- Project LP.3: Research in scaling-up the use of agroforestry technologies was noted as an "emerging science area" by our EPMR. ICRAF's newest research in scaling-up builds towards testing specific hypotheses for scaling-up programmes in each of Southern Africa (nitrogen-fixing trees and shrubs), West and Central Africa (domestication of agroforestry trees), and Southeast Asia (the Landcare approach). This represents a greater formalization of our inquiry than in previous years. We also will review cross-sector policies that impinge on or promote agroforestry, as recommended by the EPMR.

- Project ES.1: In its research on landscape interactions (trees, water, biodiversity, and livelihoods), ICRAF has expanded from an earlier focus in Southeast Asia to new sites in Guinea, Mali, and mountainous zones of Eastern Africa. Watershed modeling needs development in Africa, as do case studies on invasive agroforestry species. ICRAF recognizes its need to synthesize and disseminate a substantial base of research results in order to generate more international public goods from this research area. In 2006, ICRAF and CIFOR joined together to create a Joint Biodiversity Platform for rural landscape mosaics which is a

promising step towards enhanced collaboration and synergy between CIFOR's three research Programmes and ICRAF.

- Project ES.2: Regarding climate change, ICRAF has a small number of scientists with solid qualifications for research on land use in relation to greenhouse gases. However, the EPMR recommended that ICRAF withdraw from this line of research. ICRAF will continue to disseminate the findings of its research to date, while debating our future role in climate change, e.g., strategies for farmers to cope with climate change and to receive benefits from carbon sequestration. In other words, we will shift increasingly towards research on adaptation and away from mitigation.

- Project ES.3: For ICRAF's research on agroforestry in relation to environmental policy, the new principal thrust is to build RUPES (Rewarding Upland People for Environmental Services) and "negotiation support systems" in Africa, borrowing from ICRAF's research experience in Southeast Asia.

- Project SI.1: On strengthening partner organizations like universities and NARS which provide research and education in agroforestry, an emerging area of ICRAF's research portfolio is comparing the impacts of alternative outreach methods (including distance learning) for delivering knowledge, curricula, and skills. ICRAF is also expanding its work on investigating the "market" for educational technologies and new learning resources in the sphere of agriculture and natural resources.

- Project SI.2: Here the emerging approach is to build a stronger research component into comparative methods of capacity building in agroforestry knowledge and application. The research aspect fits System Priority 5c, while the more traditional capacity-building work falls outside of the System framework.

- AHI.1: The research aims to generate methodological innovations for integrated natural resources management at different scales: farm, watershed, and district. The number of output targets in AHI is substantially reduced from previous MTP cycles.

- AHI.2: The focus is research to scale-up appropriate natural resources technologies, and to institutionalize the process among AHI's partners and clients.

- ASB: The way forward is emphasis of high-profile publications; research on uptake of the programme's knowledge-diffusing and capacity-building activities; and strengthening ASB's research on impact assessment in integrated natural resources management.

c) <u>ICRAF's collaborative strategies</u>

ICRAF continues to broadly contribute to the Systemwide and Ecoregional programmes (SWEPs) of the CGIAR. We are a main player in the Amazon Initiative; we are embarking on new joint research with CIFOR; we are engaging in research to backstop the Millennium Development Goals; and we are increasing our portfolio of agroforestry research with the private sector. We have added a few partnerships in the health sector, a research area that ICRAF is considering for future expansion. ICRAF plays an active role in the CGIAR's regional-level MTPs for Africa. Each of these dimensions of research collaboration will be addressed in turn.

Regarding the SWEPs, ICRAF participates in the Genetic Resources Programme, the Initiative on Water Management, the Desert Margins Programme, and the cross-center research on Collective Action and Property Rights. Most importantly, ICRAF hosts the programme on Alternatives to Slash and Burn (ASB) and the African Highlands Initiative (AHI).

The ASB won the CGIAR's Partnerships Award in 2005. The ASB exemplifies cross-institutional collaboration because it bridges agriculture and environment, and because it operates at international, national, and local levels. The external evaluation report of ASB commented: "As effectively as any organization we know, it (ASB) has used systematic reflection on its own research and experience not only to learn better answers to its original questions, but also to learn better questions to ask."

The AHI continues to be an example in Africa of action-oriented research focused on managing agriculture and natural resources at the community level. The AHI will have new leadership beginning in 2006, with Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and ICRAF jointly searching for the best individual for that challenging role.

ICRAF has maintained a strong position in the Amazon Initiative (AI) as our most strategic current approach for agroforestry research for development in Latin America. The Secretary of the AI reports jointly to ICRAF and CIAT. Other collaborating centers are CIFOR, IPGRI, and IFPRI – with the prospect of additional centers joining the AI in the near future. In this the CGIAR teams up with six NARS of the Amazon countries plus an increasing network of Amazonian universities, research institutes, and NGOs.

In 2005, ICRAF and CIFOR concluded their detailed assessment of how to strengthen the alliance between the two centers. New joint projects by ICRAF-CIFOR in Guinea and the Democratic Republic of the Congo echo the spirit of that agreement, with other promising joint projects currently under discussion. A new Biodiversity Platform has been established by ICRAF-CIFOR to help identify research of mutual interest, and to evaluate relative cooperative advantages in pursuing it. ICRAF's partnership with Conservation International offers an additional platform for research on biodiversity topics.

Starting in 2006, various elements of ICRAF's research for development are being expanded in collaboration with two major initiatives in Africa. The first is led by The Earth Institute (Columbia University, New York) in which ICRAF provides a knowledge base for the Millennium Villages Project. ICRAF is pleased to offer research support for the design and methodology of rural baselines, for assessing land degradation at varying scales, and for methods and tools of impact assessment. While the research component in the Millennium Villages is modest relative to the magnitude of its development funding, ICRAF intends to demonstrate a cost-benefit favorable for expanded research.

ICRAF is also linked with TerrAfrica, the implementation mechanism for The New Partnership for Africa's Development's (NEPAD's) strategy for land management. ICRAF's role to date consists of contributing to monitoring and evaluation methods, including the diagnosis of land degradation and systems for tracking improvements.

ICRAF's collaboration with partners in private businesses and the health sector is growing. We produced an internal *Policy on Private Sector Engagement* to guide our efforts. Private partnerships now include Unilever (Allanblackia), Mars (cocoa agroforestry), Aarhus (Shea), and Syngenta (tree nurseries). New partners in the health interface with agroforestry are Association for African Medicinal Plants Standards (AAMPS), Kenya Medical Research Institute (KEMRI), and Traditional Health for the Treatment of AIDS (THETA).

As one of the four Africa-based centers in the CGIAR, ICRAF is pleased to contribute to the cross-System MTPs for each of WCA (West and Central Africa) and ESA (Eastern and Southern Africa). For both WCA and ESA, ICRAF facilitates the integration of inputs by all CGIAR centers for the regional expression of Priority 4. ICRAF fully anticipates that the content of our MTP 2008-2010 will be heavily shaped by the joint priorities which are emerging from this cross-center planning.

To date, ICRAF's participation in the CGIAR's Challenge Programmes (CPs) has not met our expectations. This may have structural explanations in terms of the set of the CPs which exist, i.e., oriented to research in commodity crops or in other ways beyond ICRAF's mandate and scope. ICRAF's recent proposals for the Sub-Saharan Africa CP were not accepted. In light of our experience, ICRAF will form a working group to review and interpret our history with the CPs in order to define a constructive way forward.

4. Financial Indicators

Financial outcomes in 2005

Total nominal (unadjusted for purchasing power) income in ICRAF increased by about 2%, from US$30.41 million in 2004 to US$31.01 million in 2005. This increase was mainly due to exchange gains on unrestricted grant income due to a weak US dollar relative to other major donor currencies. Of course, the view is less encouraging when judged in price-adjusted terms.

Total expenditure increased by about 7% from US$28.61 million in 2004 to US$30.49 million in 2005. This increase is attributed to accelerated implementation of research activities in 2005, funded mostly from restricted grants. In addition, ICRAF invested US$0.63 million in replacement of equipment from the designated net assets.

Changes in net assets for year 2005 reflect a surplus of US$0.52 million (compared with US$1.8 million in 2004). As of 2005, total unrestricted net assets in ICRAF reached US$13.9 million. This translates to 93 days of cash expenditure. Further, ICRAF's working capital as of year-end was equivalent to 158 days of cash expenditure. These figures, which measure long-term and short-term solvency, respectively, are above the upper thresholds recommended by the CGIAR's Secretariat.

The 2005 outcomes were very close to the estimates reported in the MTP submitted in June 2005 for income and expenditure. However, mainly due to exchange gains, the estimated transfer to net assets exceeded the plan by $0.17 million.

Financial estimates for 2006

Total nominal income for 2006 is estimated at US$28.81 million, which is a reduction of about 9% compared to our MTP proposal submitted in June 2005. Expenditure in 2006 is estimated at US$28.66 million, reflecting a reduction of about 9% compared to the figure presented in our MTP of June 2005. This reduction is explained by excluding the former grant from the Canada Fund for Africa. In 2005, ICRAF had anticipated the grant to be renewed, although Canada subsequently announced that it would not be.

For 2006, a net increase in net assets of US$0.15 million is thus projected, instead of US$0.40 million estimated in June 2005. If ICRAF can realize the US$0.15 million, this will be sufficient to maintain ICRAF's financial indicator on assets the same as it had been at the end of 2005.

Currently, ICRAF has obtained only one-half of last year's level of unrestricted funds from the Netherlands. The projections of income in this section are based on an assumption that the unrestricted core funding from the Netherlands will be restored to the 2005 level during 2006. The estimated results for 2006 may be affected adversely if the negotiation to restore the funding from the Netherlands to the 2005 level is unsuccessful, and if the Kenyan shilling continues to strengthen against the US dollar in 2006.

Financial proposal and plans 2007-2009

The financing plan for 2007 included in the 2007-2009 MTP is based on known or highly probable sources of future grants. ICRAF is being highly conservative in including probable sources in the 2007 financing plan, and we expect some moderate changes in the 2007 proposal. The plans for years 2008 and 2009 have been extrapolated on the basis of the 2007 financing plan, assuming a 5% average growth rate.

Detailed financial data are presented in Annex 1 *(pages 111 to 128)*

ICRAF and CGIAR Funding Trends 1988-2004

The following two tables and associated 6 graphs have been included to show ICRAF and CGIAR funding over the last 16 years both in nominal and real value terms. The results tables below reflect a healthy growth in ICRAF unrestricted funding over the year in nominal terms but in essence there is minimal or no growth in real terms. ICRAF's unrestricted grant Income in real terms has remained constant at US$ 6 million since 1995.

Table 14: ICRAF Funding Trends 1988-2004

Year	Unrestricted Core Grants (Dollars millions)	Restricted Grants (Dollars Millions)	Total Grants(Dollars Millions)	NASA Deflator Inflation Index	Deflated Unrestricted (Dollars Millions)	Deflated Restricted (Dollars Millions)	Deflated Total Grants (Dollars Millions)	UCORE Grants as % of Total
1988	2.48	2.78	5	1	2	3	5	47
1989	2.96	4.56	8	1.0389	3	4	7	39
1990	4.05	4.98	9	1.0774	4	5	8	45
1991	4.77	5.98	11	1.1179	4	5	10	44
1992	4.91	7.55	12	1.146	4	7	11	39
1993	5.77	7.7	13	1.172	5	7	12	43
1994	5.49	10.39	16	1.1972	5	9	13	35
1995	7.63	8.47	16	1.2224	6	7	13	47
1996	6.92	10.46	17	1.2459	6	8	14	40
1997	7.37	12.91	20	1.2676	6	10	16	36
1998	7.40	12.8	20	1.283	6	10	16	37
1999	7.37	13.38	21	1.2998	6	10	16	36
2000	7.04	14.51	22	1.3261	5	11	16	33
2001	6.48	15.37	22	1.3571	5	11	16	30
2002	6.68	14.81	21	1.3811	5	11	16	31
2003	7.37	19.93	27	1.4037	5	14	19	27
2004	8.41	20.9	29	1.4221	6	15	21	29
	103	**187**	**291**		**82**	**147**	**229**	**35**

Notes:

1. Restricted grants include grants for the agreed agenda programs and restricted grants received between 1988-1997 for the complimentary programs.
2. The real value of unrestricted and restricted grants has been computed using the NASA Deflator inflation index (indexhttp://www1.jsc.nasa.gov/bu2/inflateGDP.html) with 1988 as the base year. This is an inflation calculator for adjusting costs from one year to another using the Gross Domestic Product (GDP) Deflator inflation index. This inflation calculator is based on the inflation rate during the US Government Fiscal Year, which begins on October 1 and ends on September 30.

Table 15: CGIAR Funding Trends

Year	Unrestricted Core Grants (Dollars millions)	Restricted Grants (Dollars Millions)	Total Grants(Dollars Millions)	NASA Deflator Inflation Index	Deflated Unrestricted (Dollars Millions)	Deflated Restricted (Dollars Millions)	Deflated Total Grants (Dollars Millions)	UCORE Grants as % of Total
1988	179	78	257	1	179	78	257	70
1989	197	82	279	1.0389	190	79	269	71
1990	195	91	286	1.0774	181	85	265	68
1991	195	89	284	1.1179	174	80	254	69
1992	202	116	318	1.146	176	101	277	64
1993	196	115	311	1.172	167	98	265	63
1994	203	122	325	1.1972	170	102	271	62
1995	208	121	329	1.2224	170	99	269	63
1996	208	137	345	1.2459	167	110	277	60
1997	204	129	333	1.2676	161	102	263	61
1998	206	134	340	1.283	161	104	265	61
1999	179	151	330	1.2998	138	116	254	54
2000	164	167	331	1.3261	124	126	250	50
2001	145	192	337	1.3571	107	141	248	43
2002	157	200	357	1.3811	114	145	258	44
2003	168	213	381	1.4037	120	152	271	44
2004	197	240	437	1.4221	139	169	307	45
	3,202	**2,378**	**5,580**		**2,635**	**1,887**	**4,522**	**57**

Notes:

1. Restricted grants include grants for the agreed agenda programs and restricted grants received between 1988-1997 for the complimentary programs.
2. The real value of unrestricted and restricted grants has been computed using the NASA Deflator inflation index (indexhttp://www1.jsc.nasa.gov/bu2/inflateGDP.html) with 1988 as the base year. This is an inflation calculator for adjusting costs from one year to another using the Gross Domestic Product (GDP) Deflator inflation index. This inflation calculator is based on the inflation rate during the US Government Fiscal Year, which begins on October 1 and ends on September 30.

