

International Centre for Research in Agroforestry, ICRAF

1990 – 1997

**Bo Tengnäs
Arne Eriksson
Terry Kantai
Alice Kaudia
Jeff Odera**

**Department for Natural
Resources and the
Environment**

International Centre for Research in Agroforestry, ICRAF

1990 - 1997

**Bo Tengnäs
Arne Eriksson
Terry Kantai
Alice Kaudia
Jeff Odera**

Sida Evaluation 98/26

**Department for Natural
Resources and the Environment**

Evaluation Reports may be ordered from:

Infocenter, Sida
S-105 25 Stockholm
Telephone: (+46) (0)8 795 23 44
Telefax: (+46) (0)8 760 58 95
E-mail: info@sida.se, Homepage <http://www.sida.se>

Authors: Bo Tegnäs, Arne Eriksson, Terry Kantai, Alice Kaudia, Jeff Odera.

The views and interpretations expressed in this report are the authors and do not necessarily reflect those of the Swedish International Development Cooperation Agency, Sida.

Sida Evaluation 98/26
Commissioned by Sida, Department for Natural Resources and the Environment

Copyright: Sida and the authors

Registration No.:
Date of Final Report: June 1998
Printed in Stockholm, Sweden 1998
ISBN 91 586 7674 0
ISSN 1401—0402

SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
Address: S-105 25 Stockholm, Sweden. Office: Sveavägen 20, Stockholm
Telephone: +46 (0)8-698 50 00. Telefax: +46 (0)8-20 88 64
Telegram: sida stockholm. Postgiro: 1 56 34-9
E-mail: info@sida.se. Homepage: <http://www.sida.se>

CONTENTS

EXECUTIVE SUMMARY

ACRONYMS

1. The Programme Context	1
1.1 Global concerns for agricultural research in developing countries	1
1.2 History, definition and potential of agroforestry	2
1.3 ICRAF: History and evolution	3
1.4 ICRAF's role in the CG-system	3
1.5 ICRAF: Current mandate and strategies	5
1.6 Organisation	6
1.7 Current funding	7
2. The Swedish Collaboration with ICRAF	8
2.1 Sida/DNRE	9
2.2 Sida/SAREC	9
2.3 Other	9
2.4 Additional discussed activity	9
2.5 Funding levels for the various components	9
2.6 Earlier evaluations	9
3. The Evaluation Methodology	11
3.1 Scope and purpose of the evaluation	11
3.2 Approaches and methods used	12
3.3 Limitations of the study	12
4. Detailed Information on the Components of the Swedish Collaboration with ICRAF	13
4.1. Machakos	13
4.2 ANAFE	14
4.3 Core support	16
4.4 Zambia/ICRAF Agroforestry Research Project, Chipata, Zambia	16
4.5 National Agroforestry Research Project, Embu, Kenya	17
4.6 Uganda	18
4.7 Maseno	18
4.8 Agroforestry Today	19
4.9 Agroforestry film	20
4.10 Associate Experts	20
4.11 South East Asian Network for Agroforestry Education	21
4.12 Other cooperation	21
5. Performance of the Components to be Reviewed	22
5.1. Machakos	22
5.2 ANAFE	25
5.3 Core support and some general comments on ICRAF	28
5.4 Chipata	29

5.5 Maseno	33
5.6 Agroforestry Today	37
5.7 Agroforestry film and other dissemination	41
5.8 Associate Experts	41
6. Comments on Collaboration outside the Main Scope of the Evaluation	43
6.1 SE Asian ANAFE	43
6.2 Embu	43
6.3 Uganda	44
6.4 Other cooperation	45
7. Discussion	46
7.1 Why should Sida support ICRAF?	46
7.2 What type of support?	47
7.3 Logic or lack of logic in the Swedish support	48
7.4 Fragmentation of the Swedish support	48
7.5 The level of support	48
7.6 Sida's monitoring and follow-up	49
7.7 ICRAF in relation to human diversity	49
8. Recommendations	50
8.1 Overall recommendations to Sida	50
8.2 Overall recommendations to ICRAF	50
8.3 Recommendations on activities at Machakos	51
8.4 Recommendations on ANAFE	51
8.5 Recommendations on activities at Chipata	52
8.6 Recommendations on activities at Maseno	52
8.7 Recommendations on activities at Embu	53
8.8 Recommendations on support to Agroforestry Today	53
8.9 Recommendations on support to Associate Experts	53
8.10 Recommendations on support to SEANAFE	53
8.11 Recommendations on cooperation with Vietnam	53
8.12 Recommendations on other cooperation	53
9. Lessons Learnt	54
9.1 Long term commitment	54
9.2 Sida follow-up	54
APPENDICES	
I. Terms of Reference	
II. List of people met	
III. List of references and documentation	
IV. Findings from survey among 28 ANAFE member institutions	

EXECUTIVE SUMMARY

The International Centre for Research in Agroforestry has a history that dates back to its formation in 1978. Over the years ICRAF has evolved from a small council mandated to promote agroforestry research to a medium-sized research centre within the CGIAR system.