Table 16: Unrestricted Grant Income of ICRAF 1988 to 2004

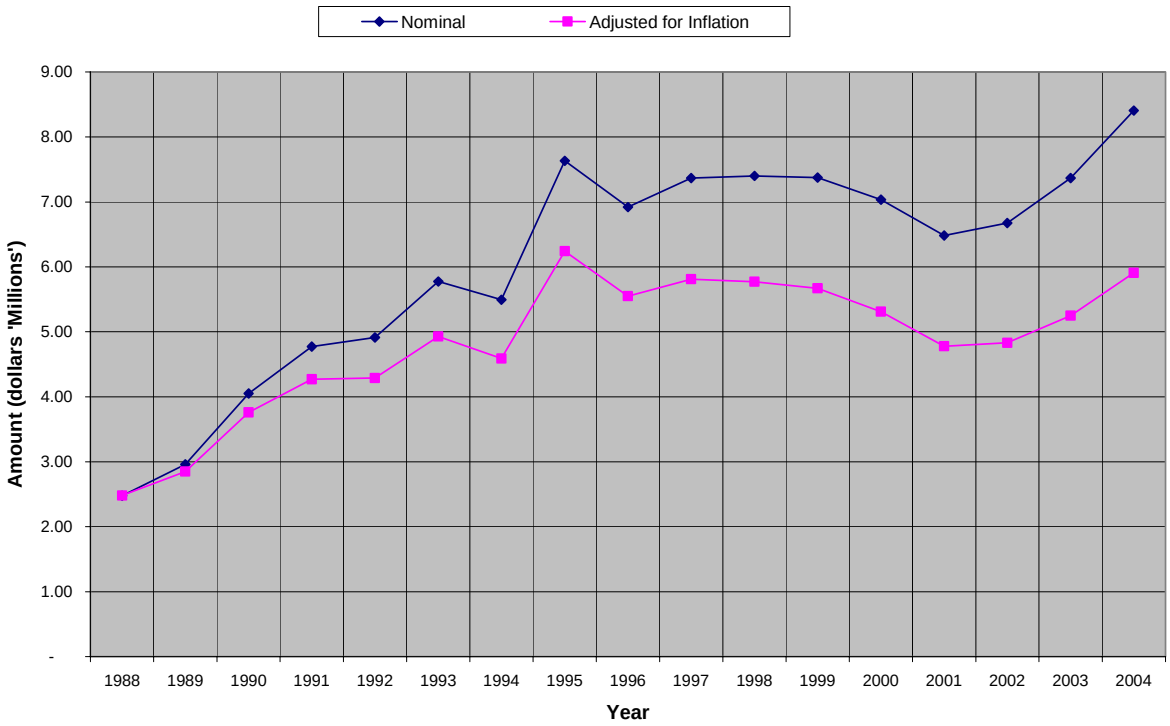


Table 17: Unrestricted Grant Income of CGIAR 1988 to 2004

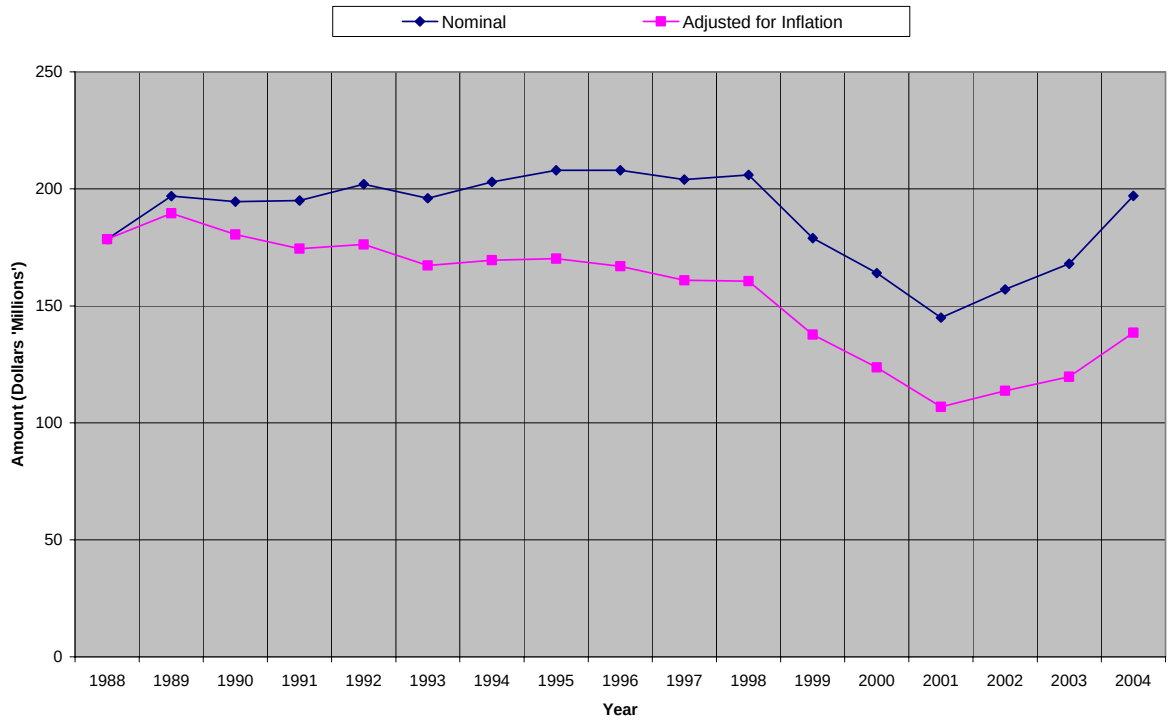


Table 18: Unrestricted Grant Income of the CGIAR and ICRAF Compared 1988 to 2004

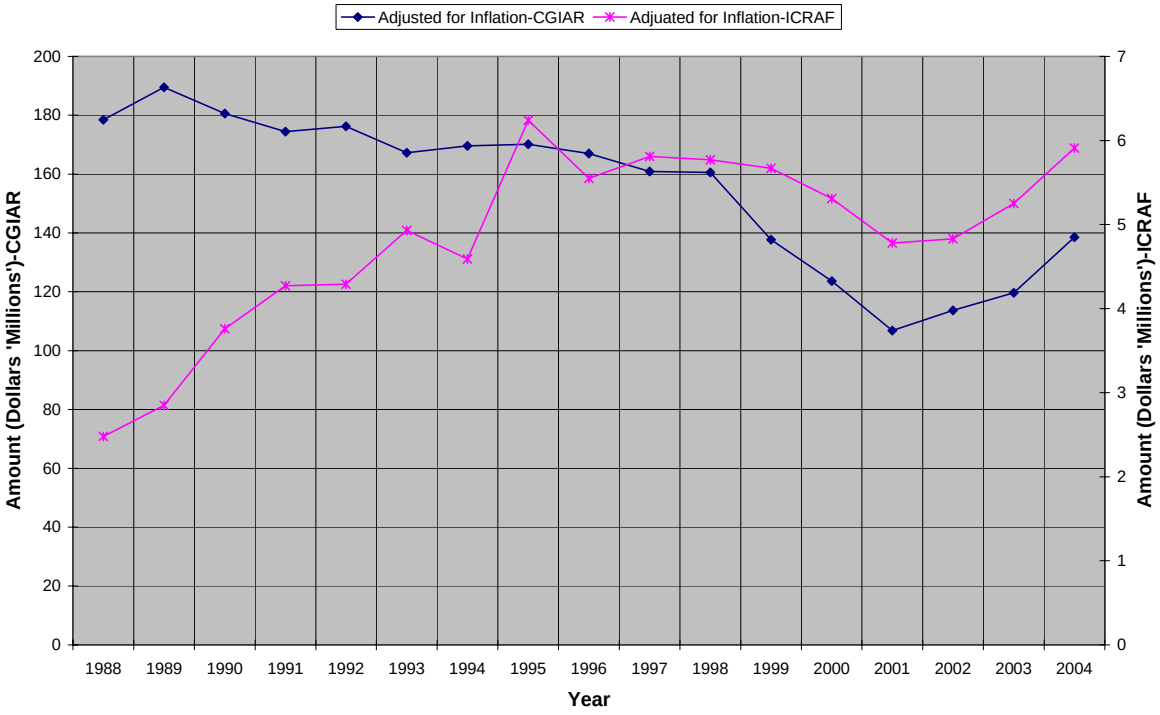


Table 19: Restricted Grant Income of ICRAF 1988 to 2004

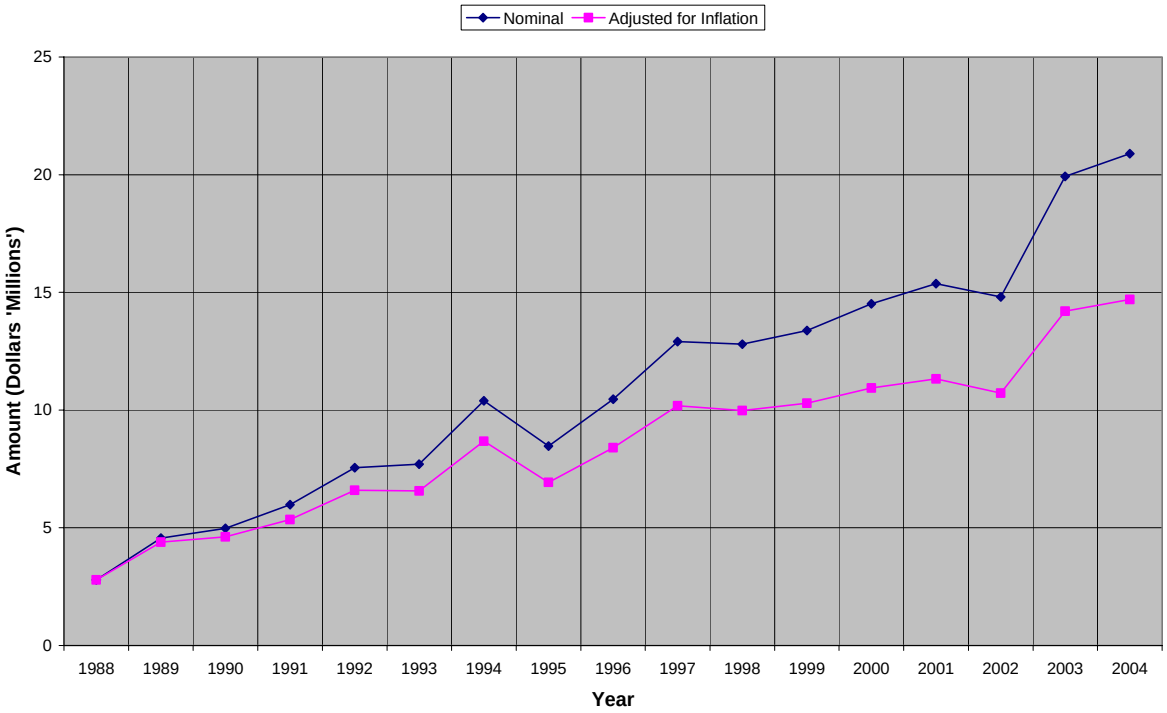


Table 20: Restricted Grant Income of the CGIAR 1988 to 2004

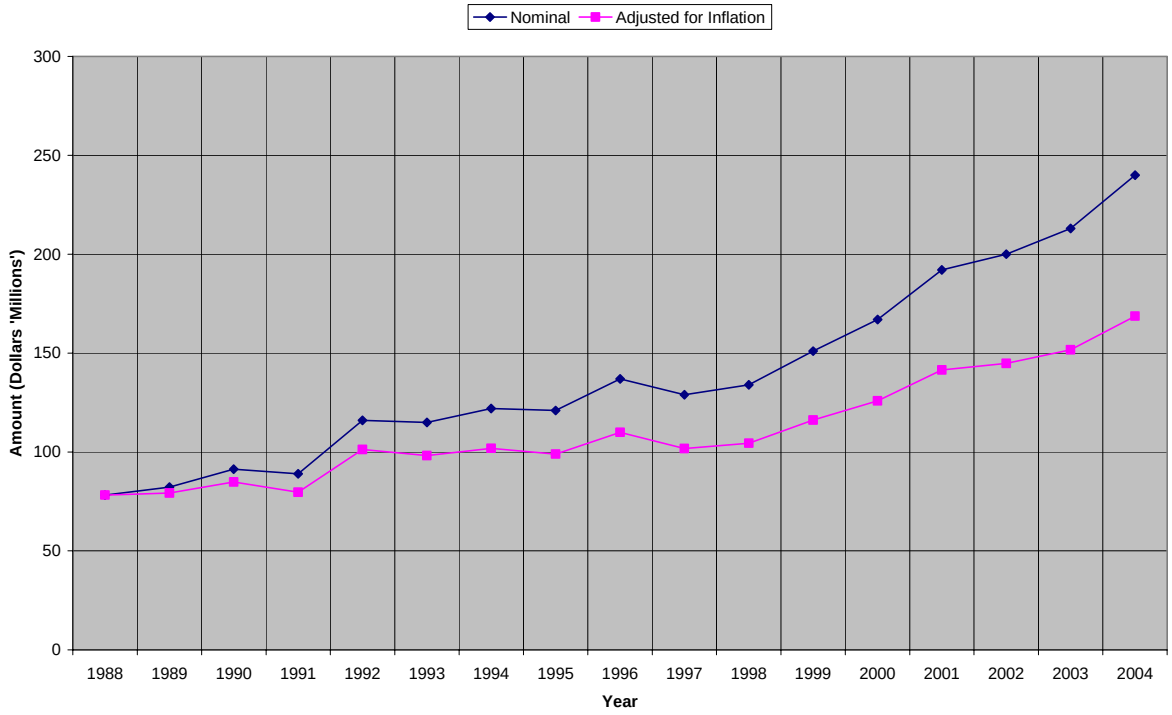
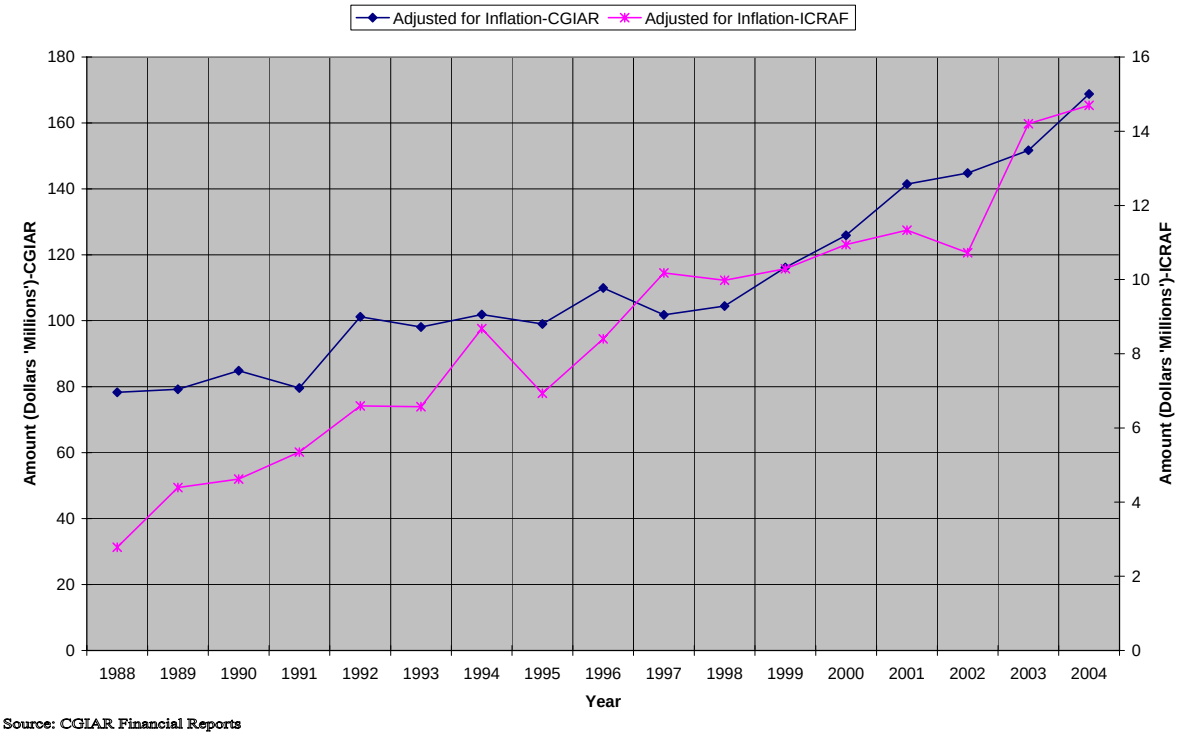


Table 21: Restricted Grant Income of CGIAR and ICRAF Compared 1988 to 2004



Source: CGIAR Financial Reports

MTP Project Narratives

MTP Project Narratives

Theme: Land and People (LP)

ICRAF Project LP.1: Land and soil health

Project Goal: Sustainable land management is widely practiced through better problem analysis and targeting of appropriate agroforestry options

Project Objectives:

To assess the nature and extent of land and soil degradation problems and to develop the principles and options for using agroforestry systems to improve land management of smallholders.

Changes and Rationale for the Project:

The current LP.1 is a combination of project areas LP.1 (Improving Rural Livelihoods through Integrated Soil Fertility Management) and LP.2 (Conserving Soil and Water for Productive Agricultural Landscapes) in the 2006-08 MTP and was done because of a high degree of overlap. In doing so, the number of outputs was reduced from a total of 6 to 2.

Estimates consistently indicate that a majority of the earth's land area has been measurably degraded. Precise data on the severity of degradation, its causes, and its implications on production is, however, lacking according to the recent Millennium Ecosystem Assessment. One of the key degradation problems is poor soil health which has been identified as a key constraint to increasing agricultural productivity and hence reducing rural poverty in many parts of the tropics, particularly in sub-Saharan Africa. Major development initiatives have recently been launched to tackle these major problems. However, ability to intervene effectively is hampered by very poor understanding of the nature of land and soil problems, the spatial extent, and their underlying causes. Methods for degradation assessment and ex ante assessment of improved options and empirical knowledge need to be more widely tested and applied redress this gap. The principles for sustainable land management and for agroforestry systems are also not well developed for lack of systematic testing across different types of land and soil constraints. The opportunities for major investments in sustainable land management, in Africa and in 'greening' programmes of Asia, mean that the research for development paradigm of the CGIAR can truly be put into practice.

Alignment of Project with CGIAR System Priorities:

This fits squarely with System Priority 4d. Within ICRAF, the work in LP.1 focusing at the plot and farm scale, blends in well with ES.1 that emphasizes land management at the landscape level and is aligned with System Priority 4a.

Description of Impact Pathways:

Outputs:

LP.1.1: Land degradation and soil fertility problems: Key outputs are:

1. Methods for assessing land degradation and soil quality at various spatial scales
2. The development of indicators and monitoring systems for land quality
3. Empirical knowledge on land degradation, changes in land use and management, their causes, and their implications for agroforestry.

LP.1.2: Land rehabilitation and enrichment: Key outputs are:

1. Testing and development of land management principles and practical agroforestry options for improved land and soil management
2. Tools and methods for ex ante assessment of agroforestry options for sustainable land management

3. Evaluation of agroforestry systems for land management in terms of productivity, poverty, and environmental resilience.

Beneficiaries (Expected users of outputs):
Major sustainable land management programmes such as United Nations Convention to Combat Desertification (UNCCD) and TerrAfrica, national land management and soil fertility programmes and projects, extension systems, policy makers, and researchers.

Expected outcomes:
- Researchers, development organizations, and policy makers will better target programmes and policies towards the key land degradation and soil problems
- Development implementers use improved tools and knowledge to make more informed choices on improving land management.
- Researchers use improved methods for land degradation and assessment.
- Land management principles are used to enhance national soil fertility research agendas
- Improved agroforestry based land and soil management options will be developed and applied by development organizations
- Policy makers remove barriers to wider use of agroforestry in sustainable land management.

End users (ultimate beneficiaries):
Smallholder farmers will benefit from the wider experimentation and dissemination of agroforestry based land management practices that themselves are more effective and better targeted.

Expected impacts:
Adoption of agroforestry systems that lead to rehabilitation of land and improved soil productivity and sustainability on smallholder farms.

Target Ecoregion(s)
This work is applicable to many regions, but the priority regions are:

1. Sub-Saharan Africa

RAEZ 2 Warm subhumid tropics (AEZ 2): Southern Africa: Malawi, Mozambique and Zambia.

RAEZ1 Warm arid and semi-arid tropics (AEZ 1): West Africa: Mali and Burkina Faso

RAEZ 3 Warm humid tropics (AEZ 3): Kenya and Ethiopia

RAEZ 4 Cool tropics (AEZ 4): Burundi, Lesotho, Rwanda, and parts of Angola, Ethiopia, Kenya, Madagascar and Tanzania

2. Asia and the Pacific

RAEZ 8 Warm arid and semi-arid tropics (AEZ 1): Parts of India.

RAEZ 9 Warm subhumid tropics (AEZ 2): Parts of India.

3. Latin America and the Caribbean

RAEZ 17 Warm humid tropics (AEZ 3): Brazil

Research Approach to Develop International Public Goods (IPG):
ICRAF has developed cost-effective tools to enable wide area assessment of soil degradation and efficient sampling for testing of land management approaches. These methods now need to be disseminated and deployed over wider areas to be able to generate empirical information that is sorely needed – to provide IPGs on the nature and extent of land and soil problems. Similarly, the refinement and dissemination of tools for ex ante assessment of agroforestry and land management

options for improved land management is a priority IPG. ICRAF has already developed useful agroforestry systems for land rehabilitation, soil conservation, and soil fertility enrichment. However, more research is required to understand the types of soil problems under which the performance of the different systems is enhanced or inhibited. It is also critical to identify the characteristics of species and management options that are most closely linked to performance. Through the use of these tools and principles, national and local research or innovation systems can engage in adaptive and applied research which will surely be needed to tackle the heterogeneous problems of land degradation.

Collaboration:
ICRAF collaborates with other CGIAR centers and advanced research institutes in the area of land degradation and soil fertility management. These include TSBF-CIAT, ICRISAT, CIMMYT, IFPRI, Wageningen University, Cornell University, University of Florida and CIRAD/IRD. The partners bring expertise in environmental accounting methods, conservation agriculture, whole farm soil management assessment, and policy analysis. ICRAF is also working closely with African Conservation Tillage Network, United Nations Development Program (UNDP), the World Bank, and NEPAD on integrating research methods and lessons into major land management programmes, such as TerrAfrica.

At the regional or national levels, ICRAF works with a large number of NARS and Universities on land and soil research. Examples are: Bunda College (Malawi), Malawi Agricultural Research Organization, Ministry of Agriculture Research-Zambia, Kenya Agricultural Research Institute (KARI), Forestry Resources Research Institute-National Agricultural Research Organisation (FORRI-NARO), Amhara Regional Agricultural Research Institute (ARARI Ethiopia), African Highlands Initiative (East Africa), Institut d'Economie Rurale du Mali (IER), Institut de l'Environnement et Recherches Agricoles (INERA Burkina Faso), Institutional Research and Application Development (IRAD Cameroon), Foundation for Ecological Security (India).

ICRAF Project LP.2: Smallholder production systems:

Project Goal: Widespread adoption of improved agroforestry systems that enhance system productivity, income, and resilience.

Project Objectives:

To understand smallholder resource constraints and livelihood opportunities and to develop principles and options for improved agroforestry management on their farms.

Changes and Rationale for the Project:

The current LP.2 was formally LP.3 (Sustaining productive farming systems through improved agroforestry management). We have however, combined an element from the first output area of the former LP.4 (Reaching the poorest land users with land management interventions) which focused on characterization of smallholder livelihoods, resources, and constraints. The water productivity under agroforestry systems is a new output in the LP theme. It was formerly integrated into the watershed protection output area of the Environmental Services theme.

Some of the reasons many smallholder farmers around the world have seen little improvement in their welfare are that agricultural productivity has stagnated, costs of inputs have increased faster than prices of outputs, and that production and market risks remain high and farmers are not insured against them. This project addresses specifically the role of agroforestry in enhancing the performance of smallholder farming systems – increasing the productivity of associated crop and livestock systems, generating income through high value tree products, and enhancing system resilience through increasing agrobiodiversity and microclimates. There are huge opportunities for agroforestry to have wider poverty reduction impacts, but these are not well understood by policy makers and development planners. Hence, there is need for more synthetic research to demonstrate the existing use and impacts of these systems. There is also need for more characterization and targeting research to be done to provide the guidance for effective strategic and adaptive technological research in this area. Lastly, there is need to understand the principles of managing integrated systems and the synergies or tradeoffs between improved economic returns, short-term market, production, and pest risks, and long-term sustainability of the systems.

Alignment of Project with CGIAR System Priorities:

This aligns principally with System Priority 3d (income from trees and forests), System Priority 5d (R&D options to reduce rural poverty) and System Priority 4c (improving water productivity)

Description of Impact Pathways:

Outputs:

LP.2.1: Smallholder resources, livelihoods and strategies. Key outputs are:

1. Better understanding of smallholder farmers – their knowledge, resources, assets, livelihoods, and strategies
2. Assessing the constraints and opportunities for women, HIV/AIDS affected households, and other vulnerable groups, and
3. Identify the opportunities for agroforestry to improve productivity, build assets, and reduce poverty.

LP.2.2: Integrated tree-crop-livestock systems. Key outputs are:

1. Ex ante and ex post analyses of tradeoffs of the integration of agroforestry into farming systems
2. Development of principles and options for integrating agroforestry into farming systems, and
3. Development of decision support tools and methods for researchers and development practitioners

LP.2.3: Improved water productivity. Key outputs are:

1. Assessment of the efficiency of water use in agroforestry systems (value per drop),
2. Assessment of the tradeoffs between on-farm production, income generation, water use, and other natural resources at the farm level,
3. The influence of improved water management and adoption of agroforestry

Beneficiaries (Expected users of outputs):
Major development programmes such and extension systems, extension systems, policy makers, and researchers.

Expected outcomes:

- Researchers use improved ex ante methods and empirical information to enhance research agendas on agroforestry systems for smallholder farms
- Development programmes for smallholder farmers increasingly include agroforestry systems among intervention choices and use improved tools and knowledge to make more informed choices on integrating agroforestry into farming systems
- Improved agroforestry principles and options for smallholder farmers will be adapted and applied by development organizations
- Development organizations and policy makers use principles and techniques for enhancing water use efficiency of trees and enhancing agroforestry development through improved water management to design more effective agroforestry programmes.

End users (ultimate beneficiaries):
Farmers will benefit from the wider testing and dissemination of a range of agroforestry practices that will raise productivity and generate income.

Expected impacts:
Widespread adoption of agroforestry systems that increase farm level productivity, incomes, water productivity, and environmental resilience on smallholder farms.

Target Ecoregion(s)
This work is applicable to many regions, but the priority regions are:

1. Sub-Saharan Africa

RAEZ 1 Warm arid and semi-arid tropics (AEZ 1): West Africa: Mali

RAEZ 2 Warm subhumid tropics (AEZ 2): East Africa: Tanzania; Southern Africa: Malawi.

RAEZ 3 Warm humid tropics (AEZ 3): Kenya, Rwanda, Ethiopia and Cameroon.

RAEZ 4 Cool tropics (AEZ 4): Burundi, Lesotho, Rwanda, and parts of Angola, Ethiopia, Kenya, Madagascar and Tanzania

2. Asia and the Pacific

RAEZ 8 Warm arid and semi-arid tropics (AEZ 1): India.

RAEZ 9 Warm subhumid tropics (AEZ 2): India and Nepal.

RAEZ 10 Warm humid tropics (AEZ 3): Indonesia.

Research Approach to Develop International Public Goods (IPG):
As an international center, ICRAF will become much less involved in learning a great deal about farmer circumstances in selected benchmark sites and focus more on understanding the constraints and opportunities at larger scales, such as major farming systems or hunger hotspots, to be able to set

priority research and development agendas in the development of productive agroforestry systems for smallholders. It is recognized that the types of agroforestry systems and species which work best for farmers will be dependent on many local conditions. Therefore ICRAF will focus on developing principles of improving farming systems through agroforestry and on identifying the attributes of species (including indigenous species) that can play useful functional roles. It will also invest in the development of tools that national and local researchers and development practitioners can use to help identify agroforestry solutions appropriate to their local conditions.

Collaboration:
Key international partners include a number of CG centers such as ILRI on integrating trees and shrubs into livestock systems, CIAT and IITA on agroforestry systems for improved food security in southern Africa. It is also collaborating with ILRI and FASID on a panel data set to understand the adoption and impact of a range of agricultural technologies on smallholder farmers in Africa. Laval University conducts joint research with ICRAF on social aspects of agroforestry in the Sahel. ICRAF is partnering with CIRAD to analyze the potential to integrate agroforestry in smallholder coffee systems in east Africa. Lastly, ICRAF collaborates with Plan International to identify methods for disseminating agroforestry systems in southern Africa.

At the regional and national level, ICRAF works with many of the same NARS as in LP.1 Ministry of Agriculture Research (Zambia), Malawi Agricultural Research Organization, Eastern Africa: KEFRI (Kenya), FORRI-NARO (Uganda), Institut des Sciences Agronomiques du Rwanda (ISAR), Sahel: ICRISAT, IER (Mali), Institut National de Recherches Agronomiques du Niger (INRAN), INERA (Burkina Faso); Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA Brazil); Rajasthan Agricultural University and Birsa Agricultural University (India); Nepal Agricultural Research Council (Nepal).

ICRAF Project LP.3: Institutional innovations and incentives

Project Goal: More rapid diffusion and uptake of agroforestry systems and improved returns to smallholder farmers.

Project Objectives:

To develop institutional innovations and identify improved incentive mechanisms that promote agroforestry adoption and management by smallholder farmers.

Changes and Rationale for the Project:

This year's LP.3 is adapted mainly from the previous year's LP.4 (Reaching the poorest land users with land management interventions) and consolidates some of its output areas (and two of the output areas have been integrated into other projects). The number of total output areas has decreased from 4 to 2.

As is well known, policy and institutional constraints have affected the performance of the smallholder agricultural sector in many developing countries. This is no less, and often considerably more, important in the area of agroforestry. In terms of policy oversight agroforestry is affected by both forestry and agricultural policies, often in harmful ways. Forestry policy aims to protect trees on the landscape but in doing so provides disincentives to farmers to grow them. Tree seed supply is normally under the forestry department which does not have the number of staff like agriculture to be able to effectively respond to farmer needs. Agroforestry is also a long term investment requiring unique types of tenure rights. Tree planting is especially difficult to promote among women in societies where it is under the domain of men. Agroforestry is also knowledge intensive which implies that traditional methods of dissemination may not work for agroforestry and the role of farmer groups and other intermediary organizations may be more important. All of these issues are complex and require analysis. As these problems are not unique to certain countries, it makes sense for such work to be undertaken by an international center.

Alignment of Project with CGIAR System Priorities:

This aligns with mainly with System Priority 4c (rural institutions and their governance). There is a secondary relationship with System Priority 4a in terms of property rights and collective action mechanisms.

Description of Impact Pathways:

Outputs:

LP.3.1: Institutional innovations. Key outputs are:

1. Analyses of effective systems and methods for dissemination of agroforestry innovations
2. Options for strengthening collective action and other institutional arrangements for enhancing impact of agroforestry and natural resource management
3. Approaches for effective and innovation systems for agroforestry and integrated natural resource management

LP.3.2: Incentives for smallholder agroforestry. Key outputs are:

1. Options for enhancing land and tree tenure rights of smallholder farmers
2. Options for improved local, national, and global policy incentives for smallholder agroforestry.

Beneficiaries (Expected users of outputs):

Policy makers from global to local levels, major development agencies.

Expected outcomes:

- Collective action institutions and systems will increasingly enhance innovation, promotion, and management of agroforestry by smallholder farmers.
- Policy makers will undertake policy reforms that create more favourable incentives for agroforestry among smallholder farmers.

End users (ultimate beneficiaries):
Farmers will benefit from increased incentives for agroforestry through an improved institutional and policy environment

Expected impacts:
More rapid diffusion and uptake of agroforestry systems and improved returns to smallholder farmers

Target Ecoregion(s)
This work is applicable to many regions, but the priority regions are:

1. Sub-Saharan Africa

RAEZ1 Warm arid and semi-arid tropics (AEZ 1): West Africa: Mali.

RAEZ 2 Warm subhumid tropics (AEZ 2): Southern Africa: Madagascar, Malawi and Mozambique.

RAEZ 3 Warm humid tropics (AEZ 3): Cameroon and Kenya.

2. Asia and the Pacific

RAEZ 8 Warm arid and semi-arid tropics (AEZ 1): India.

RAEZ 9 Warm subhumid tropics (AEZ 2): India.

RAEZ 10 Warm humid tropics (AEZ 3): Indonesia and Philippines.

Research Approach to Develop International Public Goods (IPG):
A recent CCER and the EPMR have endorsed ICRAFs recent strategy to increase the "science of moving agroforestry innovations to scale" research topic. ICRAF is well placed to deliver IPGs in lessons learnt on systems, approaches and methods in scaling up because it has vast experience in many alternatives across a large number of locations. ICRAFs land and tree tenure research is already recognized as contributing significantly to IPGs. In this area, ICRAF will focus its efforts on a selected number of critical areas such as rights of women and agroforestry and the inter-relationships between tenure on farms and tenure at the landscape scale. ICRAF has not undertaken a comprehensive review of policies that impinge or promote agroforestry for some time and as recommended by the EPMR, it will undertake this important global role on a more systematic basis.

Collaboration:
ICRAF collaborates with a number of key organizations in this project. Reading University, Landcare partners in Australia, and the Academy for Educational Development are all collaborating with ICRAF to understand processes of scaling up and ICRAF has begun discussions to widen this to other CGIAR centers such as CIAT and ILRI and the African Highlands Initiative. In terms of smallholder incentives, ICRAF collaborates with the University of Norway, Foundation for Advanced Studies on International Development (FASID Tokyo), IFPRI, and ILRI. In the particular area of property rights, ICRAF continues its relationships with a host of global partners such as Collective Action and Property Rights (CAPRi), IFPRI, FASID, United Nations Economic Commission for Africa (UNECA), UNDP, and the newly established Rights and Resources Initiative. Like the other projects in the theme, ICRAF also collaborates with regional and local institutions. Among the partners include Tegemeo Institute (Kenya) and Makerere University (Uganda) for policy research. We work with a

host of development partners in testing scaling up methods, especially in the Philippines, Cameroon, Zambia, and Malawi.

Theme: Trees and Markets (TM) { TC "Project TM.3: Tree domestication with intensification and diversification of tree cultivation systems" \f C \l "1" }

ICRAF Project TM.1: Agroforestree Germplasm

Project Goal: To determine and support sustainable tree seed and seedling systems and wise management of agroforestry tree genetic resources.

Project Objectives:

1. To better characterize, document, conserve and make available agroforestry tree genetic resources and their associated information.
2. To inform and mobilize actors for better development of tree seed and nursery systems with decentralised approaches more incorporated.
3. To better inventory, utilize and conserve tree species diversity (intraspecifc and interspecific) on farms.

Changes and Rationale for the Project:

Following ICRAF's most recent EPMR (1998-2005) and advice from the Science Council for greater levels of aggregation, the project structure has been revised at ICRAF resulting in fewer projects. Accordingly the new Project TM.1 is a combined formulation of the previous projects TM.2 (Sustainable seed and seedling systems for sound conservation and use of genetic resources of agroforestry trees) and TM.5 (Enhanced utilisation of tree diversity at the landscape level). Correspondingly, output targets for 2006 for the previous TM.2 and TM.5 projects have also been aggregated.

The rationale for the project is based on the following points:

- In contrast to annual crops, few well-documented and comprehensive tree germplasm collections exist.
- Tree species germplasm is poorly characterized.
- Tree germplasm is poorly and inadequately conserved.
- Poor genetic quality in founder populations of tree seeds being released by development projects.
- Development initiatives have concentrated on tree seed and not tree seedlings.
- There have been no farmer-saved tree seed projects, or guidelines.
- Tree seed markets are poorly developed.
- Tree seed supply is cited as a problem but tree seed demand is unquantified.
- On-farm management of tree genetic diversity is poor leading to inbreeding and loss of tree vigour.
- Dysgenic selection through harvesting on farm leads to loss of intraspecific diversity.
- Most tree species on farm do not have minimum viable populations.
- Few tree diversity baselines known for on-farm locations
- Useful tree species knowledge not freely available.

Alignment with CGIAR System Priorities

Project TM.1 has three major outputs of which two (TM.1.1 and TM.1.3) align well with CGIAR System Priorities:

1b – Conservation/characterisation of under-utilised Plant Genetic Resources (TM.1.1)
4a - Integrated land, water and forest management (TM.1.3)

The research at ICRAF under output TM.1.2 (Seed and Seedling Systems), however, does not link well with any of the System Priorities and is listed as a new research area and development activities.

Description of Impact pathways

The summarised output-outcome-impact results chain for project TM.1 is described as:

OUTPUTS	**OUTCOMES**	**IMPACTS**
Agroforestry tree genetic resources and their associated information better characterised, documented, conserved and made available.	Sustainable seed and seedling systems operating.	Alleviation of poverty and food security, and protection of the environment
Information and approaches available for sustainable tree seed and tree nursery systems.		
Tree species diversity on farm (intraspecifc and interspecific) better inventoried, and strategies developed for better utilisation and conservation	Enhanced tree diversity on farm.	

More specifically it is envisaged that:

1. Better quality founder populations will lead to greater intraspecific diversity of trees cultivated on farm.
2. Greater availability of well-documented and quality germplasm will lead to increased species diversity in nurseries and on farm.
3. Proper characterisation of tree germplasm will lead to more efficient and effective conservation.
4. Freely available and comprehensive knowledge on tree species will lead to greater recognition of role of trees and increased tree cultivation.
5. Decentralised tree seed systems will lead to greater sustainability than centralised ones.
6. Higher quality tree seed will lead to increases in nursery and farmer demand.
7. Well-informed and supported tree nursery operators will lead to filling of gap in extension on tree seed and tree species cultivation.

Within Project TM.1 ICRAF works with a variety of partners and actors and plays the roles of primary research provider, facilitator and advocate.

Target Ecoregion(s)

Research under Project TM.1 is carried out in the following eco-regions:

1. Sub-Saharan Africa

RAEZ1 Warm arid and semi-arid tropics (AEZ 1): West Africa: Mali, Niger, Senegal, Burkina Faso; East Africa: Ethiopia, Kenya, Tanzania; Southern Africa: Malawi, Mozambique, Zambia and Zimbabwe.

RAEZ 2 Warm subhumid tropics (AEZ 2): East Africa: Uganda; Southern Africa: Malawi, Mozambique, Zambia and Zimbabwe.

RAEZ 3 Warm humid tropics (AEZ 3): Cameroon, DR Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Nigeria.

2. Asia and the Pacific

RAEZ 8 Warm arid and semi-arid tropics (AEZ 1): India and Thailand.

RAEZ 9 Warm subhumid tropics (AEZ 2): India, Sri Lanka and Thailand.

RAEZ 10 Warm humid tropics (AEZ 3): Bangladesh, Indonesia, Laos, Philippines, Sri Lanka and Thailand.

RAEZ 11 Warm arid and semi-arid subtropics with summer rainfall (AEZ 5): China, India.

3. Latin America and the Caribbean

RAEZ 17 Warm humid tropics (AEZ 3): Brazil, Colombia, Peru.

Beneficiaries and end users

The primary beneficiaries of Project TM.1 are National Tree Seed Agencies, farmers and tree nursery operators. The end users of the tree knowledge and tree germplasm produced by the project include: community based organisations, development agencies, extension agents, farmers, inter-governmental bodies involved in germplasm transfers, international Research Institutions, local policymakers, National policymakers, National Research Institutions, non-governmental organisations, producer associations, regional bodies involved in germplasm regulation, and tree seed marketers.

Research Approach to Develop International Public Goods (IPG)

The two main types of international public goods (IPGs) produced by this project are tree knowledge and tree germplasm. Whilst substantial knowledge on trees in commercial plantations and natural forest exist, scant information is readily available on trees for on-farm cultivation. Nearly 5000 tree species have been listed as occurring on farms in the tropics but information on their genetic make-up, management, propagation and conservation is lacking. The wide bioclimatic suitability of such a large number of both exotic and indigenous species ensures a high IPG value to the knowledge. The tree germplasm collected, conserved and produced by the centre is used as founder populations for research and multiplication across national boundaries.

Collaboration

ICRAF collaborates with international, regional and national partners to produce the outputs and promote achievement of the outcomes and impacts of Project TM1.

The international partners primarily assist in molecular genetics work, development of strategies, databases, international policy formulation, multilateral conservation efforts, and advocacy. The international partners include: Australian Tree Seed Centre, CAB International, CIFOR, CIRAD, Danish Forest Seed Centre, European Forestry Institute, Food and Agricultural Organization (FAO), Ghent University, International Centre for Under-utilised Crops, IITA, IPGRI, International Society Horticultural Science, Scottish Crop Research Institute and Winrock International.

The regional partners primarily assist in regional networking and regional conservation efforts. The regional collaborators include: APAARI, ASARECA/TOFNET, Centro Agronómico Tropical de Investigación y Enseñanza (CATIE), Forum for Agricultural Research in Africa (FARA), FORNESSA, and SADC Tree Seed Centre Network.

The national partners primarily engage with ICRAF in developing and testing methods, conservation of individual tree species, and assembling range-wide collections. The national partners include: National Tree Seed Centres; National Agricultural Research Institutes, National Forestry Research Institutes, Universities, and National Quarantine Authorities.

ICRAF Project TM.2: Tree Domestication

Project Goal: To develop agroforestry tree germplasm and practices and facilitate their wide-scale adoption for improving rural livelihoods

Project Objectives:

1. To develop new species, varieties, technologies and practices with farmers and other partners for greater feasibility, profitability and acceptability.
2. To develop improved provenances, varieties and clones for priority fruit, timber, medicine, fodder and other species, and to identify better techniques for tree propagation and management.
3. To better design, target and test dissemination and diffusion of new germplasm, technologies and practices.

Changes and Rationale for the Project:

Following ICRAF's most recent EPMR (1998-2005) and advice from the Science Council for greater levels of aggregation, the project structure has been revised at ICRAF resulting in fewer projects. Accordingly the new Project TM.2 is a combined formulation of the previous projects TM.3 (Tree domestication with intensification and diversification of tree cultivation systems{ TC "Project TM.3: Tree domestication with intensification and diversification of tree cultivation systems" \f C \l "1" }) and TM.4 (Farmer-led development and scaling up of tree-based options). Correspondingly, output targets for 2006 for the previous TM.3 and TM.4 projects have also been aggregated.

The rationale for the project is based on the following points:

- Whilst some on-station species trials exist there is little on-farm evaluation of species, and no systematic testing
- Confusion over performance of exotics, indigenous, naturalised
- A few magic species have been promoted rather than a range of species (incl. mixtures) and farmer uptake is below species saturation level due to lack of tested alternatives.
- Very few genetic improvement programmes for agroforestry tree species, and dealing with wild or semi-domesticated species
- No methods for clonal testing (repeatability, clonal mixtures)
- Previous species testing has not tested germplasm and management options together
- Need to determine farmers' thresholds for improvement as well as biological possibilities for genetic improvement
- Scant production economics data on tree products exist
- Need to better understand farmers' criteria for evaluation and combining with production
- Extension systems are collapsing and need new approaches formulated
- Adoption rates and processes not known for fruit, timber, medicine tree species

Alignment with CGIAR System Priorities

Project TM.2 has three major outputs all of which align well with CGIAR System Priorities:

2d – Genetic enhancement of selected species to increase incomes (TM.2.1, TM.2.2)
5d - Improving R&D options to reduce rural poverty and vulnerability

Description of Impact pathways

The summarised output-outcome-impact results chain for project TM.2 is described as:

OUTPUTS	**OUTCOMES**	**IMPACTS**
New species, varieties, technologies and practices developed with farmers and other partners for greater feasibility, profitability and acceptability.	Intensification of farming systems with more productive tree-based options taken up by farmers	Alleviation of poverty and food security, and protection of the environment
Improved provenances, varieties and clones developed for priority fruit, timber, medicine, fodder and other species, and better techniques for tree propagation and management identified.	Improved tree product markets and farmers earning high proportion and amount from AFTPs	
Dissemination and diffusion of new germplasm, technologies and practices better designed, targeted and implemented.		

More specifically it is envisaged that:

1. Greater availability of demonstrably superior tree species and provenances will lead to increased tree planting by farmers.
2. Participatory domestication with farmers will lead to more suitable and improved tree species.
3. Well understood species x management x site interactions will lead to better cultivation practices and targeting of tree species.
4. Farmer-led testing of species will lead to more adoptable tree management practices.
5. Researching the dissemination and diffusion processes will lead to increased adoption and impact.

Within Project TM.2 ICRAF works with a variety of partners and actors and plays the roles of primary research provider, catalyser, facilitator and enabler.

Target Ecoregion(s)

1. Sub-Saharan Africa

RAEZ 1 Warm arid and semi-arid tropics (AEZ 1): West Africa: Mali, Niger, Senegal, Burkina Faso; East Africa: Ethiopia, Kenya, Tanzania; Southern Africa: Malawi, Mozambique, Zambia and Zimbabwe.

RAEZ 2 Warm subhumid tropics (AEZ 2): East Africa: Uganda; Southern Africa: Malawi, Mozambique, Zambia and Zimbabwe.

RAEZ 3 Warm humid tropics (AEZ 3): Cameroon, DR Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Nigeria.

2. Asia and the Pacific

RAEZ 8 Warm arid and semi-arid tropics (AEZ 1): India and Thailand.

RAEZ 9 Warm subhumid tropics (AEZ 2): India, Sri Lanka and Thailand.

RAEZ 10 Warm humid tropics (AEZ 3): Bangladesh, Indonesia, Laos, Philippines, Sri Lanka and Thailand.

RAEZ 11 Warm arid and semi-arid subtropics with summer rainfall (AEZ 5): China, India.

3. Latin America and the Caribbean

RAEZ 17 Warm humid tropics (AEZ 3): Brazil, Colombia, Peru.

Beneficiaries and end users

The primary beneficiaries of Project TM.2 are National Forestry and Agroforestry Research Institutes, farmers and extension agents.

The end users of the tree knowledge and tree germplasm produced by the project include: community based organisations, development agencies, extension agents, farmers, marketers, inter-governmental bodies involved in germplasm transfers, international Research Institutions, National Research Institutions, non-governmental organisations, producer associations, and regional bodies involved in tree networks.

Research Approach to Develop International Public Goods (IPG)

The two main types of international public goods (IPGs) produced by this project are tree knowledge and improved tree germplasm. Tree knowledge produced by this project includes general and species specific information. Both types of knowledge take the form of strategies, guidelines, domain recommendations, practices, methods and protocols. The germplasm IPGs are produced at village and national levels. Farmer-developed varieties (populations and clones) may be shared internationally especially when part of a pre-agreed network and when sui generis IPR protection systems operate. Nationally developed germplasm at species, provenance and clonal levels are encouraged to be part of multilateral system.

Collaboration

ICRAF collaborates with international, regional and national partners to produce the outputs and promote achievement of the outcomes and impacts of Project TM.2.

The international partners primarily assist in molecular genetics work for marker assisted selection, development of strategies and advocacy. The international partners include: ARCS Siebersdorf, CIFOR, CIRAD, Danish Forest Seed Centre, FAO, International Centre for Under-utilised Crops, IITA, ILRI, IPGRI, International Society Horticultural Science, James Cook University, Pretoria University, Scottish Crop Research Institute and Winrock International.

The regional partners primarily assist in regional networking and germplasm exchange. The regional collaborators include: APAARI, ASARECA/TOFNET, CATIE, CORAF, FARA, FORNESSA, and SADC Tree Seed Centre Network.

The national partners primarily engage with ICRAF in developing improved germplasm and propagation methods. The national partners include: National Agricultural Research Institutes, National Forestry Research Institutes, National Horticultural Institutions, Universities, National Health Authorities (for fruit and medicinal species), and National Extension Systems. In addition, nationally based NGOs and CBO partner on scaling up research.

ICRAF Project TM.3: Marketing of Agroforestry Tree Products (AFTPs)

Project Goal: To improve the marketing of and demand for Agroforestry Tree Products.

Project Objectives:

1. To improve understanding of principles, practices and policies of tree product markets, and to develop and promote best marketing practices.
2. To produce and update Tree Product Directories, and to facilitate networks to undertake tree product research and create enterprise models for small-scale farmers and entrepreneurs, especially within public-private partnerships.

Changes and Rationale for the Project:

Following ICRAF's most recent EPMR (1998-2005) and advice from the Science Council for greater levels of aggregation, the project structure has been revised at ICRAF resulting in fewer projects. The previous five projects within Trees and Markets have been reduced to three. However, the new Project TM.3 was considered of particular importance and the former project TM.1 (Market analysis and support to tree product enterprises) has been refreshed as TM.3.

The rationale for the project is based on the following points:

1. tree product markets operate inefficiently
2. farmers receive a low proportion of value of tree products
3. farmers are poorly organised and miss out on collective marketing opportunities
4. there is pervading focus on quantity and not quality of tree products thus restricting access to and growth of markets
5. farmers need value adding opportunities
6. traders and buyers need to be better connected to farmers
7. demand for tree products needs to be clearly identified and quantified
8. more public-private partnerships need to be established for tree products

Alignment with CGIAR System Priorities

Project TM.3 has two major outputs which both align well with CGIAR System Priorities:

3a - Increasing income from fruit and vegetables
4d - Sustainable income from forests and trees
5b - Making international and domestic markets work for the poor

Description of Impact pathways

The summarised output-outcome-impact results chain for project TM.3 is described as:

OUTPUTS	**OUTCOMES**	**IMPACTS**
Improved understanding of principles, practices and policies of tree product markets, and best marketing practices developed and promoted.	Better functioning tree product markets and farmers earning high proportion and amount from AFTPs	Alleviation of poverty and food security, and protection of the environment
Tree Product Directories produced and updated, and networks facilitated to undertake tree product research and create enterprise models for small-scale farmers and entrepreneurs, especially within public-private partnerships.		

More specifically it is envisaged that:

1. better market information would help farmers plat more trees
2. better market information will help farmers make more profit
3. better producer-buyer-consumer linkages will increase market size
4. better tree product transformation and value-addition will benefit farmers and traders

Target Ecoregion(s)

1. Sub-Saharan Africa

RAEZ1 Warm arid and semi-arid tropics (AEZ 1): West Africa: Mali, Niger, Senegal, Burkina Faso; East Africa: Ethiopia, Kenya, Tanzania; Southern Africa: Malawi, Mozambique, Zambia and Zimbabwe.

RAEZ 2 Warm subhumid tropics (AEZ 2): East Africa: Uganda; Southern Africa: Malawi, Mozambique, Zambia and Zimbabwe.

RAEZ 3 Warm humid tropics (AEZ 3): Cameroon, DR Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Nigeria.

2. Asia and the Pacific

RAEZ 8 Warm arid and semi-arid tropics (AEZ 1): India and Thailand.

RAEZ 9 Warm subhumid tropics (AEZ 2): India, Sri Lanka and Thailand.

RAEZ 10 Warm humid tropics (AEZ 3): Bangladesh, Indonesia, Laos, Philippines, Sri Lanka and Thailand.

RAEZ 11 Warm arid and semi-arid subtropics with summer rainfall (AEZ 5): China, India.

3. Latin America and the Caribbean

RAEZ 17 Warm humid tropics (AEZ 3): Brazil, Colombia, Peru.

Beneficiaries and end users

The primary beneficiaries of Project TM3 are private sector, farmers and market intermediaries.

The end users of the market and tree product knowledge produced by the project include: certification bodies, community based organisations, development agencies, extension agents, farmers, inter-governmental bodies involved in trade, International Product Research Institutions, local policymakers, National policymakers, National Product Research Institutions, non-governmental organisations, private sector, producer associations, regional bodies involved in trade, and marketers.

Research Approach to Develop International Public Goods (IPG)

The two main types of international public goods (IPGs) produced by this project are knowledge on tree products and knowledge on markets. Tree product knowledge produced by this project includes demand profiles, quality dimensions, grading, certification, processing methods, value-addition opportunities general and economics of production. Market knowledge includes information on prices, actors, volumes, timing, margins and profitability. Market knowledge also encompasses analysis of opportunities for market expansion, collective marketing and formation of producer associations.

Collaboration

ICRAF collaborates with international, regional and national partners to produce the outputs and promote achievement of the outcomes and impacts of Project TM.3.

The international partners primarily assist in highlighting market opportunities, product quality analyses, promotion of tree products and identifying supply channels. The international partners include: Aarhus, Agribusiness in Sustainable Natural African Plant Products (ASNAPP), Biofach, Campden Food Research Association, Common Fund for Commodities, Commercial Products from the Wild (CP Wild), Haas Business School Berkeley, International Centre for Under-utilised Crops, IITA, International Tropical Timber Organization (ITTO), Mars Corporation, The Network for Natural Gums and Resins in Africa (NGARA), Phytotrade, Syngenta, United Nations Economic Commission for Africa (UNECA), United Nations Industrial Development Organization (UNIDO), Unilever, World Cocoa Foundation.

The regional partners primarily assist in regional market intelligence systems, and support for producer associations. The regional collaborators include: APAARI, ASARECA/TOFNET, CATIE, FARA, NGARA and Sustainable Tree Crops Program (STCP).

The national partners primarily engage with ICRAF in market research, value-chain studies and tree product transformation methods. The national partners include: farmers, farmer groups, traders, marketeers, Export Promotion Agencies, National Agricultural Research Institutes, National Forestry Research Institutes, Universities, national producer associations and local private sector companies.

{ TC "**Project TM.3: Tree domestication with intensification and diversification of tree cultivation systems**" \f C \l "1" **}**

Theme: Environmental Services (ES)

ICRAF Project ES.1:	**Landscape interactions: Enhancing agroforestry contributions to sustainable landscape management**
Project Goal:	Appropriate agroforestry systems, practices and enterprises are effectively integrated into landscape management approaches in priority areas with high poverty and high human threat to valuable natural resources

Project Objectives:
To improve understanding of the opportunities and risks associated with integrating agroforestry into landscape approaches to natural resource management and rural livelihood security

Changes and Rationale for the Project:
ICRAF's project on landscape interactions builds upon and expands the centre's previous projects on watershed management and biodiversity conservation, explicitly recognizing that watershed services and habitat provision are part and parcel of the range of ecosystem services affected by agroforestry. The number of outputs in this area is reduced from 6 in the 2006-8 MTP to 3 in the 2007-9 MTP.

In both the developed and developing worlds it is now widely recognized that integrated landscape management approaches are among the best options for sustaining valuable ecosystems while improving human welfare. Agroforestry and collaborative forest management almost always feature in landscape management approaches to biodiversity conservation and watershed management, especially in the developing world. Tree-based systems are highly regarded for their capability to generate an array of ecosystem services: the provisioning services of generating fruit, fodder, fuel, and medicinals; the regulating services of carbon sequestration, nutrient cycling, flood regulation, erosion control, and sediment control; and the cultural services of providing habitat for a range of species. Making the most of agroforestry and other tree-based systems requires, however, good information about the various ecosystem service values of various systems and practices, the inevitable tradeoffs among those services, and the incentives that farmers have to invest in agroforestry systems, to protect other tree-based systems, and to engage in tree product enterprises. ICRAF research focuses on: (1) the application of management principles, (2) development and refinement of analytical tools, (3) quantification of empirical relationships in key case study sites, and (4) engagement in the practical search for workable approaches to harmonizing farmer, community and societal priorities.

In 2006, ICRAF and CIFOR joined together to create a Joint Biodiversity Platform that will feature prominently in the 2007-9 period (See Output ES.1.2). The CIFOR-ICRAF Biodiversity Platform for rural landscape mosaics is a promising step towards enhanced collaboration and synergy between CIFOR's three research Programmes and ICRAF. Landscape scale research will be coordinated across the forest – agriculture spectrum, focusing on the effects of managed forests, forest remnants, plantations and agroforests on biodiversity and livelihoods. As currently formulated, it presents opportunities for truly interdisciplinary collaboration, with a large number of local, regional and international partners and initiatives such as the Global Partnership for Forest Landscape Restoration. The CIFOR-ICRAF Biodiversity Platform will promote dialogue and networking to catalyze the development of new thinking, approaches, and practice of biodiversity conservation and sustainable use in multifunctional landscapes, and will provide opportunities for: 1) lesson sharing, especially across disciplines, sites and scales; 2) synergies (e.g. of resources, skills, mandates), and 3) added value (e.g. through syntheses and generalization).

Alignment with CGIAR System Priorities
ES1 matches extremely closely with the system priority 4A: Integrated land water and forest management at landscape level. ES1 also contributes to two other system priorities: 4D (Agricultural intensification in low / high potential areas) and 3D (Sustainable income from forests and trees).

Description of Impact Pathways:
Outputs:
ES1.1: Design principles, simulation models and empirical studies for enhancing the contributions of profitable agroforestry to the preservation and restoration of watershed functions.
ES1.2: Principles, approaches and practices that promote conservation, sustainable user and equitable sharing of biodiversity goods and services in landscape mosaics through better consideration of and integration with livelihoods and governance issues. *{{Joint with CIFOR for the Joint CIFOR / ICRAF Biodiversity Platform}}*
ES1.3: Design principles, tools and participatory approaches for integrating agroforestry development and forest management into landscape management for biodiversity conservation and livelihood security.

Beneficiaries (Expected users of outputs): Negotiators and planners of water resource and watershed management; forestry agencies; development planners; environment conservation planners; researchers; UNCBD negotiators

Expected outcomes: Intended users have realistic understandings of the ways that agroforestry development, conservation agriculture, afforestation and deforestation affect water balances, water quality, variation of river flow, landslide risk and the conservation of biological diversity. Those understandings are used to design watershed management, afforestation programmes, agroforestry and forest co-management regimes, and buffer zone management projects, which in turn encourage agroforestry systems of benefit to farmer livelihood and the most crucial ecosystem functions.

End users (ultimate beneficiaries): Farmers and other resource users residing in upland parts of high priority watersheds and conservation landscapes; people who use and consume untreated water in high priority watersheds; people exposed to flood risks in high priority watersheds.

Expected impacts: Farmers adopt agroforestry and conservation agriculture systems that contribute to their own livelihoods, crucial watershed functions, and the conservation of biodiversity. Tree cover and soil quality are enhanced in crucial parts of degraded watersheds and multi-functional landscapes.

Target Ecoregion(s):
1. Sub-Saharan Africa
RAEZ1 Warm arid and semi-arid tropics (AEZ 1): West Africa: Mali, Burkina Faso; East Africa: Ethiopia, Kenya, Tanzania
RAEZ 2 Warm subhumid tropics (AEZ 2): East Africa: Uganda
RAEZ 3 Warm humid tropics (AEZ 3): Cameroon, Ghana

2. Asia and the Pacific
RAEZ 8 Warm arid and semi-arid tropics (AEZ 1): India and Thailand.
RAEZ 9 Warm subhumid tropics (AEZ 2): India and Thailand.
RAEZ 10 Warm humid tropics (AEZ 3): Indonesia, Philippines and Thailand.
RAEZ 11 Warm arid and semi-arid subtropics with summer rainfall (AEZ 5): China, India.

3. Latin America and the Caribbean

RAEZ 17 Warm humid tropics (AEZ 3): Brazil, Peru.

Research Approach to Develop International Public Goods (IPG):

The recent ICRAF EPMR report recognizes this as a key area for the production of international public goods, particularly in the development of modeling tools and diagnostic approaches, backed up by a good record of peer-reviewed publications and training materials. The ASB systemwide programme continues to be crucial for pan-tropical comparative studies in the humid tropics. The EPMR report urged a further strengthening of expertise in hydrologic and economic modeling, as well as strengthened collaboration with CIFOR. ICRAF scientists are continuing to strengthen our cross-regional study design, sharing of analytical tools, and synthesis of key lessons. Key research findings and policy implications are synthesized and distributed through high impact fora such as the World Water Forum, African Ministers Conferences, NEPAD meetings, UNCBD COPs, and the Stockholm World Water Week.

Collaboration:

ICRAF links with Australian National University, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Brawijaya University, Bogor Agricultural University, and Jomo Kenyatta University for Agriculture and Technology for specialist expertise in hydrologic modeling. Specialist expertise in social science is provided through collaboration with the Yale University School of Forestry and Environmental Sciences, the University of California Santa Cruz, and the International Food Policy Research Institute (IFPRI). Strategic alliances with applied research, conservation and development organizations ensure practical problem relevance and impacts in priority sites: the Hotspot Alliance with Conservation International; the African Highlands Initiative for East Africa; the Alternatives to Slash-and-Burn Programme across the humid tropics; and the new Joint Biodiversity Platform with CIFOR. Major national collaborators in site-specific work include: Indonesia -- Bogor Agricultural University (IPB), Lampung University Brawijaya University, Department of Forestry; Thailand -- Ministry of Natural Resources and Environment, Chiang Mai University, CARE-Thailand; Royal Forest Department; China -- the Center for Mountain Ecosystem Studies, Kunming Institute of Botany, China; Kenya -- Egerston University, Maseno University, Sustainable Aid to African Network.

ICRAF Project ES.2: Climate Change: Fostering smallholder agroforestry as a pro-poor strategy for adaptation and mitigation of climate change

Project Goal: Smallholder agroforesters across the tropics are buffered from the effects of climate change and able to benefit from active participation in CDM and other voluntary emission reduction projects

Project Objectives:

1. To improve understanding of the opportunities and risks for agroforestry systems to mitigate greenhouse gas emissions and enhance the ability of farmers to adapt to climate change.
2. To identify, assess and help shape opportunities for smallholder agroforesters to benefit from the CDM and other voluntary emission reduction projects

Changes and Rationale for the Project:

The number of outputs is reduced from 3 to 2. An output related to supporting international policies and agreements on climate change is made part of one of the ES3 outputs.