Agroforestry is currently defined as a dynamic, ecologically based, natural resources management system that, through the integration of trees in farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels. ICRAF's *vision* is simply that the institution shall contribute to improving human welfare and environmental resilience through improved agroforestry systems.

ICRAF's work builds on collaborative efforts in research together with the national agricultural research systems and farmers in a multidisciplinary approach for the development of agroforestry technologies.

ICRAF has received financial support from Sweden since 1982. For 1998 the contribution from Sweden is around US \$ 1.55 million, corresponding to some 7 % of ICRAF's total budget. Sweden was the fifth largest donor in 1996.

During the 1990s the following components have been or are being supported by Sida through its Department for Natural Resources and the Environment (Sida/DNRE):

- ICRAF's Field Station in Machakos, Kenya
- The African Network for Agroforestry Education, ANAFE
- South East Asian Network for Agroforestry Education, SEANAFE
- KARI/KEFRI/ICRAF research in Embu (Bilateral funds Sweden-Kenya)
- East African AFRENA: Research activities in Kabale, Uganda
- East African AFRENA: Research activities in Maseno, Kenya
- Dissemination: ICRAF's magazine Agroforestry today
- Dissemination: Production of a TV/Video film on agroforestry
- Secondment of Swedish Associate Experts to ICRAF

Sida/SAREC has also been providing support to:

- Research activities in Chipata, Zambia.
- Core support in the magnitude of US \$ 200,000 - 400,000 annually.

The support during the 1990s has been divided between years and on the different components as follows:

	1990	1991	1992	1993	1994	1995	1996	1997	1998	TOT
<u>Sida/DNRE</u>										
Machakos	300	13	709	504	605	264	181	37	-	2,613
ANAFE	-	22	222	282	615	416	393	406	634	2,990
SEANAFE	-	-	-	-	-	-	-	4	174	178
Uganda	-	-	-	-	-	-	-	38	90	128
Maseno	-	-	-	-	100	175	315	217	206	1,013
Sen. fellows/studies	116	-	-	-	-	-	-	-	-	116
Dissemin.	-	-	-	-	-	121	-	33	100	254
Ass. Experts	59	59	64	-	38	31	7	1	-	259
Overheads	-	-	-	-	144	176	172	-	-	492
Subtotal	475	94	995	786	1,502	1,183	1,068	736	1,204	8,043
<u>Sida/SAREC</u>										
Chipata	232	250	240	280	288	221	229	187	200	2,127
Alt. to slash & burn	-	-	-	-	307	-	-	-	-	307
Core	244	234	292	232	216	232	430	267	340	2,487
Subtotal	476	484	532	512	811	453	659	454	540	4,921
<u>Bilateral funds Sweden-Kenya</u>										
Embu	103	52	106	103	183	119	87	-	27	780
Dissemination	83	63	-	-	-	-	-	-	-	146
Subtotal	186	115	106	103	183	119	87	-	27	926
GR. TOTAL	1,137	693	1,633	1,401	2,496	1,755	1,814	1,190	1,771	13,890
ICRAF TOT BUD.	9,283	10,996	13,438	14,066	16,472	18,883	20,144	23,464	21,782	148,528
Swed. funding %	12	6	12	10	15	9	9	5	8	9

The scope and purpose of this evaluation is to evaluate the Sida-supported programmes and projects as a basis for the discussion and the planning of a possible next phase of the support. Further, the Terms of Reference indicate that all relevant aspects of the projects and programmes supported by Sida (DNRE and SAREC) over the period 1990 - June 1997 shall be covered.

Overall recommendations to Sida

The mission recommends that:

- Sida continues supporting ICRAF with both restricted funds and core funds during 1999-2001.
- Restricted funds are utilized for support to the components and with approximate annual levels in US \$ as in the table below:

ANAFE	720,000
Chipata	150,000
Maseno	350,000
Agroforestry Today	80,000
Associate Experts	Operational funds
TOTAL restricted	1,300,000 + operational funds

- Level of core support is considered when reports from a forthcoming 'External Programme and Management Review' and other reviews

become available, and taking into account that an increase is suggested to compensate for (i) the proposed phasing out of funding of the expatriate in Chipata (100,000 US \$), and (ii) that the core support includes overheads on the activities financed by restricted funds.