ICRAF continues to play three roles in the area of climate change mitigation and adaptation. First, ICRAF leads the CGIAR inter-centre working group on climate change, which the Centre Directors' Committee endorsed to become a systemwide initiative of the CGIAR in 2005. Second, ICRAF provides expert technical support to developing country governments and negotiators on the practical implications of United Nations Framework Convention on Climate Change (UNFCCC) / Clean Development Mechanism (CDM) guidelines and ways that those guidelines could be modified to the benefit of smallholder farmers. Indications from the UNFCCC process are that much greater emphasis will be put on Land Use, Land-Use Change and Forestry (LULUCF) projects and avoided deforestation in future negotiations and policy frameworks. And third, we conduct empirical and synthetic studies of the potential of agroforestry to sequester carbon and mitigate against climate fluctuations associated with global warming. ICRAF continues to work closely with UNEP and to be heavily involved in the Inter-Governmental Panel on Climate Change (IPCC).

Alignment with CGIAR System Priorities

ICRAF's Climate Change research matches most closely with CG System Priorities 4A (Integrated land water and forest management at landscape level) and 4D (Agricultural intensification in low / high potential areas). As a major force shaping developing country agriculture over the last decades, we find it quite surprising that climate change is given very little explicit attention in the System Priorities.

Description of Impact Pathways:

Outputs:

ES.2.1 Options and decision support tools for mitigating atmospheric greenhouse gas loading through smallholder agroforestry and other landscape restoration strategies

ES.2.2 Empirical evidence, principles, and decision support tools for enhancing the contribution of agroforestry for buffering farmers and communities against the climatic variability associated with climate change.

Intended users of outputs (beneficiaries): Researchers, policy analysts; Climate adaptation specialists and policy makers; Research and development partners, farmers, policymakers, and extension staff

Expected outcomes: Intended users have realistic understanding of the potential for various agroforestry systems to buffer against climate variability. Those perceptions inform programmes and policies for land management, drought proofing and agroforestry development.

Expected impacts: Rural land use and livelihood systems are better able to cope with environmental risks. Agroforestry farmers generate significant amounts of additional income from CDM and voluntary emission reduction projects.

Target Ecoregion(s):
1. Sub-Saharan Africa
RAEZ1 Warm arid and semi-arid tropics (AEZ 1): East Africa: Kenya; Southern Africa: Malawi and Zambia

2. Asia and the Pacific
RAEZ 8 Warm arid and semi-arid tropics (AEZ 1): India.
RAEZ 9 Warm subhumid tropics (AEZ 2): Thailand.
RAEZ 10 Warm humid tropics (AEZ 3): Indonesia, Philippines, and Thailand.

3. Latin America and the Caribbean
RAEZ 17 Warm humid tropics (AEZ 3): Brazil, Peru.

Ultimate beneficiaries (end users): farmers and communities who benefit from carbon sequestration projects; smallscale farmers in developing countries who are better able to cope with the effects of climate change because of their investment in agroforestry.

Research Approach to Develop International Public Goods (IPG):
Climate change research is inherently of global relevance due to the global nature of climate change and the global reach of the climate change convention. ICRAF scientists further enhance the IPG dimensions of the research through a major research consortium that works in two African and two Latin American countries, and through close linkages with the IPCC and the UNFCCC processes. The recent EPMR in fact indicated a concern that ICRAF research was too far "upstream:" our response to the report indicated that ICRAF's work is firmly based on the practical problems and opportunities of smallholder farmers in the tropics.

Collaboration:
ICRAF collaborates with several CG centres through its leadership of the Inter-Centre working group on Climate Change. A collaborative project with European, African and Latin American research institutes is generating importance guidance for developing country negotiators and planners of CDM projects. This includes B.S.S. Economic Consultants (Switzerland), Centro Técnico Forestal (Bolivia), Face Foundation (Netherlands), Forest Industry Services (Uganda), Joanneum Research (Austria), Kenya Agricultural Research Institute (Kenya), Katholieke Universiteit Leuven (Belgium) and Profafor (Ecuador). In Uganda, ICRAF is part of a voluntary emission reduction project, collaborating with EcoTrust (Uganda) and the Edinburgh Centre for Carbon Management, UK. Two ICRAF scientists are actively involved in Inter-Governmental Panel on Climate Change and one is a member of the International Institute for Sustainable Development (IISD)-led Development Dividend Task Force.

ICRAF Project ES.3: Environment policy: Harmonizing policy for environmental stewardship and rural development	
Project Goal:	Multi-lateral, national and local policies and programmes are designed to better harmonize goals related to environmental stewardship and sustained and equitable rural development.

Project Objectives:
To contribute to the development of policies providing stronger incentives for farmers to adopt and maintain agroforestry systems that enhances environmental stewardship and rural development

Changes and Rationale for the Project:
The number of outputs has been aggregated from 5 to 3.

ICRAF work in the area of environmental policy focuses on bridging gaps: gaps between science and policy and gaps between good environmental stewardship and sustained rural development. We address these gaps through two integrating frameworks: negotiation support systems (especially focused on informing policy with knowledge of the interactions between trees, land tenure options, environmental services, rural livelihoods and new approaches to providing recognition, rewards and compensation for environmental services. ICRAF seeks to influence international policy processes through the provision of targeted advice on how agroforestry can better contribute to the goals of regional environmental plans and the multilateral environmental agreements.

Alignment with CGIAR System Priorities
ES.3 matches very closely with the system priority 4A (Integrated land water and forest management at landscape level), with strong links to system priority 5C (Making international and domestic markets work for the poor) and 5D (Rural institutions and their governance).

Description of Impact Pathways:
Outputs:
ES3.1: Assessments, tools and multi-stakeholder approaches for negotiation and harmonization of policies and strategies for rural poverty alleviation and environmental conservation.
ES3.2: Pilot studies, syntheses, and tools for designing mechanisms that recognize and reward smallholders for providing local, national and global environmental services through appropriate agroforestry strategies.
ES3.3: Syntheses, policy studies, and support to developing country negotiators on how multi-lateral environmental agreements, regional conventions, and national action plans can be modified to enhance the contributions of agroforestry.

Intended users (beneficiaries): Environment and poverty researchers; non-governmental organizations; Environmental management agencies; researchers; local government agencies; non-governmental organizations active in the national policy processes; negotiators for multi-lateral environmental agreements; planners for regional environmental plans (e.g. NEPAD); Global Environmental Facility; regional organizations; international policy shapers (e.g. World Bank, World Conservation Union (IUCN)

Expected outcomes: A critical mass of national and regional experts use new concepts and methods to scope, develop, facilitate, monitor and assess negotiated agreements, environmental service mechanisms, and supporting policies that harmonize rural development and environmental management objectives. International and regional conventions, agreements and action plans are modified to enhance the contribution of agroforestry to livelihood security and conservation in multi-function conservation landscapes.

End users (ultimate beneficiaries): Farmers and communities who benefit from environmental service mechanisms and more coherent approaches to environmental stewardship and poverty reduction.

Expected impacts: Enhanced ecosystem services and human welfare in critical ecosystems around the developing world.

Target Ecoregion(s):
1. Sub-Saharan Africa

RAEZ 1 Warm arid and semi-arid tropics (AEZ 1): West Africa: Mali, Niger, Senegal, Burkina Faso; East Africa: Ethiopia, Kenya, Tanzania; Southern Africa: Malawi, Mozambique, Zambia.

RAEZ 2 Warm subhumid tropics (AEZ 2): East Africa: Uganda; Southern Africa: Malawi, Zambia.

RAEZ 3 Warm humid tropics (AEZ 3): Cameroon, Guinea.

2. Asia and the Pacific

RAEZ 8 Warm arid and semi-arid tropics (AEZ 1): India and Thailand.

RAEZ 9 Warm subhumid tropics (AEZ 2): India, Sri Lanka and Thailand.

RAEZ 10 Warm humid tropics (AEZ 3): Indonesia, Philippines, Sri Lanka and Thailand.

RAEZ 11 Warm arid and semi-arid subtropics with summer rainfall (AEZ 5): China, India, Nepal

3. Latin America and the Caribbean

RAEZ 17 Warm humid tropics (AEZ 3): Brazil, Peru.

Research Approach to Develop International Public Goods (IPG):
ICRAF is becoming a recognized global leader in applied and strategic on mechanisms providing compensation for ecosystem services. Indeed, its work in this area was recognized by the EPMR as a major IPG of ICRAF that should be strengthened and extended in geographical terms. The ICRAF approach stresses action research in contrasting sites, the possibility of in-kind payments, development of parsimonious assessment tools to clarify the real links between land use and ecosystem services, the importance of the negotiation process itself, cross-site learning and synthesis, and policy relevance. In 2007-9, this research will be deepened in Asia and Latin America, and extended to Africa. The trademark RUPES project (Rewarding Upland Poor for Environmental Services) will be extended from Asia to Africa in 2007, with a network of sites and collaborators across the continent. A wide range of publications, partnerships, and presentations in international fora further enhance the IPG dimension of this work.

Collaboration:
The RUPES project involves a range of international organizations, national policy groups, national and local research and development organizations working across Asia, including Indonesia, the Philippines, China, Vietnam, Sri Lanka, India, Nepal, and Thailand. IFPRI collaborates on impact assessment studies. A similar network will be established in Africa in the 2007-9 period. In the Amazon Basin, ICRAF conducts similar research on rewards for ecosystem services through the Amazon Initiative Consortium and a number of Brazilian institutions, including ProAmbiente Programme.

Theme: Strengthening Institutions (SI)

ICRAF Project SI.1: Strengthening the capacity for Agroforestry and NRM science at national institutions and systems

Project Goal: Research partners in developing countries have the capacity to carry out agroforestry research and to share results with among others, educational and development institutions.

Project Objectives:

1. Understanding Agroforestry/Natural Resource Management science and technology policies
2. Agroforestry research and teaching capacity
3. Institutionalization of Agroforestry and NRM

Changes and Rationale for the Project:

While many universities and National Agricultural Research Institutes (NARIs) recognize the importance of Agroforestry in their academic and research programmes, they face challenges in mainstreaming it into existing programmes due to policy and capacity shortfalls. The two major areas of need are human resource capacity and development of quality agroforestry and NRM teaching and research programmes. Providing support in these areas will enhance the quality and volume of scientific outputs from our national partners as well as expand the reach of agroforestry and NRM innovations to farmers. The project objective is to institutionalise agroforestry in national scientific institutions.

Project activities include studies on policies, tools and approaches/methods for strengthening Agroforestry in scientific institutions; direct support to mentor young scientists and supervise graduate students; and guiding the development of credible research and educational programmes. The project also supports the development of excellence in agroforestry through collaborative arrangements among education and research institutions.

Alignment with CGIAR Science System priorities

The strengthening institutions research is focused on understanding the underlying causes of capacity insufficiency through baseline studies, policy analyses, institutional typology and scrutiny of capacity elements within institutions. The challenges of cross-disciplinary integration through agroforestry are also be explored. The project's activities are primarily aligned to Science Council priority 5a as well as priority 4a. A part of the activities are flexible free standing agenda.

Description of Impact pathways

The project has three output areas:

- Diagnosis and recommendations on the way agroforestry and natural resource management can be integrated into national science, technology and education policies.
- Graduates of Masters and PhD degree programmes, mentored young research scientists and improved academic and research programmes
- Agroforestry and natural resource management institutionalized into National Agricultural Research Institutions and in institutions of learning

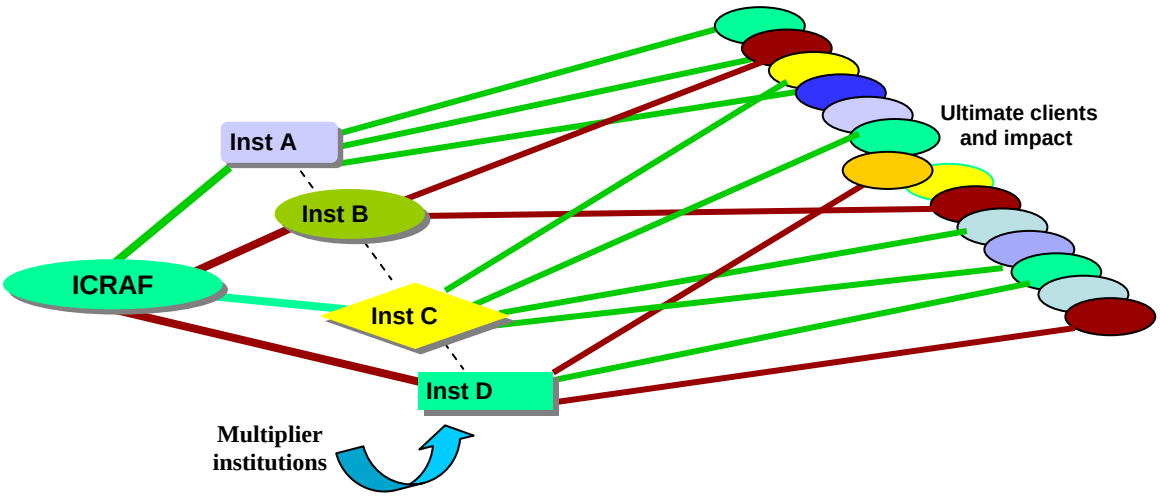
ICRAF and its partners hope to achieve improved policies and environment for local research and education institutions to generate agroforestry science and innovations and contribute towards the prosperity of poor farming communities. This will be realized through:

- A good analysis and synthesis of science and technology policies with respect to agroforestry and NRM to extract lessons and advice

- Facilitating the development of favorable science and technology programmes for innovation in agroforestry and NRM
- Facilitating the development of human capital in agroforestry and NRM

The expected outcomes are respectively: research and academic institutions use policy briefs and case studies to improve institutional programmes in Agroforestry and NRM; increased human resources availability enhances institutional capacity for agroforestry science and innovation at universities and NARIs; and integrative approaches to NRM are applied in other areas of research and development

The main impact will be the development of the right institutional capacity for agroforestry and NRM science and innovation. This impact is achieved through partner multiplier institutions as elaborated in the figure below, in which the different colours represent different types and levels of institution.



Working with and through Multiplier Institutions (MIs)

ICRAF's roles include the generation of knowledge products, knowledge brokering, facilitation and advocacy to influence institutional policies for adoption & adaptation of new and integrative approaches.

Target Ecoregion(s)

RAEZ 1 Warm arid and semi-arid tropics (AEZ 1): West Africa: Mali, Niger, Senegal, Burkina Faso; East Africa: Ethiopia, Kenya, Tanzania; Southern Africa: Malawi, Mozambique, Zambia and Zimbabwe.

RAEZ 2 Warm subhumid tropics (AEZ 2): East Africa: Uganda; Southern Africa: Malawi, Zambia; Southern Africa: Malawi, Mozambique, Zambia and Zimbabwe.

RAEZ 3 Warm humid tropics (AEZ 3): Cameroon, Guinea, DR Congo, Cote d'Ivoire, Equatorial Guinea, Gabon, Ghana, Nigeria.

2. Asia and the Pacific

RAEZ 8 Warm arid and semi-arid tropics (AEZ 1): India and Thailand.

RAEZ 9 Warm subhumid tropics (AEZ 2): India, Sri Lanka and Thailand.

RAEZ 10 Warm humid tropics (AEZ 3): Bangladesh, Indonesia, Laos, Philippines, Sri Lanka and Thailand.

RAEZ 11 Warm arid and semi-arid subtropics with summer rainfall (AEZ 5): China, India, Nepal

3. Latin America and the Caribbean

RAEZ 17 Warm humid tropics (AEZ 3): Brazil, Colombia, Peru.

Beneficiaries

The direct **beneficiaries** are NARIs and universities in tropical developing world that are partnering with ICRAF. They will benefit from improved scientific and institutional capacity for Agroforestry and NRM. Others are young scientists and students who will benefit from mentorship and thesis research support and supervision. Indirect beneficiaries include all those individuals and institutions that will receive services from NARIs and universities directly or through graduates.

End Users

The **end users** are faculty and students at universities and research scientists NARIs that have interest in agroforestry and NRM. In addition, policy makers will make use of the approaches to transform their institutions. Development organizations, government ministries and agri-industry and private businesses will make use of more competent graduates and research innovations generated. Other CGIAR training departments, especially at IFPRI-ISNAR, ILRI, IITA, IRRI, WARDA, IPGRI and ICRISAT will have access to databases generated and can use them in designing their programmes to support NARIs and universities.

Research Approach to Develop International Public Goods (IPG)

Institutions will be stratified according to typology, geographical location, resources and size. Studies will be designed to evaluate various aspects such as policies, internal structure and external environment, type of programmes and key opportunities and challenges. Structured questionnaires, interviews and visits will be used in a double sampling design. The analysis and development of strategic intervention will produce IPGs. The graduate students will produce theses that have publishable content, and they will be encouraged to write scientific articles. Effective institutionalization cases (best practices) will be studied vis-à-vis those that fail to extract lessons as IPGs.

Collaboration

About 20 universities in Africa (from the 127 members of the African Network for Agriculture, Agroforestry and Natural Resource Education), 20 NARIS in the same countries as the universities, and similar numbers in Asia will be involved in the research. They will produce original data about their policies, programmes and activities in Agroforestry and NRM, and take part in the analysis and synthesis. They will also develop strategies for addressing capacity shortfalls. Both NARIs and universities will take a lead in the development of credible teaching and research programmes. The following advanced universities will provide technical support in the development of programmes: Université Laval, Wageningen Agricultural University, Oregon State University, University of Florida and Swedish Agricultural University (SLU). The universities (both national and advanced) will register and supervise graduate students and award degrees. NARIs will provide candidates for graduate programmes and provide field sites for thesis research.

Comparative and complementary advantage of the project activities

By its nature, agroforestry is an integrated field of science and technology. ICRAF therefore occupies a unique position as the global institution whose prime mandate is to develop the science of agroforestry. This has enabled ICRAF to be the primary provider of capacity building in the area.

Over the years, ICRAF has accumulated a large volume of knowledge and experience in Agroforestry which can be deployed to support interested scientific institutions. Additionally, ICRAF has helped to build regional education networks in Africa and Southeast Asia. These networks will work with and complement ICRAF's efforts and also help in reaching more institutions.

ICRAF Project SI.2: Enhancing capacity for sharing Agroforestry and NRM innovations to leverage scaling up	
Project Goal:	Improved adoption of agroforestry innovations by farmers
Project Objectives:	
SI.2.1:	Characterization of and partnering with development institutions
SI.2.2:	Collaboration and Networking

Changes and Rationale for the Project:

The adoption and use of agroforestry scientific products and innovations is slowed down by the weak communication to share knowledge products, especially due to inadequate links among producers and users of knowledge. There is a need to understand inter-institutional barriers to communicating knowledge and explore the formation of effective partnerships.

In this project ICRAF will conduct research on training needs and opportunities and develop appropriate strategies, methods and products/products tailored to use available institutional infrastructures and resources. For instance, we will support learning communities and networks and production of adaptable learning materials for a wide range of learners.

Tapping into the current advances in information and communication technology (ICT) ICRAF can greatly facilitate the incorporation of agroforestry into distance learning so that more individuals and institutions can benefit from research products.

Alignment with CGIAR Science System priorities

The key research questions address capacitation options on retooling of institutions, institutional innovations, improving policies, strategies and programmes; strengthening linkages and knowledge management. The research content of this project falls under Science Council priority 5c while the rest falls within the flexible 20% of the agenda. A good balance is maintained between building the science and practice to up-scale of Agroforestry.

Description of Impact pathways

The project has two output areas:

- Improved learning resources and tools, policy briefs and institutional frameworks for partner networks and development organizations to enable scaling up agroforestry approaches
- Processes, mechanisms, tools and networks for capturing and sharing agroforestry and natural resource management innovations and knowledge

The general approach of using multiplier institutions to leverage ICRAF's ability to reach more users of ICRAF's scientific products (as explained in project SI.1) applies. The large the number of partners tapping into quality knowledge and sharing the higher the probability of success. ICRAF's roles include the generation of knowledge products, knowledge brokering, facilitation and advocacy to influence institutional policies and adoption & adaptation of new and integrative approaches. ICRAF also supports and builds the capacity of institutions to capture, adapt, use and share knowledge.

Target Ecoregion(s)

RAEZ 1 Warm arid and semi-arid tropics (AEZ 1): West Africa: Mali, Niger, Senegal, Burkina Faso; East Africa: Ethiopia, Kenya, Tanzania; Southern Africa: Malawi, Mozambique, Zambia and Zimbabwe.

RAEZ 2 Warm subhumid tropics (AEZ 2): East Africa: Uganda; Southern Africa: Malawi, Zambia; Southern Africa: Malawi, Mozambique, Zambia and Zimbabwe.

RAEZ 3 Warm humid tropics (AEZ 3): Cameroon, Guinea, DR Congo, Cote d'Ivoire, Equatorial

Guinea, Gabon, Ghana, Nigeria.

2. Asia and the Pacific

RAEZ 8 Warm arid and semi-arid tropics (AEZ 1): India and Thailand.

RAEZ 9 Warm subhumid tropics (AEZ 2): India, Sri Lanka and Thailand.

RAEZ 10 Warm humid tropics (AEZ 3): Bangladesh, Indonesia, Laos, Philippines, Sri Lanka and Thailand.

RAEZ 11 Warm arid and semi-arid subtropics with summer rainfall (AEZ 5): China, India, Nepal

3. Latin America and the Caribbean

RAEZ 17 Warm humid tropics (AEZ 3): Brazil, Colombia, Peru.

Beneficiaries

The direct beneficiaries are training and education institutions, NGOs, development workers, farmer groups, CBOs, government departments and private sector. Indirect beneficiaries are farmers who receive and share their farming knowledge and are able to adopt and adapt new innovations.

End Users

The end users are farmers and institutions that promote faming.

Research Approach to Develop International Public Goods (IPG)

Modern approaches to partnering and network analysis are applied to develop links with and among institutions. Performance criteria for partnerships include assessments of effectiveness, efficiency, relevance and sustainability. On learning materials and resources peer review mechanisms will be applied.

Collaboration

The general principle used is to facilitate partners carry out as much as possible of the work, especially the development of learning materials from research products. Then we generate synergies from the competitive advantages of different partners, by creating synergies.

Comparative and complementary advantage of the project activities

ICRAF's regional and global contacts and experiences are assets that are used in facilitating cross-regional fertilization of knowledge. Relying of the large volume of research results generated by ICRAF and its partners, we have the capability to test models across a wide spectrum on political, geographic, social, economic and biophysical settings.

Eco-regional Programme: African Highlands Initiative (AHI)

ICRAF Project AHI.1: INRM Innovations in Pilot Sites to Balance Income Generation with Conservation

Changes and Rationale for the Project

Output AHI 1 synthesizes two outputs from previous years, namely AHI 1 and AHI 2, and consolidates some of its output areas. The number of total output areas has decreased from 3 to 2.

The African Highlands Initiative (AHI) is an ecoregional research program of the CGIAR and a regional network of ASARECA that focuses on improving livelihoods and reversing natural resource degradation in the intensively cultivated highlands of eastern and central Africa. To this end, AHI is developing and promoting an "integrated natural resource management" (INRM) approach and institutionalizing its use in key partner organizations. AHI work targets the poor in degraded highland watersheds where environmental and related livelihood problems are widely visible on farms and on landscapes. Project 1 integrates action and empirical research to catalyze methodological innovations within and among partner organizations to better address the needs of the target population and ecoregion. Methodological innovations cut across farm, watershed and district levels, and emphasize systems intensification and diversification; collective action and governance; management of landscape-level processes to optimize returns to diverse system components and land users; enhancing synergies among technological, policy and institutional innovations; and district-level institutional innovations.

Alignment of Project with CGIAR System priorities

The emphasis on systems intensification and diversification at farm level, and on integrated watershed management to optimize production with conservation of nutrients, water and biodiversity at landscape level, are directly aligned with several CGIAR science priorities. The most direct linkages are with "sustainable agro-ecological intensification in low- and high-potential areas" and "integrated land, water and forest management." Methods development to increase income generation while ensuring sustainable nutrient management and groundwater recharge; optimize production of crops, livestock and trees; and strategically match technological and management innovations with social and biophysical niches directly support these priorities. "Rural institutions and their governance" are also a strong thematic emphasis, with prior attention to approaches for strengthening demand-driven development and the governance of development inputs, landscape-level processes and natural resources of common interest. The emphasis on identifying social and ecological principles and practices to enhance income generation while reducing vulnerability stemming from natural resource degradation, a reduced crop genetic base and erosion of institutions of governance also directly support "improving R&D options to reduce rural poverty and vulnerability".

Project AHI-1 provides secondary support to additional CGIAR science priorities, as follows: (i) "Maintaining and enhancing yields of staple crops," achieved through integrating germplasm, crop husbandry and integrated nutrient management innovations; (ii) "Enhancing nutritional quality and safety," through work to optimize income generation, household nutrition and natural resource management through farm-level innovations; (iii) "Increasing income from fruit and vegetables" through the integration of high-value enterprises matched to farmers'

preferences and market demand; and (iv) "improved water productivity" through technological and governance interventions at landscape level.

Description of Impact Pathways
Outputs:
AHI.1.1: Pilot Implementation of Integrated Watershed R&D Interventions. Key outputs are methods and approaches for integrated natural resource management at farm and landscape level that: (1) optimize returns to household income, nutrition and system nutrients; (2) harmonize interactions among adjacent landscape units and users while making more efficient use of land, labor, nutrients and water; and (3) empower local communities to sustain these efforts.

AHI.1.2: Pilot Implementation of District Institutional Innovations for INRM. Key outputs are methods and approaches for integrated natural resource management at district and institutional levels that: (1) foster enhanced cooperation and synergy between research and development institutions to increase returns from development interventions; (2) improve governance of natural resources and development processes; (3) enhance equitable income capture while sustaining the natural resource base; and (4) empower R&D actors to sustain these efforts.

Beneficiaries (expected users of outputs):
National agricultural research and extension systems, local government, NGOs, community-based organizations and private service providers, targeted for application of better methods for strengthening communities' capacity to achieve multiple system objectives while enhancing their adaptive capacity.

Expected outcomes:
- Land users and local institutions are better able to reconcile short- and long-term goals and to optimize use of limited resources for improved livelihood
- Research and development organizations have access to and utilize methods and approaches that make the social and biophysical trade-offs of current and alternative land use scenarios explicit, and to assist households and communities in optimally managing these
- Local government uses lessons and tools to more effectively support communities in improving the governance of development processes and natural resources, and to support R&D actors to harmonize their activities to enhance returns to investment
- Local communities and development institutions are empowered with tools and knowledge to optimally integrate and sequence ttechnological, social and policy dimensions of development and natural resource management

End users (ultimate beneficiaries):
Smallholder farmers located in densely settled highlands of ECA will benefit from increased ability to optimize returns from diverse system components (soil, crops, water, livestock, trees), integrate technological with market and governance innovations, and generate income and food short-term while sustaining the natural resource base and minimizing vulnerability.

Expected impacts:
More integrated management of natural resources (soil, crops, water, livestock, trees), more sustainable production, more income and food, and reduced risk and vulnerability.

Target Ecoregion(s):
The target ecoregion are the densely settled mountain areas of ECA with clear signs of natural resource degradation.

1. Sub-Saharan Africa

RAEZ 2 Warm subhumid tropics (AEZ 2): East Africa: Parts of Ethiopia, Tanzania and Uganda; Southern Africa: Madagascar.

RAEZ 3 Warm humid tropics (AEZ 3): Congo and parts of Madagascar.

RAEZ 4 Cool tropics (AEZ 4): Burundi, Rwanda, Ethiopia, Kenya, Madagascar and Tanzania.

This ecoregion covers parts of Ethiopia, Eritrea, Uganda, Tanzania, Kenya, Madagascar, Rwanda, DR Congo, and Burundi. More humid densely populated highlands constitute about 23% of the total landmass in the region, yet house over 50% of the population given their suitability for human habitation. These highlands can be categorized as warm sub-humid tropics and cool tropics. They are generally characterised by high population density, small land size, land degradation, poor infrastructure, limited livelihood options and poverty. These areas provide critical environmental services to local, lowland and urban residents alike.

Research Approach to Develop International Public Goods (IPG)
With a mandate to develop innovative methods and approaches for integrated natural resource management (INRM) at the local level and to catalyze the necessary changes in R&D practice and policies, AHI works in a series of benchmark sites which serve as the source of methodological innovation. It is within these pilot districts and watersheds that integrated technological, social, economic and institutional innovations are developed and tested through a combination of action and empirical research. AHI works in close partnership with national agricultural research institutes and district partners (agricultural extension, local government and civil society) to jointly plan, implement, adapt and evaluate new approaches under development. Cross-site analysis around 'higher-order' research questions and themes enables synthesis of good practice and improved understanding of what works where, and why.

AHI's research and associated IPGs within Project 1 fall under four thematic areas:

1. *Systems intensification and diversification*, which emphasizes approaches for optimizing returns from limited resources at farm level;
2. *Participatory integrated watershed management*, which focuses on natural resource management and governance issues at landscape scale;
3. *Collective action in natural resource management*, which explores the added value of collective action and the conditions enabling collective investment in public goods;
4. *Policy and institutional innovations*, to understand the role of innovations within and among support institutions and improved natural resource governance in improving livelihoods and enabling more integrated, sustainable management of natural resources.

Collaboration
Collaboration and partnership are fundamental to the production of IPGs under this output area. AHI works in a series of benchmark sites in the highlands of ECA in close collaboration with national partners to design, test, monitor and synthesize methodological innovations and

associated impacts. Interdisciplinary teams of research and development actors from National Agricultural Research Institutes and extension departments, as well as NGOs and local government partners, are the primary implementing bodies in benchmark sites. A small Regional Research Team with complementary disciplinary expertise (systems perspectives, social science) provides technical support to site teams in planning, field testing of approaches, review and synthesis.

Comparative Advantage

Integrated natural resource management is a knowledge-intensive process requiring attention to the "process" as much as the "content" of development and sustainability. AHI has specialized methodologically in the form of social, action-based learning approaches for collaborative development and testing of new approaches for INRM in partnership with national partners and communities. This has enabled the generation of IPGs not only in the form of increased rates of adoption of NRM technologies and localized livelihood impact, but in the form of methods and approaches to enable such localized impacts to be scaled up and institutionalized within R&D institutions in the region.

ICRAF Project AHI.2: Scaling Up and Institutionalization

Changes and Rationale for the Project:
Output AHI 2 is directly aligned with AHI 3 of previous years, but consolidates some of its output areas.

While a host of historical and contextual factors have contributed to the current decline in agricultural productivity and natural resources in the target ecoregion, the methods and practices employed by research and development organizations with a mandate to support rural livelihoods are ill-suited to the task. Strategies used by agricultural R&D institutions in the region:

- Tend to be reductionist in their orientation – emphasizing maximizing gains to a single system component rather than systems problems, and failing to integrate biophysical, social, economic and institutional concerns;
- Emphasize short-term economic returns at the expense of sustainability;
- Utilize blanket recommendations where technologies are developed with little input from farmers, limiting adoption in areas characterized by high levels of heterogeneity;
- Neglect social dimensions, such as local institutions and knowledge, gender and equity;
- Emphasize individual over collective decision-making, private over common property and farm over landscape-level processes; and
- Lead to the isolation of research from development, duplication of activities and lost opportunities for collaboration.

Project 2 seeks to build on research findings and lessons from Project 1 and institutionalize related principles, methods and practices within research and development institutions in the region. This is achieved through a combination of facilitated institutional change processes, formal trainings, competitive grant systems, publication and knowledge sharing, and networking.

Alignment of Project with CGIAR System priorities
Project 2 is similarly aligned with CGIAR science priorities as Project 1, given the direct flow of public goods from pilot sites to institutions within the ecoregion. However, the emphasis on scaling up and institutionalization align Project 2 with two additional CGIAR science priorities – namely, "science and technology policies and institutions" and "improving R&D options to reduce rural poverty and vulnerability."

Description of Impact pathways

Outputs:
AHI.2.1: Institutional Change in Support of INRM. Institutional change in support of integrated, participatory NRM is strengthened among research and development organizations across the ecoregion through advocacy, self-led organizational change, capacity building and mentoring.

AHI.2.2: Knowledge Management. Increased knowledge base of R&D actors at national, regional and global levels on INRM principles, methods and impacts through improved information capture, packaging and sharing.

Beneficiaries (expected users of outputs):
National agricultural research and extension systems, local government and NGOs, targeted for application of better methods for strengthening communities' capacity to achieve multiple system objectives while enhancing their adaptive capacity; managers of research, development and educational institutions targeted for institutionalizing INRM methods and practices in their own organizations.

Expected outcomes:
- Improved capacity of NARIs, NGOs, extension personnel and government employees to integrate INRM methods into everyday practice
- Staff from research, development and educational institutions supported through organizational structures, processes and technical support services in the application of INRM principles and methods
- Increased awareness and application of the principles and practice of INRM among R&D organizations and professionals in the ECA region and beyond

End users (ultimate beneficiaries):
Smallholder farmers located in densely settled highlands of ECA will benefit from increased institutional coordination, capacity and support in assisting them in managing the complex trade-offs they face in allocating limited resources among diverse enterprises; balancing short-term economic gains with longer-term NRM investments and reductions in risks and vulnerability, and investing in individual vs. public goods. They will also benefit from more widespread application of proven technological, social, economic and governance innovations to reverse land and biodiversity degradation and improve livelihoods.

Expected impacts:
More integrated management of natural resources (soil, crops, water, livestock, trees), more sustainable production, more income and food, and reduced risk and vulnerability.

Target Ecoregion(s):
The target ecoregion are the densely settled mountain areas of ECA with clear signs of natural resource degradation. However, many of the methods and approaches are applicable to other ecoregions with densely settled agricultural landscapes, high levels of natural resource degradation, and/or tightly coupled interactions among adjacent landscape units and land users.

Research Approach to Develop International Public Goods (IPG)
While Project 2 is in large part focused on the delivery of IPGs from Project 1 to the end users (policy makers, local government and research, development and educational institutions) to expand impacts among the beneficiary groups, IPGs are also generated in Project 2. Research conducted on institutional change and scaling up processes, and the impact of these processes, is designed to capture lessons for more widespread application. Processes for scaling up different types of technologies, scaling up methods and institutionalizing new paradigms within organizations have unique requirements. This calls for careful planning, as well as research to capture lessons about the strengths and shortcomings of different approaches. This research may be embedded within a single institutional change process, synthesize lessons across a set of cases or be conducted as a retrospective analysis. IPGs from Projects 1 and 2 are delivered to end users through a knowledge management strategy consisting of improved information capture in the

implementation phase (participatory monitoring and evaluation, process documentation and impact assessment), and information packaging and dissemination.

AHI's research and associated IPGs within Project 2 fall under two thematic areas:

1. Scaling up and institutionalization, which emphasizes approaches to scale up both technologies and methods as well as means of catalyzing change within organizations to increase impact; and
2. Improving research-development linkages, which explores institutional arrangements and practices to strengthen both the contributions of diverse types of research to development and the role of the end user in defining research priorities.

Collaboration

The AHI Regional Research team collaborates closely with its national partners both in the scaling up and institutionalization work and in knowledge management. Site teams in AHI benchmark sites work to synthesize lessons from methodological innovations applied in their respective sites, and will be increasingly involved in sharing these lessons with other regional stakeholders through their involvement in capacity building. National agricultural research institutes that have hosted AHI have also been intimately involved in leading their own institutional change processes with AHI support.

Comparative Advantage

Intensive work in pilot sites by site and regional research team members has led to the concentration of expertise in the hands of a small number of individuals. Moving this knowledge beyond pilot sites required direct involvement of AHI staff and its partners in scaling up and institutionalization. As most of this work is conducted as action research, engaging in development-oriented processes represents no conflict of interest with respect to the development of IPGs. Where this is not the case, AHI will use a Training of Trainers approach to quickly devolve knowledge to national partners who are best suited to institutionalize this knowledge within their own organizations or among their client groups.

Systemwide Programme: Alternatives to Slash-and-Burn (ASB)

ICRAF Project ASB: Alternatives to Slash-and-Burn

Project Goals:

- Poor people have secure access to resources, food security, and a voice in land-use decisions.
- Livelihood options for the rural poor expand, based on natural resource management practices that improve livelihoods while conserving biological diversity and essential environmental services.
- Globally-significant tropical rainforest habitat is conserved. (Note: much globally-significant habitat is outside protected areas.)

Project Objectives:

ASB.1: Knowledge on development-conservation tradeoffs in the tropical forest margins

- Influential individuals' awareness increases and their attitudes and mindsets change regarding smallholders' sustainable development potential and the driving forces, tradeoffs, and effective responses to 'win more and lose less'.
- Public awareness and understanding of driving forces, tradeoffs, and effective responses is transformed.
- Spread of new knowledge and better understanding of driving forces, tradeoffs, and effective responses within various scientific disciplines and among policy shapers.

ASB.2: Global network for the tropical forest margins.

- Leading research, development, and conservation organizations collaborating on a coordinated suite of interventions at multiple scales.
- Improved flow of knowledge and practical insights among scientists, policy shapers, civil society activists, and local people.
- Multidisciplinary, multi-institutional, multi-cultural science becomes the accepted paradigm for natural resource assessments, research, development, and education.

ASB.3: Enhanced capacity of partners to generate knowledge and develop workable interventions

ASB partners in the tropics have capabilities and resources that will enable them to rise to the unconventional challenges they now face in balancing environment and development objectives.

Changes and Rationale for the Project

Tropical rainforests are falling fast. Causes of deforestation are complex, including agricultural expansion, road building, and market forces. Deforestation often is blamed on the slash-and-burn practices of poor migrant smallholders, millions of whom do clear and cultivate small areas of forest by this method. However, other groups often clear much larger areas, leading to conflict with smallholders. These include plantation owners, ranchers, loggers, and state-run enterprises and settlement projects. For the poor people making a living in the tropical forest margins, conservation does not (yet) pay. Attempts to impose conservation by regulation either fail altogether or benefit the powerful at the expense of the poor. Moreover, global markets do not value the environmental benefits of tropical forests. Until we address the tradeoffs between

conservation and local livelihoods, tropical rainforests will continue to disappear. No single group or organization has the means or expertise to tackle these complex, interlinked problems by itself.

Specifically, the ASB MTP for 2007-2009 includes:
Implementation of external review recommendations:

- **Knowledge Communication strategy:** Medium Term strategy, Monitoring and Evaluation (M&E).
- **Policy Outcome strategy:** Develop a policy outcome strategy, Develop M&E systems and indicators for policy outcomes.
- **Strategy for Capacity Building and Institutional Strengthening:** Develop a capacity building strategy and a way to assess its effectiveness, Develop M&E systems and indicators for capacity building and institutional strengthening outcomes.
- **Fundraising strategy**: Comprehensive fundraising strategy, roles of the actors operating at different levels within the programmme in conjunction with efforts, institutional incentives.
- **Develop of a comprehensive, targeted dissemination strategy** including communication of knowledge, shaping policies and other outcomes, and enhanced visibility of ASB: Identify ASB's most important audiences, Assess the degree of coincidence between intended target and actual outreach results, and the causes of possible divergence, and Design outreach paths and techniques to reach intended audiences more effectively
- **Broadening stakeholder input to ASB governance**: Develop mechanisms so that decision making is open to input from GSG new members, and from stakeholders in the ASB domain not formally represented on the GSG.
- **External Advisory group of scholars and practitioners**: Global Coordinator will work with the GSG to develop external advisory committee terms of reference, and ASB will implement this recommendation as soon as possible.
- **Mapping through the future of ASB**: Led by the GSG with facilitation from the Global Coordinator, ASB stakeholders to identify and evaluate future paths for the ASB Consortium in a fully consultative process.
- **Results-based management, monitoring, evaluation, and impact assessment**: Develop and implement monitoring and evaluation systems for ASB inputs, outputs and their uptake based on the Panel's findings.

Alignment with CGIAR System Priorities
ASB is addressing three interlinked problems of global significance:

- Chronic mass poverty in the humid tropics
- Continuing loss of globally-significant habitat in the humid tropics
- Tradeoffs between poverty reduction and habitat conservation

The Review team concluded that the partnership continues to be highly relevant to the CGIAR's goals and is pursuing work that fits well with the CGIAR System Priorities, notably Priority 4a, "Integrated land, water and forest management at landscape level", and

- sustaining and realizing the value and benefits of forests and trees
- ensuring access by the poor to forest and tree resources
- improving policies and governance of environmental resources

Of critical importance is the fact that the ASB SWP is the <u>only</u> global forum for people working on these priority issues specifically in tropical forest margins.

Description of Impact pathways

- **ASB Output 1:** Knowledge generation and communication to influence science, policy, private sector, and public awareness of development-conservation tradeoffs and thereby raise the level of awareness of real challenges, public debate about alternatives, and support for appropriate policy reform and research, development, and education investments.

  Outcomes: Improved awareness and understanding of driving forces, tradeoffs, and appropriate responses by policy makers, scientists, and public; including awareness of need to integrate new natural resource management (NRM) practices and better governance as well as understanding that this integration is feasible.

  Impact (on CGIAR goals): Improved policies that have a major impact on agricultural development, the spread of new technologies, and the management and conservation of natural resources.

- **ASB Output 2:** Sustaining and developing the only global network devoted to work on the tropical forest margins. Development and diffusion of new **organizational learning and change processes** that link integrative science with policy and practice in the search for better approaches to poverty reduction, natural resource management, and rainforest conservation.

  Outcomes: Workable organizational structures and processes identified and implemented that link integrative science with policy and practice in the search for better approaches to poverty reduction, natural resource management, and rainforest conservation. New ways of "doing business" in the CGIAR and other international organizations emerge.

  Impact (on CGIAR goals): Building pantropic capacity to develop innovative practices for sustainable management of natural resources in the tropical forest margins and the institutional and policy innovations needed to support sustainable resource management and conservation of globally-significant habitats.

- **ASB Output 3:** Training and other investments to strengthen capacity of ASB partners to lead and sustain their own programs of integrated assessment, research, development, communication, education and action for poverty reduction, natural resource management, and rainforest conservation.

  Outcomes: stronger institutions in developing countries; investments in people (primarily in developing countries) who can contribute to the search for solutions to the global problems of mass poverty and loss of natural habitat.

  Impact (on CGIAR goals): Enhanced capabilities of national agricultural research systems (NARS), other institutional partners, and individuals through joint research, training, mentoring, and knowledge-sharing.

A 2005 external review and impact assessment found that ASB:

- "… contributed directly to the design of innovative policies, legislation, and institutions across the pantropic domain."

- "… [is] the world's leader in integrated, interdisciplinary research on the human and environmental consequences of land use choices in that domain."
- "… has already begun to influence natural resource management in ways that have led not only to income and environmental benefits but also to avoidance of substantial economic and environmental losses, as well as occurrence of damaging conflict."
- "…was cited by many as their 'standard' for how productive international collaboration on NRM [natural resource management] challenges should be organized."

Target Ecoregion(s)
ASB works at the margins of the world's remaining tropical rainforests, in landscape mosaics comprising both forests and farms. These rainforests are an invaluable natural heritage. They are also home to over one billion rural people, the vast majority of whom are poor and depend directly on forest resources and agriculture for their livelihoods.

1. Sub-Saharan Africa

RAEZ 3 Warm humid tropics (AEZ 3): Cameroon

2. Asia and the Pacific

RAEZ 10 Warm humid tropics (AEZ 3): Indonesia, Philippines and Thailand.

3. Latin America and the Caribbean

RAEZ 17 Warm humid tropics (AEZ 3): Brazil and Peru

Beneficiaries and end users
Current estimates by ASB indicate that more than 1.8 billion people live within this humid tropical and subtropical forest biome; of these 1.2 billion are rural people. Most are poor households directly dependent on forest resources and agriculture for their livelihoods. Other poor households suffer indirectly from waste of these resources and environmental degradation. Because ASB's target ecosystems supply global public goods (globally-significant habitats and carbon storage), beneficiaries also include the Earth's entire population.

Research Approach to Develop International Public Goods (IPG)

(1) Knowledge and attitudes: improved awareness and understanding of driving forces, tradeoffs, and appropriate responses by policy makers, scientists, and public; including awareness of need to integrate new natural resource management (NRM) practices and better governance as well as understanding that this integration is feasible (scales: global, continental/regional, national)

(2) New practices: diffusion, adaptation, and adoption of new NRM practices by smallholders; including improved germplasm and technological innovations (scales: continental/regional, national, local).

(3) Appropriate incentives: institutional innovations to create rewards that value global public goods and other environmental services marketing and trade policy reforms that reduce perverse incentives

(4) Better governance: implementation of institutional innovations and policy reforms that support adoption of appropriate practices and secure access to resources for the rural poor and conservation of globally-significant habitat (scales: global, continental/regional, national, local); integration of development and environment strategies at the national level.

(5) Organizational capacity: stronger institutions in developing countries; new ways of "doing business" in the CGIAR and other international organizations; investments in people (primarily in developing countries) who can contribute to the search for solutions to the global problems of mass poverty and loss of natural habitat.

Collaboration
ASB is a multi-level, global consortium of more than 80 institutions governed by a Global Steering Group.

The global consortium includes:

- 5 international agricultural research centres (CIAT, CIFOR, ICRAF, IFPRI, and IITA)
- 6 national systems (Brazil, Peru, Cameroon, Thailand, Indonesia, and the Philippines)
- 7 local and national NGOs in developing countries
- 8 other national agencies in developing countries
- 13 universities in developing countries
- 14 advanced research institutions and international organizations.

The ASB consortium received the CGIAR Science Award for "Outstanding Partnership" in 2005. The ASB partners play compl**ementary roles in providing funding, expertise, governance, coordination, and bridges to impact in pursuing their common goal: *t**o raise productivity and income of rural households in the humid tropics without increasing deforestation or undermining essential environmental services.*

ASB's Global Coordination Office supports and coordinates the work done by over 80 partner organisations, including five international agricultural research centres, 13 national research and development programmes, 20 non-governmental organizations and a variety of local community groups. A Global Steering Group made up of 12 representative organizations – balancing institutions and perspectives from the South and the North – serves as ASB's governing body. The Group determines priorities and approves annual work programmes, budgets and the allocation of funding. The programme is hosted by the World Agroforestry Centre (ICRAF), which provides a variety of institutional support, including financial controls. The Board of Trustees of ICRAF have fiduciary responsibility for the ASB programme.

This dynamic global consortium achieves impact through close collaboration at the local and national levels. Building effective teams for research and action on the complexities of natural resource management has required significant investment of human and financial resources since ASB's inception in 1994. Today ASB is drawing on an investment of over US$65 million that has accrued over the past decade in the form of exhaustive baseline studies at the consortium's benchmark sites and participatory development of sustainable alternatives and which is embodied in the talents and skills of its numerous research partners.

Institutional sustainability at the local and national levels of the Programme derives from ASB's participatory approach. This has been accomplished by sustained collaborative activities among ASB partners at the benchmark sites. As national institutions are full partners in ASB governance, they play a central role in setting priorities for the consortium and allocation of funds and have a sense of ownership of the ASB agenda.

ASB's effectiveness depends in no small part on a demonstrated ability to engage talented people and sustain their commitment. ASB researchers comprise a very diverse group with respect to discipline, gender, and geographic origin. Participants cite the intellectual opportunities and excitement provided by ASB as major factors in their decisions to engage and remain engaged in programme activities.

ASB's popularity and longevity is also thought to be the result of its flexibility, lack of bureaucracy, and the fact that it minimizes costs for its members. This enables ASB to learn and adapt in response to scientific results, lessons learned in the field, and better understanding of users' needs that comes through participatory engagement. ASB is evolving beyond its original scope to encompass a much broader exploration of options for shaping tropical land use.

ASB participating institutions

The following two groups are members of the ASB Global Steering Group

International Agricultural Research Centres on Global Steering Group
Center for International Forestry Research (CIFOR) (GSG Chair)
International Centre for Tropical Agriculture (CIAT) and Tropical Soil Biology and Fertility Institute (TSBF)
International Food Policy Research Institute (IFPRI)
International Institute for Tropical Agriculture (IITA)
World Agroforestry Centre (ICRAF)

National Agricultural Research Systems on Global Steering Group
Agency for Agricultural Research and Development (AARD), Indonesia
Empresa Brasileira de Pesquisa Agropecuária (Embrapa), Brazil
Institut de Recherche Agricole pour le Dévéloppement (IRAD), Cameroon
Instituto Nacional de Investigación Agraria (INIA), Peru
Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), Philippines
Royal Forest Department (RFD), Thailand

Other main developing country partners (by region).
(All are public institutions or NGOs in developing countries, except where indicated by an asterisk).

Amazon
Amazon Initiative Consortium (AI), Brazil
Asociación de Mujeres Campesinas de Ucayali (AMUCAU), Peru
Asociación de Productores de Semillas Mejoradas, Plantones, y Madera de Alta Calidad (PROSEMA), Peru

Asociación para la Conservación de la Cuenca Amazónica (ACCA), Peru
Consorcio de Desarrollo de Ucayali (CODESU), Peru
Grupo Empresarial Amazonico del Peru S.A. (GEA), Peru
Instituto de Investigaciones de la Amazonia Peruana (IIAP), Peru
Instituto Nacional de Recursos Naturales (INRENA), Peru
Patcha Mama Amazonia, Rio Branco, Brazil
PESACRE, Rio Branco, Brazil
Universidad de Ucayali (UNU), Peru
Universidad de la Amazonia Peruana (UNAP), Peru
Universidad Nacional Agraria La Molina (UNALM), Peru
Universidade de Brasilia, Brazil
Universidade Federal de Lavras, Brazil

West and Central Africa
Central Africa Regional Program for the Environment (CARPE), Cameroon
Ngul Nti ("Strength of God") Farmer Group, Cameroon
Sustainable Tree Crops Programme (STCP), coordinated by IITA, Cameroon
Twan-Toh Mixed Farming Common Initiative Group (MIFACIG), Cameroon
Universite D'abobo-Adjame, Cameroon
University of Yaoundé, Cameroon

Other Africa
Gestion des Espaces Ruraux et de l'Environnement à Madagascar (GEREM), Institut de Recherche pour le Développement (IRD), Madagascar

Southeast Asia
Association of Indonesian Rubber Processors (GAPKINDO)*
Bogor Agricultural University (IPB), Indonesia
CARE-Thailand
Center for Agro-Socioeconomic Research (CASER), Indonesia
Center for Soil and Agroclimate Research (CSAR), Indonesia
Chiang Mai University (CMU), Thailand
Claveria Landcare Association, Philippines
Family of Nature and Environment Lovers-Lampung (Watala), Indonesia
Forest Products and Socio-Economics Research Development Center (FPSERDC), Indonesia
Forestry and Estate Crops Research and Development Agency (FORDA), Indonesia*
Gaja Made University, Indonesia
Human Kemasyarakatan (HKM) Associations, Indonesia
Indonesian Tropical Institute (LATIN), Indonesia
Lampung University, Indonesia
Lantapan Landcare Association, Philippines
Ministry of Natural Resources and Environment (MoNRE), Thailand
Misamis Oriental School of Agriculture & Technology, Philippines
National Agriculture and Forestry Research Institute (NAFRI), Laos
Philippine Council for Agriculture, Forestry and Natural Resources Research and
Replanting and Land Rehabilitation Division, Department of Forestry, Indonesia
Rewarding the Upland Poor for Environmental Services (RUPES) Project
Rubber Research Institute, Sembawa, Indonesia

Southeast Asian Regional Centre for Tropical Biology (SEAMEO-BIOTROP), Indonesia
University of Brawijaya, Indonesia
University of the Philippines, Los Baños, Philippines

International Organizations and Investors
Australian Centre for International Agricultural Research (ACIAR)
Below-ground Biodiversity Project, coordinated by TSBF Institute
Centre de Cooperation Internationale en Recherche Agronomique pour le Développement (CIRAD), France
Centre for Biodiversity Management (CBM), Australia
Colorado State University, USA
Consultative Group on International Agricultural Research (CGIAR)
Cornell University, USA
Danish International Development Agency (DANIDA)
Department of Ecology, Faculty of Biology, Universidad Complutense de Madrid, Spain
Development Research Group of the World Bank, USA
Earth Institute at Columbia University, USA
EcoAgriculture Partners, USA
Forest Trends, USA
Global Environment Facility (GEF)
Global Partnership on Forest Landscape Restoration (FLR)
Government of Norway
Government of the Netherlands (DGIS)
Harvard University, USA
Institut de Recherche pour le Développement (IRD), France
International Fertilizer Development Center (IFDC)
International Institute for Sustainable Development (IISD), Canada
Millennium Ecosystem Assessment
Rainforest Challenge Partnership (IUCN – World Conservation Union, Worldwide Fund for Nature - WWF, ICRAF – World Agroforestry Centre, and others)

MTP Project Logframes

Theme: Land and People (LP)

ICRAF Project LP.1: Land and Soil Health

To assess the nature and extent of land and soil degradation problems and to develop the principles and options for using agroforestry systems to improve land management of smallholders.

Output LP.1.1: Land and soil degradation assessment methods and empirical results generated

Output Targets	Intended Users	Outcomes	Impacts
2007 **Key theme: wide area land degradation assessment methods and empirical results** **Other knowledge:** Electronic atlas and database of land degradation domains, land degradation trends and analysis of risk factors affecting land degradation in several sub-Saharan African countries, including Kenya and Mali. **Capacity:** Technical backstopping and capacity building on land degradation surveillance to CGIAR projects, including under the Sub-Saharan Challenge Programme; TerrAfrica, UNDP development programmes in Africa; and national research institutions in India, Kenya, Uganda, Mali, Mozambique	Scientists at national, international research institutes Development organizations Funding agencies Policy makers	Researchers use improved methods for land degradation and soil quality assessment Researchers, development organizations, and policy makers will better target programmes and policies towards the key land degradation and soil problems Development implementers use improved tools and knowledge to make more informed choices on improving land management.	Adoption of agroforestry systems that are better targeted to specific land degradation problems.
2008 **Practices:** Protocol developed for integrated assessment of soil, crop, and livestock health using infrared spectroscopy and national level soil degradation surveillance system tested in one African country. **Policies/Strategies:** Policy options for addressing land degradation in Africa widely disseminated.			
2009 **Capacity:** Technical backstopping and capacity building on land degradation surveillance and use of infrared spectroscopy in agriculture for national research institutions in ten countries.			

Output LP.1.2: Principles and options for agroforestry based sustainable land management developed.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Practices:** M&E and impact assessment methods for sustainable land management interventions developed **Other Knowledge:** Cross country comparisons of alternative agroforestry technologies and farmer innovations for soil fertility management in maize systems	Scientists at national and international research institutes Development organizations Extension systems Policy makers	Land management principles are used to enhance national soil fertility research agendas Improved agroforestry based land and soil management options will be developed and applied by development organizations Policy makers remove	Adoption of agroforestry systems that lead to rehabilitation of land and improved soil productivity and sustainability on smallholder farms.
2008 **Practices:** Guidelines for sustainable rehabilitation and enrichment of degraded landscapes developed and disseminated **Other Knowledge:** Analysis of the effects of agroforestry in farmer and community land management efforts including tradeoffs (productivity x environmental services) and effects on high value crop enterprises.			

2009 **Policy/Strategies:** Policy options for wider use of agroforestry for soil fertility improvement disseminated in Africa. **Other Knowledge:** Lessons for technological, institutional, and policy interventions for sustainable land management in Africa identified.		barriers to wider use of agroforestry in sustainable land management.	

ICRAF Project LP.2: Smallholder production systems

To understand smallholder constraints and opportunities and to develop principles and options for improved agroforestry management on their farms.

Output LP.2.1: Smallholder farmer constraints and opportunities analyzed and potential agroforestry interventions identified

Output Targets	Intended Users	Outcomes	Impacts
2007 **Practices:** Fully functional economic decision OLYMPE models made available through ICRAF Web **Other Knowledge:** Analysis of household resources and poverty and implications for agroforestry and NRM for several major farming systems of Africa and South Asia. **2008** **Policies/Strategies:** Briefs meetings and workshops for policy makers on strategies to promote silvo-pastoral systems in LA. **Other Knowledge:** Analysis of household resources and poverty and implications for agroforestry and NRM for several major farming systems of Africa and South Asia and Latin America. **2009** **Policies/Strategies:** Priorities for national level research agendas on agroforestry systems for smallholders established.	Scientists at national and international research institutes Policy maker Development organizations Funding agencies	Researchers use improved ex ante methods and empirical information to enhance research agendas on agroforestry systems for smallholder farms Development programmes for smallholder farmers increasingly include agroforestry systems among intervention choices.	Widespread adoption of agroforestry systems that respond to priority constraints and opportunities and which increase farm level productivity, incomes, water productivity, and environmental resilience on smallholder farms.

Output LP.2.2: Principles and options for improved agroforestry management on smallholder farms developed.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Practices:** Models developed for prediction of pest problems in agroforestry and tested in southern Africa **Other Knowledge:** Synthesis of use, adoption, and impact of agroforestry in southern Africa, on impact of shade on coffee systems in East Africa, and on smallholder dairy farmers in East Africa. **2008** **Other Knowledge:** Synthesis of the spatial and community factors affecting the adoption of agroforestry the in southern Africa and analysis of constraints to adoption of agroforestry in South Asia. **Capacity:** Extension materials on management of agroforestry systems developed for southern Africa and on rubber and cocoa based agroforestry in southeast Asia.	Scientists at national and international research institutes Development organizations Extension systems	Development implementers use improved tools and knowledge to make more informed choices on integrating agroforestry into farming systems Improved agroforestry principles and options for smallholder farmers will be adapted and applied by development organizations	Widespread adoption of agroforestry systems that increase farm level productivity, incomes, water productivity, and environmental resilience on smallholder farms.

2009 **Other Knowledge:** Synthesis of experiences and lessons learnt on the adoption, promotion and impact of agroforestry and natural resource management technologies in Africa published			
Output LP.2.3 Principles and options for more effectively integrating agroforestry with water management at the farm scale developed and disseminated			
Output Targets	**Intended Users**	**Outcomes**	**Impacts**
2007 **Policies/Strategies:** Policy Guidelines for watershed based rainwater harvesting within IWRM developed and mainstreamed in at least 5 African countries **Other Knowledge:** Water use of Eucalyptus spp in different systems and environments assessed.	Development organizations Extension systems Policy makers	Development organizations and policy makers use principles and techniques for enhancing water use efficiency of trees and enhancing agroforestry development through improved water management to design more effective agroforestry programmes.	Widespread adoption of agroforestry systems that are supported by improved water harvesting methods and that increase farm level productivity, incomes, water productivity and environmental resilience on smallholder farms.
2008 **Other Knowledge:** Analysis of experiences and lessons from green water harvesting from eastern and southern Africa. Local innovations of watershed based rainwater harvesting systems in at least five African countries documented and lessons learnt			
2009 **Other Knowledge:** Impacts of agroforestry systems on water conservation and productivity assessed in South Asia.			

ICRAF Project LP.3: Institutions and Incentives for Agroforestry To develop institutional innovations and identify improved incentive mechanisms that promotes agroforestry adoption and management by smallholder farmers.			
Output LP.3.1: Options for improved collective action and other institutional mechanisms that promote smallholder agroforestry analyzed and developed			
Output Targets	**Intended Users**	**Outcomes**	**Impacts**
2007 **Practices:** Guidelines and decision support tools on scaling up AF practices, innovations, and policies developed. **Other Knowledge:** Analysis of the effectiveness of different scaling up approaches in east Africa, southern Africa, and southeast Asia. **Capacity:** Partner organizations trained in implementing relevant scaling up approaches in southern Africa	Policy makers at global, national, and local levels Development organizations Extension systems Funding agencies	Collective action institutions and systems will increasingly enhance innovation, promotion, and management of agroforestry by smallholder farmers.	More rapid diffusion and uptake of agroforestry systems and improved returns to smallholder farmers
2008 **Other knowledge:** (1) Assessment of impact potential of farmer training and field visits on adoption/adaptation of improved rubber agroforestry in SEA. (2) Evaluation of alternative dissemination methods in at least two African regions (3) Analysis of feasible institutions for involving vulnerable Amazon populations in innovation systems for agroforestry in LA.			
2009 **Other Knowledge:** Lessons learnt on best bet scaling up approaches to reach smallholder farmers with a range of agroforestry innovations			
Output LP.3.2: Options for improved policies and other incentive mechanisms that promote smallholder agroforestry analyzed and developed			
Output Targets	**Intended Users**	**Outcomes**	**Impacts**
2007 **Policies/strategies:** Policy options for increasing smallholder agroforestry disseminated to policy makers in southern Africa. **Other Knowledge:** The effect of property rights arrangements on management of resources at farm and landscape scales analyzed for east Africa	Policy makers at global, national, and local levels Development and funding organizations	Policy makers will undertake policy reforms that create more favourable incentives for agroforestry among smallholder farmers.	More rapid diffusion and uptake of agroforestry systems and improved returns to smallholder farmers
2008 **Other Knowledge:** Lessons learnt on the policy options, including property rights, for adoption and promotion of agroforestry and natural resource management technologies in eastern and southern Africa identified (2) Critical legal analysis of existing rules and institutions in the INRM domain in southeast Asia. **Capacity:** Policy forum to dialogue and increase awareness on property rights that benefit the poor to enhance livelihood.			
2009 **Policies/Strategies:** Lessons from the policy forum on property rights up/out scaled.			

Theme: Trees and Markets (TM)

ICRAF Project TM.1: Agroforestree Germplasm

To determine and support sustainable tree seed and seedling systems and wise management of agroforestry tree genetic resources.

Output TM.1.1: Tree Genetic Resources and Information

Agroforestry tree genetic resources and their associated information better characterised, documented, conserved and made available.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Materials:** - Germplasm explored and collected for at least 10 tree species - At least 3000 tree germplasm accessions conserved in long-term storage **Capacity:** - Agroforestry germplasm networks established in at least 3 regions	community based organisations, development agencies, extension agents, farmers, inter-governmental bodies involved in germplasm transfers, International Research Institutions, National policymakers, National Research Institutions, non-governmental organisations, producer associations, regional bodies involved in germplasm regulation, and tree seed marketers	Enhanced tree diversity on farm. Better conserved tree germplasm.	Increased and more diverse tree products produced on farm which lead to alleviation of poverty and food insecurity, and protection of the environment
2008 **Materials:** - Seed orchards of priority AF species established in at least 6 countries. **Other knowledge:** - Global tree databases updated and released including site suitability maps - Molecular characterisation of at least three AF tree species published			
2009 **Materials** - Improved clones of 4 tree species available			

Output TM.1.2: Seed and Seedling Systems

Informed and mobilised actors for better development of tree seed and nursery systems with decentralised approaches more incorporated.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Other knowledge:** - Gaps/constraints to high quality planting material identified and interventions for improvement suggested **Capacity:** - 2500 farmers trained in managing tree nurseries to research seedling supply	community based organisations, development agencies, extension agents, farmers, local policymakers, National policymakers, National Research Institutions, non-governmental organisations, producer associations, tree seed marketers	Sustainable seed and seedling systems operating. Enhanced tree diversity on farm.	More buffered and productive farm environment contributing to poverty alleviation, better human health and food security
2008 **Materials:** - Seed stands established with NARS and farmers to research decentralized supply **Practices:** - A generic manual for high quality seed and seedling production produced			

2009 **Policies/Strategies:** Policy options formulated and published for tree seed sector reform			
Output TM.1.3: On-farm management of tree genetic diversity Tree species diversity (intraspecifc and interspecific) better inventoried, utilised and conserved on farms			
Output Targets	**Intended Users**	**Outcomes**	**Impacts**
2007 **Practices:** - Training manual for tree diversity assessment produced **Other knowledge:** - Journal article on tree diversity richness of Sahelian parklands published **Practices:** - Management guidelines for genetic diversity of tree species adjacent to biodiversity hotspots in Africa developed - Extension publication prepared on farmer management of genetic diversity	community based organisations, development agencies, extension agents, farmers, local policymakers, National policymakers, National Research Institutions, producer associations	Tree genetic resources better conserved on farms Greater self-sufficiency of farmers in tree seed and seedling supply. Enhanced tree diversity on farm.	More sustainable and productive farm-forest landscape to alleviate poverty, food insecurity and environmental degradation
2008 **Other knowledge:** - Tree species suitability maps produced for at least two regions - Two journal articles produced on relationship of intraspecific diversity and tree abundance on farms			

ICRAF Project TM.2: Tree Domestication

To develop agroforestry tree germplasm and practices and facilitate their wide-scale adoption for improving rural livelihoods

Output TM.2.1: Participatory evaluation and analysis

New species, varieties, technologies and practices developed with farmers and other partners for greater feasibility, profitability and acceptability.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Materials** - Domestication demonstration trials established in at least three regions **Practices** - Tree-integration guidelines produced for diversification of cocoa farms **Other knowledge** - Farmer assessment manual produced	Community based organisations, extension agents, farmers, International Research Institutions, National Research Institutions, non-governmental organisations, producer associations, and regional bodies involved in tree networks.	Intensification of farming systems with more productive tree-based options taken up by farmers	Increased tree cover contributing to alleviation of poverty and food security, and protection of the environment.
2008 **Capacity** - At least 100 farmer groups trained in tree evaluation - At least 25 herbalists groups trained in medicinal tree cultivation			
2009 **Capacity** - At least 2000 farmers trained in vegetative propagation skills			

Output TM.2.2: Tree improvement and management

Improved provenances, varieties and clones developed for priority fruit, timber, medicine, fodder and other species, and better techniques for tree propagation and management identified.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Materials** - Three new progeny trials established - Superior clones of at least three fruit species available for mass multiplication **Practices** - Propagation protocols published for at least three tree species **Policies/Strategies** - Policy for East Africa regional introduction of elite exotic fruit tree germplasm written	Development agencies, marketers, inter-governmental bodies involved in germplasm transfers, International Research Institutions, National Research Institutions, producer associations, and regional bodies involved in tree networks.	Improved tree product markets and farmers earning high proportion and amount from AFTPs More productive tree-based options taken up by farmers	Greater income from tree products, and on-farm household benefits to human health and nutrition
2008 **Materials** - Superior clones of at least four fruit species available for mass multiplication **Practices** - Nursery techniques published for at least 10 species			

2009 **Other knowledge** - Four journal articles published on tree species performance - Publication on tree quality traits produced.			
Output TM.2.3: Improving dissemination and scaling up Dissemination and diffusion of new germplasm, technologies and practices better designed, targeted and implemented.			
Output Targets	**Intended Users**	**Outcomes**	**Impacts**
2007 **Practices** - Approaches for backstopping farmer nurseries published **Other knowledge** - Geo-spatial tree adoption maps produced in at least 2 regions **Capacity** - Farmer exchange visits organised in at least 3 regions	community based organisations, development agencies, extension agents, farmers, National Research Institutions, non-governmental organisations, producer associations	More productive tree-based options taken up by farmers. Farmers better organized and acting more collectively in marketing of tree products.	Increased food and nutritional security, and better incomes from more productive tree-based options.
2008 **Practices** - Guidelines for use as tree nursery operators as extension agents produced **Other knowledge** - Farmer uptake and impact assessment studies published for at least three tree types (e.g. fertilizer, medicinal, fruit)			
2009 **Capacity** - Farmer exchange programmes operational in at least 4 regions			

ICRAF Project TM.3: Marketing of Agroforestry Tree Products (AFTPs)

To improve the marketing of and demand for Agroforestry Tree Products (AFTPs).

Output TM.3.1: Market Research

Improved understanding of principles, practices and policies of tree product markets, and best marketing practices developed and promoted.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Practices** - Guidelines developed for rapid market/value chain analyses and tree product prioritization **Other knowledge** - Demand determined for tree products in at least two contrasting regions **Capacity** - Marketing Information System implemented for humid west Africa	certification bodies, community based organisations, development agencies, extension agents, farmers, inter-governmental bodies involved in trade, International Product Research Institutions, local policymakers, National policymakers, National Product Research Institutions, non-governmental organisations, private sector, producer associations, regional bodies involved in trade, and marketers.	Better functioning tree product markets. Farmers earning high proportion and amount from AFTPs.	Alleviation of poverty in rural farmers and traders. Enhanced trade and regional cooperation by poor countries.
2008 **Practices** - Functioning economic forecasting model used by partners **Other knowledge** - Demand forecast carried out for fruit tree products			
2009 **Policies/Strategies** - Market and price policy interventions and extent of planting area published:			

Output TM.3.2: Tree Product Development

Tree Product Directories produced and updated, and networks facilitated to undertake tree product research and create enterprise models for small-scale farmers and entrepreneurs, especially within public-private partnerships.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Practices** - recommendations for small-holder timber production published - Certification and labeling guidelines developed for medicinal tree products **Other knowledge** - Product quality analyses published for fruit trees	certification bodies, development agencies, extension agents, farmers, International Product Research Institutions, National Product Research Institutions, non-governmental organisations, private sector, producer associations, regional bodies involved in trade, and marketers.	Increased marketing of tree products Farmers earning high proportion and amount from AFTPs	Alleviation of poverty in rural farmers and traders. Enhanced trade and regional cooperation by poor countries.
2008 **Capacity** - Capacity of private sector partners increased to process medicinal tree products **Practices** - Small-level food processing and products of smallholder farmers promoted			
2009 **Capacity** Africa Tree Product Platform operational			

Theme: Environmental Services (ES)

ICRAF Project ES.1: Landscape interactions: Enhancing agroforestry contributions to sustainable landscape management			
Output ES.1.1: Watershed management: Design principles, simulation models and empirical studies for enhancing the contributions of profitable agroforestry to the preservation and restoration of watershed functions.			
Outputs Targets	**Intended Users**	**Outcome**	**Impact**
2007 **Practices:** Journal articles, synthesis volume and training manual produced on rapid hydrological assessment in the context of Environmental Service recognition and reward. **Other knowledge:** Pan-tropical review of watershed management practices and recommendations published in an Occasional Paper and refereed journal. Two journal articles or book chapters on the dynamics of poverty and property rights in the Nyando basin of Western Kenya. **Capacity:** Methods for rapid hydrological function assessment in the context of environmental service recognition and rewards are disseminated to partner organizations through training workshops in SE Asia and East Africa.	Negotiators and planners of water resource and watershed management; forestry agencies; development planners; environment conservation planners; researchers	Intended users have realistic understandings of the ways that agroforestry development, conservation agriculture, afforestation and deforestation affect water balances, water quality, and variation of river flow. Those understandings are used to design watershed management, agroforestry and afforestation programmes and policies that encourage agroforestry systems of benefit to farmer livelihood and the most crucial watershed functions.	Farmers adopt agroforestry and conservation agriculture systems that contribute to their livelihoods and crucial watershed functions. Tree cover and soil quality are enhanced in crucial parts of degraded watersheds.
2008 **Practices:** Research reports on ecological sanitation and hydrological functions of bamboo agroforestry for buffer zone protection in peri-urban areas and upper watersheds of Lake Victoria, including Mt. Elgon.			
2009 **Policies/Strategies:** Principles and guidelines for agroforestry options for rehabilitation of watersheds on the Black Nile. **Other knowledge:** Scientific report on trading water for carbon analysis of CDM.			
Output ES.1.2: Joint CIFOR / ICRAF Biodiversity conservation: Principles, approaches and practices that promote conservation, sustainable user and equitable sharing of biodiversity goods and services in landscape mosaics through better consideration of and integration with livelihoods and governance issues. {{Joint with CIFOR for the CIFOR / ICRAF Biodiversity Platform}}			
Outputs Targets	**Intended Users**	**Outcome**	**Impact**
2007 **Practices:** Rapid (agro)biodiversity assessment in the context of ES recognition & rewards (RABAES), defined and compared to the CIFOR multi-stakeholder landscape assessment (MLA) approach in two sites in SE Asia. **Capacity:** Training of in the use of agroforestry as a strategy for managing conservation landscapes conducted in at least 2 countries in SE Asia, one country in East Africa, and one country in the Upper Guinea Forest of West Africa.	Negotiators and planners of conservation landscapes; forestry and agricultural agencies providing extension support in conservation landscapes; environment and biodiversity researchers	Intended users have realistic understandings of the impacts of agroforestry and community forestry on biodiversity at multiple scales. That understanding informs biodiversity and agroforestry programmes that enhance farmer livelihoods and wild biodiversity.	Farmers adopt agroforestry and conservation agriculture systems that sustain farmers' livelihoods and enhance biodiversity conservation.
2008			
2009 **Other knowledge:** International journal article on the contribution of agroforestry biodiversity to human health and nutrition.			

Output ES.1.3: Trees in multifunctional landscapes Design principles, tools and participatory approaches for integrating agroforestry development and forest management into landscape management for biodiversity conservation and livelihood security.			
Outputs Targets	**Intended Users**	**Outcome**	**Impact**
2007 **Policies/Strategies:** Synthesis and case study papers on principles integrating agroforestry into management of conservation landscapes.	Research and development organizations concerned with harmonizing environmental stewardship and development in multi-functional landscapes.	Landscape management plans that better synergize enterprise development, conservation and environmental governance.	More resilient ecosystems and improved livelihoods in high priority landscapes
2008 **Other knowledge:** Peer-reviewed paper on the relationships between biodiversity with stability and productivity of tree-crop-livestock systems in Asia.			
2009 **Other knowledge:** Journal articles on the contributions of agroforestry development to biodiversity conservation in SE Asia and East Africa. **Capacity:** Training manual on agroforestry options for the management of conservation landscapes			

ICRAF Project ES.2: Climate Change: Fostering smallholder agroforestry as a pro-poor strategy for adaptation and mitigation of climate change { TC "Project TM.2: Sustainable seed and seedling systems for sound conservation and use of genetic resources of agroforestry trees" \f C \l "1" }

Output ES.2.1: Climate change mitigation:
Options and decision support tools for mitigating atmospheric greenhouse gas loading through smallholder agroforestry and other landscape restoration strategies.

Outputs Targets	Intended Users	Outcome	Impact
2007 **Practices:** Searchable databases of the production characteristics, economic value and carbon sequestration potential of indigenous trees assembled for Africa. **Other knowledge:** Analyses of the vulnerability of agroforestry and agricultural systems to climate variability and changing climates in Africa.	Researchers, policy analysts; Climate adaptation specialists and policy makers	Intended users have realistic understanding of the potential for various agroforestry systems to buffer against climate variability. Those perceptions inform land management, drought proofing and agroforestry development programmes.	Rural land use and livelihood systems are better able to cope with environmental risks.
2008 **Practices: Policies/Strategies:** Policy options articulated for enhancing the contributions of agroforestry and water management to risk buffering in a pilot watershed in the Lake Victoria basin of East Africa. **Other knowledge:** Improved understanding of how agroforestry contributed to tsunami recovery in Indonesia used disseminated to policy makers and policy shapers			
2009			

Output ES.2.2: Climate change mitigation:
Climate change adaptation: Empirical evidence, principles, and decision support tools for enhancing the contribution of agroforestry for buffering farmers and communities against the climatic variability associated with climate change.

Outputs	Intended Users	Outcome	Impact
2007 **Practices:** Validated practices for baseline assessment and monitoring in CDM pilot projects are disseminated to environmental agencies across the developing world **Other knowledge:** Peer-reviewed publication on the nitrous oxide emission from agroforestry systems using legume tree biomass as surface mulch	Researchers, policy analysts; National environment agencies and climate change negotiators; designers of CDM projects	Smallholder agroforesters across the tropics participate actively in CDM and other voluntary emission reduction projects	Smallholder farmers receive a significant share of the benefits from CDM projects.
2008 **Practices:** Dissemination of agroforestry technologies that sequester additional carbon as well as improve farmer livelihoods **Other knowledge:** Three MSc theses completed on changes in carbon stocks associated with current and plausible future land uses in Southeast Asia. At least 2 papers on results of the early stages of implementation of CDM pilot projects.			
2009			

ICRAF Project ES.3: Environmental policy: Harmonizing policy for environmental stewardship and rural development			
Output ES.3.1: Harmonizing policy for environment and poverty goals: Assessments, tools and multi-stakeholder approaches for negotiation and harmonization of policies and strategies for rural poverty alleviation and environmental conservation.			
Outputs Targets	**Intended Users**	**Outcome**	**Impact**
2007 **Practices:** Refine, test and disseminate Rapid Tenure Assessment (RATA) tool for conflict resolution in agroforestry areas in Southeast Asia **Policies/Strategies:** Refereed paper on the application of Negotiation Support tools for improved watershed management in Indonesia **Other knowledge:** Special issue or edited book on the links between bi-laws, agroforestry and natural resource management, drawing from ICRAF work in the Sahel, East Africa, and Southern Africa. Asia Regional overview book on Forest Ownership	Environmental researchers, non-governmental organizations	Stakeholders in contentious resource use situations have better appreciation of each others' perspectives and interests	Less conflict and greater complementarities between different stakeholders in watersheds and conservation landscapes.
2008 **Other knowledge:** Refereed paper on experience and opportunities for the recognition of collective property rights in Indonesia.			
2009			
Output ES.3.2: Rewards for environmental services: Pilot studies, syntheses, and tools for designing mechanisms that recognize and reward smallholders for providing local, national and global environmental services.			
Outputs Targets	**Intended Users**	**Outcome**	**Impact**
2007 **Practices:** Mechanisms for rewarding the provision of environmental service operational in at least 2 additional sites in Asia and at least one additional site in Africa. **Other knowledge:** A special issue of a journal or edited volume summarizing the results of the pan-tropical scoping study of compensation for ecosystem services. Lessons learned from RUPES sites in Indonesia and the Philippines are published and used to support training and additional cases in Southeast Asia.	Environmental management agencies, non-governmental organizations, researchers, local government agencies	Successful environmental service mechanisms implemented in a range of sites across Africa, Asia and Latin America.	Critical ecosystem services maintained and farmer welfare enhanced in the selected sites in Africa, Asia and Latin America.
2008 **Policies/Strategies:** Framework and design principles for projects that reward smallholder farmers for watershed protection services through appropriate agroforestry practices developed. Policy options for incentive systems to reward smallholder agroforesters for environmental services in Southern Africa formulated and disseminated. **Other knowledge:** Case studies on payments for environmental services. Implementation of an African-wide project on Rewards for Ecosystem Services.			

2009 **Policies/Strategies:** At least one paper on the contradictions among institutions created for the implementation of PES schemes, existing conventional institutions and traditional institutions. **Other knowledge:** Case studies on payments for environmental services operational in a range of sites across Asia and Africa.			
Output ES.3.3: Agroforestry in international policy: Syntheses, policy studies, and support to developing country negotiators on how multi-lateral environmental agreements, regional conventions, and national action plans can be modified to enhance the contributions of agroforestry.			
Output Targets	**Intended Users**	**Outcome**	**Impact**
2007 **Policies/Strategies:** Inventory of natural resource use policies for six countries of the Amazon basin.	Negotiators for multi-lateral environmental agreements; planners for regional environmental plans (e.g. NEPAD); Global Environmental Facility; regional organizations; international policy shapers (e.g. World Bank, IUCN)	International and regional conventions, agreements and action plans are modified to better facilitate the contributions of smallholder farmers practicing agroforestry.	Enhanced tree planting and management in conjunction with the implementation of international and regional environmental agreements
2008			
2009			

Theme: Strengthening Institutions (SI)

ICRAF Project SI.1: To strengthening the capacity for Agroforestry and NRM science at national institutions and systems

Output SI.1.1: Understanding AF/NRM science and technology policies
Diagnosis and recommendations on the way agroforestry and natural resource management can be integrated into national science, technology and education policies and programmes.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Practices:** A guide for Agroforestry learning programmes in ECA region, joint research design developed by 3 pairs of research and education institutions in Latin America and an international workshop on improving forestry education hosted at ICRAF. **Policies/Strategies:** Policy briefs on institutionalizing agroforestry and NRM at academic and research institutions and at least 2 strategic plans by universities/NARIs in Africa.	Colleges and universities in the countries involved in the project; faculty, research institutes, government ministries, students, researchers	Improved coordination of and integration of research with education and extension Policy makers are aware and take Agroforestry into consideration when undertaking institutional developments	A contribution to the global growth in scientific research and innovation in Agroforestry and NRM. Policy makers recognize complex landscape functions and incorporate the knowledge in decision making especially on institutions
2008 **Practices:** A manual and learning materials to support learning at postgraduate Agroforestry education and five pairs of institutions (research and education) assisted to develop joint research and education programmes in Latin America. **Policy/Strategies:** A common **s**trategy paper for integrating natural resource sciences at training institutions.			
2009			

Output SI.1.2: Agroforestry research and teaching capacity
Graduates of Masters and PhD degree programmes, mentored young research scientists and improved academic and research programmes

Output Targets	Intended Users	Outcomes	Impacts
2007 **Capacity:** 10 graduate students complete their thesis research at ICRAF, 20 researchers from partner institutions in Southern Africa trained in agroforestry research methods, 30 faculties trained in Africa and Southeast Asia and 30 lecturers mentored on production of learning materials on landscape agroforestry in SEA. **Practice:** A manual/guide on landscape Agroforestry for SEA region.	Prospective students, Universities, technical colleges, NARS, industry, government ministries and private sector	Universities and NARIs employ highly qualified scientists to improved quality of research in Agroforestry	Improved and well-integrated national research programmes
2008 **Capacity:** 11 graduate students complete their thesis research in ECA (5), Southern Africa (3) and Southeast Asia regions (3), 40 researchers and educators mentored to carry out own research in Southern Africa and six jointly submitted articles, and 24 MA/MS theses in Latin America and 10 researchers mentored to carry out own research in Southern Africa. **Policy and strategies:** - Three pairs of institutions (research + education) assisted to develop joint research and education programmes in L. America			

2009 **Capacity:** 2 PhD and 5 MSc graduates and 10 faculty trained in Africa and Asia			
Output SI.1.3: Institutionalization of Agroforestry and NRM Agroforestry and natural resource management institutionalized into National Agricultural Research Institutions and in institutions of learning			
Output Targets	**Intended Users**	**Outcomes**	**Impacts**
2007 **Policies/Strategies:** Policy tools strategies for incorporating agroforestry into Poverty Reduction Strategy Papers (PRSPs) in African countries (ECA and AHT regions), two forums on rainwater harvesting held for policy makers in the ECA region **Practice:** Three pairs of institutions (research + education) assisted to develop joint research and education programmes in L. America and two colleges assisted to generate own learning materials **Capacity:** ANAFE registered as an international NGO supporting agric and NRM education, five colleges in Southern Africa assisted to mainstream AF into teaching programmes and four NAFTs receive grants and manage own programmes	Policy makers, managers of education and training institutions, ministries for education and labor, researchers, farmers research institutes, international research bodies, NGOs	Institutions actively apply integrative principles in the design of education and research programmes	Overall growth of global capacity for integrative management of natural resources on farming landscapes
2008 **Capacity:** Taskforces formed to establish national Agroforestry research programmes in 4 Latin American countries **Practices:** Synthesis of a capacity building project results/methods produced and shared; tools developed to assess the impact of linking institutions and professions for promoting market-led production in ECA region and three pairs of institutions (research and education) assisted to develop joint research and education programmes in Latin America;			
2009 **Capacity:** SEANAFE registered as an international NGO supporting agric and NRM education and CGIAR training community meeting to produce system strategy			

ICRAF Project SI.2: To enhancing capacity for sharing Agroforestry and NRM innovations to leverage scaling up			
Output SI.2.1 Characterization of and partnering with development institutions Improved learning resources and tools, policy briefs and institutional frameworks for partner networks and development organizations to enable scaling up agroforestry approaches			
Output Targets	**Intended Users**	**Outcomes**	**Impacts**
2007 **Practices:** Principles in the development of learning programmes developed jointly with national institutions in Bhutan, Sri Lanka and India, an Agroforestry research training guide produced and shared (HQ and ECA region), training guides for development workers developed for South Asia and Sahel. A complete database on agroforesty capacity needs for 4 Sahelian countries compiled **Capacity:** 20 South Asian policy makers exposed to AF innovations and opportunities through visits to research sites and four specialized training courses designed and implemented to benefit 80 scientists, complemented by 10 small grants. **Policy/Strateg**y: An analysis of capacity needs and best-bet tools and approaches for integrating natural resource management into schools and non-formal education programmes, based on results of studies in 3 sub-Saharan Africa countries. An article on school links with rural communities for development and an appraisal of partnerships published.	Universities, technical colleges, NGOs involved in farmer support and training activities, NARS, trainers, extension agents, rural institutions (schools, religious institutions, cooperatives), CBOs	National institutions have better access to Agroforestry and NRM knowledge products and use them in their work.	Agroforestry knowledge plays a significant role in knowledge and decision systems
2008 **Policies/Strategies:** A synthesis on instructional design for on-line Agoforestry learning resources; a strategy for Experiential Learning Watersheds in 4 countries in ECA region; and a synthesis and strategy for advancing the positive results from Farmers of the Future project **Capacity:** 20 South Asian policy makers exposed to AF innovations and opportunities through visits to research sites, regional institutions launch a common regional AF training programme in Latin America and a partnership on HIV & AIDS education in relation to Agroforestry in Zambia formed **Practices:** teaching materials and curriculum guide on landscape AF in 5 languages in SE Asia, regional materials and curriculum guide on forestry and environmental policies in SE Asia, two teaching guides on Agroforestry topics in Africa ii) One extension guide drafted for AHT region and Amazon initiative web-site and intranet accessible to farmer organizations			

2009 **Other Knowledge:** A fully operational Amazon-wide regional Agroforestry database with inclusion of information from the 6 Amazon countries **Capacity:** National partners enabled to link production with commercialization and post-harvest management in ECA region **Practice:** A repository of relevant teaching and learning materials on natural resource management targeting young people and educators in sub-Saharan Africa.			
Output SI.2.2 : Collaboration and Networking Processes, mechanisms, tools and networks for capturing and sharing agroforestry and natural resource management innovations and knowledge.			
Output Targets	**Intended Users**	**Outcomes**	**Impacts**
2007 **Practices:** A guide on on-line learning opportunities and challenges in Agroforestry; and a synthesis of case studies on farmer linking institutions and mechanisms **Policy/Strategies:** Briefs to policy makers (in Ethiopia, Kenya, India, Sri Lanka an Bangladesh) on Agroforestry policies; a synthesis on effective partnership approaches. **Capacity:** Four Agroforestry learning resource centers established with local development organizations in Africa and three National Agricultural Forums for Training (NAFTs) established in Africa.	NGOs involved in farmer support and training activities, NARS, trainers, extension agents, rural institutions (schools, religious institutions, cooperatives), CBOs, educational institutions, research institutions, donors and governments.	A culture of exchanging knowledge and experiences among farming communities, networks and institutions will grow	Agroforestry and NRM knowledge and experiences shared rapidly and globally
2008 **Other knowledge:** A synthesis report targeting the scaling up of pilot program on contextualized education in L America, AF teaching materials developed for the South Asia region, synthesis of knowledge on domestication, marketing an post-harvest research in ECA region, CGIAR training community formed and on-line learning Resources repository fully established. **Capacity:** 3 national networks mobilized funded by own resources and 2 more networks secured partial funding in SE Asia and two NAFTs formed and operational in Southern Africa. **Practice:** Inter-institutional training mechanisms for AF established for the South Asia region.			
2009 **Other knowledge:** A website for training institutions in the Sahel (RAFT-Sahel), ANAFE is linked to other leading global and regional networks, all four RAFTS have newsletters produced biannually and an analysis of partnerships for scaling up published.			

Eco-regional Programme: African Highlands Initiative (AHI)

ICRAF Project AHI.1: INRM Innovations in Pilot Sites

To develop and promote demand-driven INRM innovations at watershed and district levels.

Output AHI.1.1: Pilot Implementation of Integrated Watershed R&D Interventions

AHI partners develop and use an integrated, participatory NRM approach and associated methods to develop and adapt practical technologies and practices that improve land use, increase returns to land and labour, arrest land and biodiversity degradation in the highlands and empower local communities to sustain these efforts.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Materials:** Lessons and impacts consolidated and published on: (i) Phase 2 and Phase 3 work; (ii) collective action processes; and (iii) systems intensification work in the perennial-based systems of Ethiopia.	Government ministries; NGOs; research institutes; CBOs.	Communities in highland areas have increased income and optimized yields from diverse farm components while conserving system nutrients, water and biodiversity.	(i) More integrated management of natural resources (soil, crops, livestock, water, trees); (ii) More sustainable production; (iii) More income and food and reduced vulnerability of rural households; (iv) Stabilized or increased provision of environmental services.
2008 **Strategies:** New strategies for addressing "intractable" challenges in benchmark sites and inducing change in decision-makers designed and undergoing implementation as a result of impact assessments and "watershed phase" evaluation.			
2009 **Strategies:** New practices for advancing AHI research into new areas identified in the AHI Priority-Setting Exercise (*compensation for environmental services; resilience and risk management*) are undergoing implementation in pilot sites and institutions.			

Output AHI.1.2 Pilot Implementation of District Institutional Innovations for INRM

Support is provided by AHI partners to local policy makers and R&D stakeholders to analyze, formulate and test novel institutional (market, policy, organizational) innovations to reverse land and biodiversity degradation and improve livelihoods.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Capacity:** In-field mentoring of trainees in new sites / countries fosters more coordinated efforts by district-level actors; enhances synergies among system components and land users; enables improved use of limited on-farm resources through identification of "win-win" land management practices; improves environmental governance; facilitates community-based NRM; and enhances integration of AHI project portfolio.	NARIs, NGOs, extension personnel and local government, who are targeted for increased cooperation and use of INRM approaches to support income generation, improved natural resource management and governance, and local adaptive capacity.	(i) NARIs, NGOs, extension and local government are more capable of cooperating with one another and empowering communities to enable more optimal outcomes to diverse system goals	(i) More integrated management of natural resources for optimal returns from land and investments (income, food, water, fuel and marketable products); (ii) Improved capacity of and coordination among district R&D institutions; (iii) Better
2008 **Strategies:** New strategies for inducing change in district institutional arrangements, policies and key decision-makers designed and undergoing implementation as a result of impact assessments and "watershed phase" evaluation.			

2009 **Materials:** Knowledge gained through CGS-supported research, follow-up to capacity building events and preliminary lessons from emerging research themes is consolidated, published and developed into training materials for district actors.		and users; (ii) Community members are more able to monitor and evaluate, to negotiate and link with outside actors to advocate for their interests, and to govern development processes and natural resource management.	targeted technologies and higher rates of adoption of NRM technologies; (iv) Reduced conflict and vulnerability through improved governance of development processes and the environment; (v) More effective institutional arrangements for INRM, scaling up and community mobilization.

ICRAF Project AHI.2: Scaling Up and Institutionalization of INRM Methods Tested in Pilot Sites

To enable more widespread impact from INRM through analysis, documentation and dissemination of lessons and methods, and increased institutional investment and change among R&D organizations.

Output AHI 2.1: Institutional Change in Support of INRM

Institutional change in support of integrated, participatory NRM is strengthened among research and development organizations across the ecoregion through advocacy, self-led organizational change, capacity building and mentoring.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Capacity:** (i) Capacity building and technical backstopping on the use of INRM methods developed in benchmark sites is conducted in new sites and countries; (ii) INRM partnerships and/or consortia to research diverse institutional models for institutionalizing INRM in 3 countries formed.	Research and development organizations (NARIs, NGOs, extension organizations, local government, universities)	(i) Improved capacity of NARIs, NGOs, extension personnel and government employees to integrate INRM methods into everyday practice; (ii) Staff from research, development and educational institutions supported through organizational structures, processes and technical support services in the application of INRM principles and methods.	More widespread impact (*as specified in Outputs 1.1 and 1.2)* from institutionalization of INRM approaches within national and regional R&D organizations and partnerships.
2008 **Materials**: 1 dissertation and 2 peer reviewed papers published on principles and practices of institutional change and distributed to R&D partners in the region.			
2009 **Policies/Strategies:** Strategies for far-reaching institutional change under implementation due to lessons learned from impact monitoring of scaling up strategies (capacity building, mentoring, self-led institutional change, CGS); a "critical mass" of R&D practitioners versed in and "championing" the INRM approach; and strengthened regional coordination of regional scaling up and institutionalization strategies.			

Output AHI 2.2 Knowledge Management

Increased knowledge base of R&D actors at national, regional and global levels on INRM principles, methods and impacts through improved information capture, packaging and sharing.

Output Targets	Intended Users	Outcomes	Impacts
2007 **Materials**: At least 30 final knowledge and training products produced for identified target groups (farmers, research and development practitioners, policy makers) finalized by site and regional team members under IDRC Knowledge Management grant; products to include peer-reviewed papers, AHI Methods Guides, AHI Briefs, leaflets, posters and online library.	Research, development and educational institutions and practitioners at national, regional and global levels.	(i) Increased awareness and application of the principles and practice of INRM among R&D organizations and professionals in the ECA region and beyond	More widespread regional and global impact (as in Outputs 1.1 and 1.2) of INRM from improved knowledge management (*monitoring, documentation, synthesis, analysis and dissemination of lessons and methods from pilot sites and projects*), technical support and networking.
2008 **Policies/Strategies:** Regional program strategies finalized based on comprehensive literature reviews, partnership building and evaluations and under implementation: (i) networking strategy (Landcare, GMP); (ii) GMP strategy for linking suppliers of R&D products with institutions working on mountain R&D in Africa; and (iii) AHI Communication Strategy.			

2009 **Materials:** Lessons on institutionalizing INRM and Landcare approach within regional R&D organizations and initiatives consolidated and published as methods guides, working papers and peer review articles.			

Systemwide Programme: Alternatives to Slash-and-Burn (ASB)

ICRAF Project ASB: Alternatives to Slash-and-Burn (ASB)

Output ASB.1: Knowledge on development-conservation tradeoffs in the tropical forest margins

Output Targets	Intended Users	Outcomes	Impacts
2007 **Knowledge:** A comprehensive, targeted dissemination strategy including communication of knowledge, shaping policies and other outcomes, and enhanced visibility of ASB. **2008** **Policies/Strategies:** A policy outcome strategy. Complimentary global, regional and national communication strategies and an overall publication strategy for the consortium **2009** **Knowledge:** Define parameters for measuring success-both direct and indirect and document the impacts of the programme's knowledge products on key audiences, including but not limited to publications impact factors.	Scientists, Donors, Policy makers and policy analysts, university teachers and students NGOs. Policy makers and policy analysts, university teachers and students. Scientists, Donors, Policy makers and policy analysts, university teachers and students NGOs. Scientists, Donors, Policy makers and policy analysts, university teachers and students NGOs.	**Knowledge and attitudes**: improved awareness and understanding of driving forces, tradeoffs, and appropriate responses by policy makers, scientists, and public; including awareness of need to integrate new natural resource management (NRM) practices and better governance as well as understanding that this integration is feasible (scales: global, continental/regional, national) **New practices**: diffusion, adaptation, and adoption of new NRM practices by smallholders; including improved germplasm and technological innovations (scales: continental/regional, national, local). **Appropriate incentives**: institutional innovations to create rewards that value global public goods and other environmental services marketing and trade policy reforms that reduce perverse incentives.	Knowledge generation and communication to influence science, policy, private sector, and public awareness of development-conservation tradeoffs and thereby raise the level of awareness of real challenges, public debate about alternatives, and support for appropriate policy reform and research, development, and education investments.

Output ASB.2: Global network for the tropical forest margins

Output Targets	Intended Users	Outcomes	Impacts
2007 **Capacity:** Complete renaming and rebranding ASB. Comprehensive fundraising strategy, clarification of roles of the actors operating at different levels within the programmme in conjunction with improved institutional incentives; external advisory committee terms of reference. External advisory committee appointed. Develop and implement monitoring and evaluation systems for ASB inputs, outputs and their uptake.	International and national research institutions International and national research institutions. International and national research institutions.	**Better governance:** implementation of institutional innovations and policy reforms that support adoption of appropriate practices and secure access to resources for the rural poor and conservation of globally-significant habitat (scales: global, continental/regional, national, local); integration of development and environment strategies at the national level.	Sustaining and developing the only global network devoted to work on the tropical forest margins. Development and diffusion of new organizational learning and change processes that link integrative science with policy and practice in the search for better approaches to poverty reduction, natural resource management, and rainforest conservation

2008 **Capacity:** Institutional mechanisms so that decision making is open to input from GSG new members, and from stakeholders in the ASB domain not formally represented on the GSG; ASB stakeholders to identify and evaluate future paths for the ASB Consortium in a fully consultative process. Global Coordination Office will develop and implement standard comparative metrics in the areas in which it works.			
2009 **Capacity:** Impact assessment methods to document ASB impacts in the areas in which it works.			
Output ASB.3: Enhanced capacity of partners to generate knowledge and develop workable interventions			
Output Targets	**Intended Users**	**Outcomes**	**Impacts**
2007 **Capacity:** Strategy for bringing young scientists along and into leadership positions within the network.	International and national research institutions. International and national research institutions. International and national research institutions.	**Organizational capacity**: stronger institutions in developing countries; new ways of "doing business" in the CGIAR and other international organizations; investments in people (primarily in developing countries) who can contribute to the search for solutions to the global problems of mass poverty and loss of natural habitat.	Strengthened capacity of ASB partners to lead and sustain their own programs of integrated assessment, research, development, communication, education and action for poverty reduction, natural resource management, and rainforest conservation.
2008 **Capacity:** Capacity building strategy and a way to assess its effectiveness. Start with global and regional needs assessment and work thorough to appropriate outputs and desired outcomes			
2009 **Capacity:** M&E systems and indicators for capacity building and institutional strengthening outcomes.			

ANNEX 1 – Financial Tables

World Agroforestry Centre (ICRAF)
Table 22: Cost Allocation: Financial Requirements by CGIAR System Priority 2007

	System Priority 1	System Priority 2			System Priority 3			System Priority 4			System Priority 5				Non-Priority area			
Center Projects	Priority 1B	Priority 2A	Priority 2C	Priority 2D	Priority 3A	Priority 3B	Priority 3D	Priority 4A	Priority 4C	Priority 4D	Priority 5A	Priority 5B	Priority 5C	Priority 5D	Development Activities	New Research Areas	Stand-alone Training	Total
AHI: African Highlands Ecoregional Programme		0.022	0.022		0.022	0.022	0.022	0.372	0.022	0.139	0.137	0.097	0.139	0.371				1.387
ASB: Alternatives to Slash-and-Burn Systemwide Programme							0.027	0.273			0.274	0.027	0.027	0.027				0.655
Project ES1: Landscape interactions							0.345	2.010	1.480	0.008								3.843
Project ES2: Climate change.								0.071		0.015			0.041					0.127
Project ES3: Environment policy.							1.263	1.399						0.372				3.034
Project LP1: Land and soil health.										1.506								1.506
Project LP2: Smallholder production systems.							0.061		0.061					1.200				1.322
Project LP3: Institutional innovations and incentives.													2.981					2.981
Project SI1: Enhancing national capacity.								1.126			2.478							3.604
Project SI2: Knowledge Management.													1.093				0.728	1.821
Project TM2: Tree Domestication.				1.533										0.719				2.252
Project TM3: Marketing of AFTPs.					2.095		0.698					0.698						3.491
Project TM1: Agroforestry Germplasm.	0.954							0.258							0.285	1.000	0.143	2.640
Total	0.954	0.022	0.022	1.533	2.117	0.022	2.416	5.509	1.563	1.668	2.889	0.822	4.281	2.689	0.285	1.000	0.871	28.663

World Agroforestry Centre (ICRAF)
Table 23: Cost Allocation of Resources by CGIAR System Priority 2006 – 2009
In millions of US dollars

Priorities	Estimated 2006	Proposal 2007	Plan 1 2008	Plan 2 2009
Priority 1B	0.954	0.992	1.022	1.042
Priority 2A	0.022	0.023	0.024	0.024
Priority 2C	0.022	0.023	0.024	0.024
Priority 2D	1.533	1.594	1.642	1.674
Priority 3A	2.117	2.202	2.268	2.312
Priority 3B	0.022	0.023	0.024	0.024
Priority 3D	2.416	2.513	2.589	2.638
Priority 4A	5.509	5.730	5.901	6.017
Priority 4C	1.563	1.625	1.674	1.707
Priority 4D	1.668	1.735	1.787	1.822
Priority 5A	2.889	3.004	3.096	3.155
Priority 5B	0.822	0.855	0.881	0.897
Priority 5C	4.281	4.453	4.586	4.675
Priority 5D	2.689	2.797	2.880	2.935
Development Activities	0.285	0.296	0.305	0.311
Stand-alone Training	0.871	0.906	0.933	0.951
New Research Areas	1.000	1.040	1.071	1.092
Total	28.663	29.811	30.707	31.300

World Agroforestry Centre (ICRAF)
Table 24: Cost Allocation: Project Cost Summary, 2006-2009
In $ millions

Project	Estimated 2006	Proposal 2007	Plan 1 2008	Plan 2 2009
AHI: African Highlands Ecoregional Programme	1.387	1.444	1.489	1.515
ASB: Alternatives to Slash-and-Burn Systemwide Programme	0.655	0.681	0.702	0.713
Project ES1: Landscape interactions	3.843	3.997	4.117	4.197
Project ES2: Climate change.	0.127	0.133	0.136	0.139
Project ES3: Environment policy.	3.034	3.156	3.251	3.313
Project LP1: Land and soil health.	1.506	1.566	1.613	1.645
Project LP2: Smallholder production systems.	1.322	1.374	1.415	1.444
Project LP3: Institutional innovations and incentives.	2.981	3.100	3.193	3.255
Project SI1: Enhancing national capacity.	3.604	3.748	3.861	3.936
Project SI2: Knowledge Management.	1.821	1.894	1.951	1.989
Project TM1: Agroforestry Germplasm.	2.640	2.745	2.827	2.883
Project TM2: Tree Domestication.	2.252	2.342	2.412	2.459
Project TM3: Marketing of AFTPs.	3.491	3.631	3.740	3.812
Total	28.663	29.811	30.707	31.300

World Agroforestry Centre (ICRAF)
Table 25: Cost Allocation: Allocation of Project Cost to CGIAR Priorities
In $ millions

Projects Priorities	Estimated 2006	Proposal 2007	Plan 1 2008	Plan 2 2009
Project LP1: Land and soil health.				
Priority 4D	1.506	1.566	1.613	1.645
Total Project	1.506	1.566	1.613	1.645
Project LP2: Smallholder production systems.				
Priority 3D	0.061	0.063	0.065	0.067
Priority 4C	0.061	0.063	0.065	0.067
Priority 5D	1.200	1.248	1.285	1.310
Total Project	1.322	1.374	1.415	1.444
Project LP3: Institutional innovations and incentives.				
Priority 5C	2.981	3.100	3.193	3.255
Total Project	2.981	3.100	3.193	3.255
Project TM1: Agroforestry Germplasm.				
Priority 1B	0.954	0.992	1.022	1.042
Priority 4A	0.258	0.268	0.276	0.282
Development Activities	0.285	0.296	0.305	0.311
Stand-alone Training	0.143	0.149	0.153	0.156
New Research Areas	1.000	1.040	1.071	1.092
Total Project	2.640	2.745	2.827	2.883
Project TM2: Tree Domestication.				
Priority 2D	1.533	1.594	1.642	1.674
Priority 5D	0.719	0.748	0.770	0.785
Total Project	2.252	2.342	2.412	2.459
Project TM3: Marketing of AFTPs.				
Priority 3A	2.095	2.179	2.244	2.288
Priority 3D	0.698	0.726	0.748	0.762
Priority 5B	0.698	0.726	0.748	0.762
Total Project	3.491	3.631	3.740	3.812
Project ES1: Landscape interactions				
Priority 3D	0.345	0.359	0.370	0.377
Priority 4A	2.010	2.091	2.153	2.195
Priority 4C	1.480	1.539	1.585	1.616
Priority 4D	0.008	0.008	0.009	0.009
Total Project	3.843	3.997	4.117	4.197
Project ES2: Climate change.				
Priority 4A	0.071	0.074	0.076	0.078
Priority 4D	0.015	0.016	0.016	0.016
Priority 5C	0.041	0.043	0.044	0.045
Total Project	0.127	0.133	0.136	0.139
Project ES3: Environment policy.				
Priority 3D	1.263	1.314	1.353	1.379
Priority 4A	1.399	1.455	1.499	1.528
Priority 5D	0.372	0.387	0.399	0.406
Total Project	3.034	3.156	3.251	3.313
Project SI1: Enhancing national capacity.				
Priority 4A	1.126	1.171	1.206	1.230
Priority 5A	2.478	2.577	2.655	2.706
Total Project	3.604	3.748	3.861	3.936
Project SI2: Knowledge Management.				
Priority 5C	1.093	1.137	1.171	1.194
Stand-alone Training	0.728	0.757	0.780	0.795
Total Project	1.821	1.894	1.951	1.989
ASB: Alternatives to Slash-and-Burn Systemwide Programme				
Priority 3D	0.027	0.028	0.029	0.029
Priority 4A	0.273	0.284	0.292	0.298
Priority 5A	0.274	0.285	0.294	0.299
Priority 5B	0.027	0.028	0.029	0.029
Priority 5C	0.027	0.028	0.029	0.029
Priority 5D	0.027	0.028	0.029	0.029
Total Project	0.655	0.681	0.702	0.713
AHI: African Highlands Ecoregional Programme				
Priority 2A	0.022	0.023	0.024	0.024
Priority 2C	0.022	0.023	0.024	0.024
Priority 3A	0.022	0.023	0.024	0.024
Priority 3B	0.022	0.023	0.024	0.024
Priority 3D	0.022	0.023	0.024	0.024
Priority 4A	0.372	0.387	0.399	0.406
Priority 4C	0.022	0.023	0.024	0.024
Priority 4D	0.139	0.145	0.149	0.152
Priority 5A	0.137	0.142	0.147	0.150
Priority 5B	0.097	0.101	0.104	0.106
Priority 5C	0.139	0.145	0.149	0.152
Priority 5D	0.371	0.386	0.397	0.405
Total Project	1.387	1.444	1.489	1.515
Total	28.663	29.811	30.707	31.300

World Agroforestry Centre (ICRAF)
Table 26: Investments by Undertakings, Activities and Sectors, 2006 - 2009
In $ millions

	Estimated 2006	Proposal 2007	Plan 1 2008	Plan 2 2009
Increasing Productivity	4.099	4.263	4.391	4.476
Germplasm Enhancement & Breeding	1.126	1.171	1.206	1.230
Production Systems Development & Management	2.973	3.092	3.185	3.247
Cropping systems	0.000	0.000	0.000	0.000
Livestock systems	0.000	0.000	0.000	0.000
Tree systems	2.973	3.092	3.185	3.247
Fish systems	0.000	0.000	0.000	0.000
Protecting the Environment	5.050	5.252	5.410	5.515
Saving Biodiversity	3.688	3.836	3.951	4.028
Improving Policies	7.039	7.321	7.540	7.687
Strengthening NARS	8.787	9.139	9.413	9.596
Training and Professional Development	5.323	5.536	5.702	5.813
Documentation, Publications, Info. Dissemination	3.305	3.437	3.540	3.609
Organization & Management Couselling	0.159	0.165	0.170	0.174
Total	28.663	29.811	30.705	31.302

World Agroforestry Centre (ICRAF)
Table 27: Cost Allocation: Allocation of Project Cost to CGIAR
In $ millions

Project	Region	Actual 2005	Estimated 2006	Proposal 2007	Plan1 2008	Plan2 2009
AHI: African Highlands Ecoregional Programme	SSA	0.725	1.387	1.443	1.486	1.515
	Total Project	0.725	1.387	1.443	1.486	1.515
ASB: Alternatives to Slash-and-Burn Systemwide Programme	Asia	0.159	0.164	0.171	0.176	0.179
	LAC	0.159	0.164	0.171	0.176	0.179
	SSA	0.320	0.327	0.340	0.350	0.357
	Total Project	0.638	0.655	0.682	0.702	0.715
Project ES1: Landscape interactions	Asia	0.445	0.942	0.980	1.009	1.029
	LAC	0.000	0.000	0.000	0.000	0.000
	SSA	1.753	2.901	3.017	3.108	3.168
	Total Project	2.198	3.843	3.997	4.117	4.197
Project ES2: Climate change.	Asia	0.199	0.041	0.043	0.044	0.045
	LAC	0.000	0.000	0.000	0.000	0.000
	SSA	0.422	0.086	0.089	0.092	0.094
	Total Project	0.621	0.127	0.132	0.136	0.139
Project ES3: Environment policy.	Asia	1.643	1.433	1.490	1.535	1.565
	LAC	0.018	0.016	0.017	0.017	0.017
	SSA	0.901	1.585	1.648	1.698	1.731
	Total Project	2.562	3.034	3.155	3.250	3.313
Project LP1: Land and soil health.	Asia	0.203	0.084	0.087	0.090	0.092
	LAC	0.014	0.006	0.006	0.006	0.007
	SSA	3.436	1.416	1.473	1.517	1.546
	Total Project	3.653	1.506	1.566	1.613	1.645
Project LP2: Smallholder production systems.	Asia	1.370	0.823	0.856	0.882	0.899
	LAC	0.010	0.006	0.006	0.006	0.007
	SSA	0.819	0.493	0.513	0.528	0.538
	Total Project	2.199	1.322	1.375	1.416	1.444
Project LP3: Institutional innovations and incentives.	Asia	0.265	0.243	0.253	0.260	0.265
	LAC	0.000	0.000	0.000	0.000	0.000
	SSA	2.982	2.738	2.848	2.933	2.990
	Total Project	3.247	2.981	3.101	3.193	3.255
Project SI1: Enhancing national capacity.	Asia	0.732	0.850	0.884	0.911	0.928
	LAC	0.206	0.239	0.249	0.256	0.261
	SSA	2.166	2.515	2.616	2.694	2.747
	Total Project	3.104	3.604	3.749	3.861	3.936
Project SI2: Knowledge Management.	Asia	0.124	0.226	0.235	0.242	0.247
	LAC	0.036	0.078	0.081	0.084	0.085
	SSA	0.692	1.517	1.578	1.625	1.657
	Total Project	0.852	1.821	1.894	1.951	1.989
Project TM1: Agroforestry Germplasm.	Asia	1.605	1.085	1.128	1.162	1.185
	LAC	0.148	0.100	0.104	0.107	0.109
	SSA	2.149	1.455	1.513	1.559	1.589
	Total Project	3.902	2.640	2.745	2.828	2.883
Project TM2: Tree Domestication.	Asia	0.295	0.191	0.199	0.205	0.209
	LAC	0.127	0.082	0.085	0.088	0.090
	SSA	3.057	1.979	2.058	2.120	2.161
	Total Project	3.479	2.252	2.342	2.413	2.460
Project TM3: Marketing of AFTPs.	Asia	0.305	0.452	0.470	0.484	0.494
	LAC	0.066	0.098	0.102	0.105	0.107
	SSA	1.985	2.941	3.059	3.151	3.212
	Total Project	2.356	3.491	3.631	3.740	3.813
	Total	29.536	28.663	29.812	30.706	31.304

Summary by Region, 2005-2009

Region	Actual 2005	Estimated 2006	Proposal 2007	Plan1 2008	Plan2 2009
SSA	21.407	21.340	22.195	22.861	23.305
Asia	7.345	6.534	6.796	7.000	7.137
LAC	0.784	0.789	0.821	0.845	0.862
Total	29.536	28.663	29.812	30.706	31.304

World Agroforestry Centre (ICRAF)
Table 28: Expenditure by Object, 2005 – 2009
In $ millions

Object of Expenditure	Actual 2005	Estimated 2006	Proposal 2007	Plan 1 2008	Plan 2 2009
Personnel	13.486	14.146	14.570	15.007	15.299
Supplies and services	9.143	8.235	8.647	8.906	9.079
Collaboration/ Partnerships	1.926	2.287	2.399	2.471	2.519
Operational Travel	3.764	2.817	2.958	3.047	3.106
Depreciation	1.217	1.178	1.237	1.274	1.299
Total	29.536	28.663	29.811	30.705	31.302

World Agroforestry Centre (ICRAF)
Table 29: Financing: Members and Non-Members Unrestricted and Restricted
In $ millions

Member	Estimated 2006	Proposal 2007
Unrestricted Contributions		
Member		
Australia	0.189	0.190
Canada	0.656	0.680
China	0.020	0.020
Denmark	0.455	0.450
Finland	0.396	0.400
Germany	0.294	0.300
Ireland	0.824	0.850
Japan	0.172	0.180
Netherlands	0.272	0.270
Norway	0.448	0.440
Philippines	0.004	0.004
South Africa	0.020	0.020
Sweden	0.425	0.450
Switzerland	0.397	0.400
Thailand	0.008	0.008
United Kingdom	1.125	1.200
United States	0.567	0.560
World Bank	1.700	1.700
Sub total	7.972	8.122
Sub total	7.972	8.122
Restricted Contributions		
Member		

Member	Estimated 2006	Proposal 2007
Australia	0.393	0.409
Austria	0.061	0.063
Belgium	0.442	0.460
Canada	1.462	1.261
Denmark	0.106	0.110
European Commission	1.252	2.561
Ford Foundation	0.322	0.334
IDRC	0.915	0.952
IFAD	1.260	1.309
Italy	0.109	0.113
Japan	0.051	0.053
Netherlands	1.827	1.901
Norway	0.060	0.000
Peru	0.034	0.035
Rockefeller Foundation	0.060	0.062
Spain	0.333	0.346
Sweden	3.667	0.543
UNEP	0.346	0.360
United Kingdom	0.494	0.291
United States	2.645	2.750
World Bank	0.725	0.544
Sub total	16.564	14.457
Non-member		
ASARECA	0.870	0.905
Common Fund for Commodities	1.048	1.092
Global Environment Facility (GEF)	0.162	0.168
IFPRI	0.101	0.106
ILRI	0.017	0.018
IRRI	0.033	0.034
IUCN	0.020	0.020
Others	1.376	4.383
Sub total	3.627	6.726
Sub total	20.191	21.183
Total	28.163	29.305

World Agroforestry Centre (ICRAF)
Table 30: Allocation of Members/Non Members Grants to Projects, 2005 - 2007
In millions $

Project	Member		Estimated 2006	Proposal 2007
AHI: African Highlands Ecoregional Programme	Member	Canada	0.000	0.000
		IDRC	0.325	0.338
		Italy	0.109	0.113
		Netherlands	0.093	0.097
		Norway	0.060	0.000
		World Bank	0.091	0.000
	Non Member	ASARECA	0.616	0.641
		IFPRI	0.038	0.040
		Others	0.000	0.157
	Unrestricted + Center Income		0.055	0.058
		Project Totals	1.387	1.444
ASB: Alternatives to Slash-and-Burn Systemwide Programme	Member	Australia	0.000	0.000
		Netherlands	0.263	0.274
		World Bank	0.300	0.300
	Non Member	Others	0.000	0.012
	Unrestricted + Center Income		0.092	0.095
		Project Totals	0.655	0.681
Project ES1: Landscape interactions	Member	ADB	0.000	0.000
		Australia	0.141	0.147
		Canada	0.018	0.019
		European Commission	0.124	0.243
		Ford Foundation	0.079	0.082
		IDRC	0.050	0.052
		IFAD	0.012	0.012
		Netherlands	0.560	0.582
		Spain	0.005	0.005
		Sweden	0.487	0.246
		United Kingdom	0.115	0.120
		United States	1.670	1.737
		Common Fund for Commodities	0.013	0.014

Project	Member		Estimated 2006	Proposal 2007
		Others	0.211	0.366
	Unrestricted + Center Income		0.358	0.372
		Project Totals	3.843	3.997
Project ES2: Climate change.	Member	ADB	0.000	0.000
		Canada	0.041	0.043
		Netherlands	0.001	0.001
		United States	0.001	0.001
	Non Member	ASARECA	0.000	0.000
		Common Fund for Commodities	0.001	0.001
	Unrestricted + Center Income		0.083	0.087
		Project Totals	0.127	0.133
Project ES3: Environment policy.	Member	ADB	0.000	0.000
		Australia	0.009	0.009
		Canada	0.011	0.011
		Denmark	0.032	0.033
		European Commission	0.374	0.389
		Ford Foundation	0.135	0.140
		IDRC	0.252	0.262
		IFAD	0.142	0.148
		Netherlands	0.015	0.016
		Rockefeller Foundation	0.057	0.059
		Spain	0.023	0.024
		Sweden	0.005	0.005
		United Kingdom	0.091	0.095
		United States	0.005	0.005
	Non Member	ASARECA	0.003	0.003
		Common Fund for Commodities	0.016	0.017
		Global Environment Facility (GEF)	0.162	0.168
		Others	0.152	0.154
	Unrestricted + Center Income		1.550	1.618
		Project Totals	3.034	3.156
Project LP1: Land and soil health.	Member	ADB	0.000	0.000
		Australia	0.003	0.003
		Canada	0.169	0.176
		European Commission	0.001	0.187

Project	Member		Estimated 2006	Proposal 2007
		IDRC	0.004	0.004
		Netherlands	0.026	0.027
		Sweden	0.406	0.000
		UNEP	0.077	0.080
		United States	0.020	0.021
		World Bank	0.046	0.000
	Non Member	ASARECA	0.004	0.004
		IRRI	0.033	0.034
		Others	0.169	0.463
	Unrestricted + Center Income		0.548	0.567
		Project Totals	1.506	1.566
Project LP2: Smallholder production systems.	Member	ADB	0.000	0.000
		Australia	0.007	0.007
		Canada	0.064	0.067
		European Commission	0.020	0.144
		Ford Foundation	0.107	0.111
		IDRC	0.008	0.008
		IFAD	0.034	0.035
		Netherlands	0.030	0.031
		Spain	0.037	0.038
		Sweden	0.270	0.000
		United Kingdom	0.003	0.003
		United States	0.010	0.010
		World Bank	0.011	0.000
	Non Member	ASARECA	0.000	0.000
		Common Fund for Commodities	0.213	0.222
		IFPRI	0.063	0.066
		Others	0.015	0.185
	Unrestricted + Center Income		0.430	0.447
		Project Totals	1.322	1.374
Project LP3: Institutional innovations and incentives.	Member	ADB	0.000	0.000
		Australia	0.077	0.080
		Canada	0.443	0.200
		European Commission	0.001	0.391

Project	Member		Estimated 2006	Proposal 2007
		IDRC	0.046	0.048
		Netherlands	0.071	0.074
		Spain	0.039	0.041
		Sweden	0.755	0.005
		UNEP	0.263	0.274
		United Kingdom	0.036	0.037
		United States	0.177	0.184
		World Bank	0.027	0.028
	Non Member	ASARECA	0.004	0.004
		CIAT	0.000	0.000
		Common Fund for Commodities	0.020	0.021
		Others	0.112	0.767
	Unrestricted + Center Income		0.910	0.946
		Project Totals	2.981	3.100
Project SI1: Enhancing national capacity.	Member	Austria	0.000	0.000
		Belgium	0.036	0.037
		Canada	0.193	0.201
		European Commission	0.001	0.198
		Ford Foundation	0.001	0.001
		IDRC	0.089	0.093
		IFAD	0.173	0.180
		Netherlands	0.473	0.492
		Spain	0.024	0.025
		Sweden	1.035	0.076
		United Kingdom	0.018	0.019
		United States	0.135	0.140
		World Bank	0.071	0.074
	Non Member	ASARECA	0.002	0.002
		Common Fund for Commodities	0.013	0.014
		Others	0.306	1.117
	Unrestricted + Center Income		1.034	1.079
		Project Totals	3.604	3.748
Project SI2: Knowledge Management.	Member	Australia	0.000	0.000
		Belgium	0.004	0.004
		Canada	0.248	0.258
		European Commission	0.000	0.121

Project	Member		Estimated 2006	Proposal 2007
		IDRC	0.098	0.102
		IFAD	0.010	0.010
		Netherlands	0.200	0.208
		Peru	0.001	0.001
		Rockefeller Foundation	0.003	0.003
		Spain	0.035	0.036
		Sweden	0.425	0.042
		United Kingdom	0.016	0.017
		United States	0.142	0.148
		World Bank	0.027	0.028
	Non Member	CIAT	0.000	0.000
		Common Fund for Commodities	0.002	0.002
		Others	0.102	0.279
	Unrestricted + Center Income		0.508	0.635
		Project Totals	1.821	1.894
Project TM1: Agroforestry Germplasm.	Member	Australia	0.113	0.118
		Austria	0.000	0.000
		Belgium	0.013	0.014
		Canada	0.092	0.096
		European Commission	0.587	0.618
		IDRC	0.043	0.045
		IFAD	0.083	0.086
		Netherlands	0.028	0.029
		Peru	0.001	0.001
		Spain	0.092	0.096
		Sweden	0.016	0.010
		United Kingdom	0.002	0.000
		United States	0.007	0.007
		World Bank	0.092	0.096
	Non Member	ASARECA	0.222	0.231
		Common Fund for Commodities	0.165	0.172
		IUCN	0.009	0.009
		Others	0.019	0.020
	Unrestricted + Center Income		1.056	1.097
		Project Totals	2.640	2.745

Project	Member		Estimated 2006	Proposal 2007
Project TM2: Tree Domestication.	Member	Australia	0.043	0.045
		Belgium	0.001	0.001
		Canada	0.079	0.082
		Denmark	0.074	0.077
		European Commission	0.049	0.051
		IFAD	0.570	0.593
		Japan	0.051	0.053
		Netherlands	0.015	0.016
		Peru	0.002	0.002
		Spain	0.028	0.029
		Sweden	0.003	0.003
		UNEP	0.006	0.006
		United Kingdom	0.184	0.000
		United States	0.006	0.006
		World Bank	0.043	0.000
	Non Member	ASARECA	0.019	0.020
		Common Fund for Commodities	0.012	0.012
		ILRI	0.017	0.018
		IUCN	0.011	0.011
		Others	0.151	0.493
	Unrestricted + Center Income		0.888	0.824
		Project Totals	2.252	2.342
Project TM3: Marketing of AFTPs.	Member	Australia	0.000	0.000
		Austria	0.061	0.063
		Belgium	0.388	0.404
		Canada	0.104	0.108
		European Commission	0.095	0.219
		IFAD	0.236	0.245
		Netherlands	0.052	0.054
		Peru	0.030	0.031
		Spain	0.050	0.052
		Sweden	0.265	0.156
		United Kingdom	0.029	0.000
		United States	0.472	0.491
		World Bank	0.017	0.018
	Non Member	ASARECA	0.000	0.000

Project	Member		Estimated 2006	Proposal 2007
		Common Fund for Commodities	0.593	0.617
		Others	0.139	0.370
	Unrestricted + Center Income		0.960	0.803
		Project Totals	3.491	3.631
		Total	28.663	29.811

World Agroforestry Centre (ICRAF)
Table 31: Staff Composition: Internationally and Nationally Recruited Staff, 2005 - 2009

Staff	Actual 2005	Estimated 2006	Proposal 2007	Plan 1 2008	Plan 2 2009
ORS	401	386	391	391	391
IRS	46	49	50	50	50
Total	447	435	441	441	441

World Agroforestry Centre (ICRAF)
Table 32: Financial Position: Currency Structure of Expenditure 2005 -2007
in $ millions

	Actual 2005			Estimated 2006			Proposal 2007		
Currency	Amount	$ Value	% Share	Amount	$ Value	% Share	Amount	$ Value	% Share
IDR	9524.000	0.975	3	9500.000	1.000	3	975.000	1.200	4
KES	521.000	6.944	24	520.000	7.123	25	600.000	7.300	24
Others	1,0521.000	6.462	22	9000.000	5.900	21	1,0500.000	6.500	22
USD	0.000	15.155	51	0.000	14.640	51	0.000	14.811	50
Total		29.536	100 %		28.663	100 %		29.811	100 %

World Agroforestry Centre (ICRAF)
Table 33: Financial Position: Statements of Financial Position at December 31, 2005 and 2004
in $ millions

Assets, Liabilities and Net Assets	2005	2004
Current assets		
Cash and cash equivalents	12.063	14.384
Investments	0.000	0.000
Accounts receivable		
- Donor	7.423	6.781
- Employees	0.108	0.165
- Other CGIAR centers	1.422	1.151
- Others	3.805	2.522
Inventories	0.087	0.101
Pre-paid expenses	0.099	0.080
Total Current assets	25.007	25.184
Non-current assets		
Net property, plan and equipment	6.317	6.454
Investments	0.000	0.000
Other assets	0.000	0.000
Total Non-current assets	6.317	6.454
Total Assets	31.324	31.638
Current liabilities		
Overdraft/Short term borrowings	0.000	0.000
Accounts payable		
- Donor	7.578	10.451
- Employees	0.277	0.327
- Other CGIAR centers	0.323	0.069
- Others	2.245	1.215
Accruals and provisions	1.795	1.743
Total Current liabilities	12.218	13.805
Non-current liabilities		
Accounts payable		
- Employees	5.250	4.498
- Deferred grant revenue	0.000	0.000
- Others	0.000	0.000
Total Non-current liabilities	5.250	4.498
Total Liabilities	17.468	18.303
Net assets		
Unrestricted		
- Designated	9.168	9.168
- Undesignated	4.688	4.167
Total Unrestricted Net assets	13.856	13.335
Restricted	0.000	0.000
Total Net Assets	13.856	13.335
Total Liabilities and Net Assets	31.324	31.638

World Agroforestry Centre (ICRAF)
Table 34: Financial Position: Statements of Activities for the years ended December 31, 2005 and 2004
in $ millions

Statements		Unrestricted	Restricted		Total	
			Temporary	Challenge Programs	2005	2004
Revenue and Gains	Grant Revenue	9.540	20.060	0.000	29.600	29.149
	Other revenue and gains	0.457	0.000	0.000	0.457	0.515
	Total revenue and gains	9.997	20.060	0.000	30.057	29.664
Expenses and Losses	Program related expenses	7.591	19.995	0.000	27.586	26.630
	Management and general expenses	4.195	0.065	0.000	4.260	3.969
	Other losses expenses	0.000	0.000	0.000	0.000	0.000
	Sub Total expenses and losses	11.786	20.060	0.000	31.846	30.599
	Indirect cost recovery	-2.310	0.000	0.000	-2.310	-2.731
	Total expenses and losses	9.476	20.060	0.000	29.536	27.868
	Net Surplus / (Deficit) from ordinary	0.521	-0.000	0.000	0.521	1.796
	Extraordinary Items	0.000	0.000	0.000	0.000	0.000
	NET SURPLUS / (DEFICIT)	0.521	-0.000	0.000	0.521	1.796
Object of Expenditures	Personnel	6.987	6.499	0.000	13.486	13.239
	Supplies and services	0.374	8.769	0.000	9.143	7.582
	Collaboration/ Partnerships	0.253	1.673	0.000	1.926	1.835
	Operational Travel	1.094	2.670	0.000	3.764	3.962
	Depreciation	0.768	0.449	0.000	1.217	1.250
	Total	9.476	20.060	0.000	29.536	27.868