- Sida considers having a continuous follow-up through recruitment of a monitoring consultant, similar to the arrangement CIDA has. Possibly, the ToR for such consultancy could include a liaison function to promote contacts between ICRAF and Swedish Universities, and Swedish Universities directly with African Universities that are members of ANAFE.

In addition to these overall recommendations, the mission has given some general recommendations to ICRAF and detailed recommendations with regard to the different components that have been supported by Sida. Comments have also been made on other types of collaboration between ICRAF and Swedish Institutions.

Among lessons learnt the mission notes the necessity and benefit of having a long term commitment in the support, and the importance of regular and more frequent reviews of the support than has been the case during the 1990s.

List of acronyms

AAS	African Academy of Science
AFRENA	Agroforestry Research Networks for Africa
AHI	African Highland Initiative
ANAFE	African Network for Agroforestry Education
ASB	Alternatives to Slash and Burn Programme
BBC	British Broadcasting Corporation
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro Internacional de Agricultura Tropical
CIDA	Canadian International Development Agency
CIFOR	International Centre on Forestry Research
CIMMYT	Centro Internacional de Mejoramiento de Maíz y Trigo
CIP	Centre Internacional de la Papa
CNN	Cable News Network
CTA	Technical Centre for Agricultural and Rural Cooperation
D & D	Diagnosis and Design
DFID	Department for International Development (UK)
EEC	European Economic Community
EPMR	External Programme and Management Review
EU	The European Union
FAO	Food and Agriculture Organization of the United Nations
FNAD	ICRAF's Division for Finance and Administration
FORI	Forestry Research Institute (Uganda)
FTPP	Forest, Trees and People Programme
GEF	Global Environment Facility
GNP	Gross National Product
GRZ	Government of the Republic of Zambia
IBSRAM	International Board for Soil Research and Management
ICARDA	International Center for Agricultural Research in Dry Areas
ICIPE	International Centre of Insect Physiology and Ecology
ICLARM	International Center for Living Aquatic Resources Management
ICRAF	International Centre for Research in Agroforestry
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDRC	International Development Research Centre (Canada)
IFDC	International Fertilizer Development Centre
IFPRI	International Food Policy Research Institute
IFS	International Foundation for Science
IIBC	International Institute of Biological Control
IIMI	International Irrigation Management Institute
IITA	International Institute for Tropical Agriculture
ILCA	International Livestock Centre for Africa
ILRAD	International Laboratory for Research Animal Diseases
ILRI	International Livestock Research Institute
IPGRI	International Plant Genetic Resources Institute
IRRI	International Rice Research Institute
ISNAR	International Service for National Agricultural Research

ISU	Information Services Unit
KARI	Kenya Agricultural Research Institute
KEFRI	Kenya Forestry Research Institute
MSEK	Million Swedish Kronor
N	Nitrogen
NAFRP	National Agroforestry Research Project (Embu)
NARS	National Agricultural Research System
NGO	Non-Government Organization
ODA	Overseas Development Agency (UK)
ORSTOM	Institut Français de Recherche Scientifique pour le Développement en Coopération
P	Phosphorus
RELMA	Regional Land Management Unit (Sida)
RSCU	Regional Soil Conservation Unit (Sida)
RSU	Research Services Unit
SACCAR	Southern Africa Centre for Cooperation in Agricultural Research
SADCC	Southern African Development Coordination Conference
SALWA	ICRAF's programme in Semi-Arid Lowlands of West Africa
SAREC	Swedish Agency for Research Cooperation with Developing Countries
SCAFE	Soil Conservation and Agroforestry Extension (Zambia)
SEANAFE	South East Asian Network for Agroforestry Education
SIDA	Swedish International Development Authority
Sida	Swedish International Cooperation Agency
Sida/DNRE	Sida's Department for Natural Resources and the Environment
SPAAR	Special Programme for African Agricultural Research
SUAS	Swedish University of Agricultural Sciences
TAC	Technical Advisory Committee to the CGIAR
TSBF	Tropical Soil Biology and Fertility Programme
TVE	Television Trust for the Environment
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Social and Cultural Organization
USAID	United States Agency for International Development
USCAPP	Uganda Soil Conservation and Agroforestry Pilot Project
WARDA	West African Rice Development Association
WCED	World Commission on Environment and Development
WTN	World Television Network

1. The Programme Context

1.1 Global concerns for agricultural research in developing countries

The global community is witnessing momentous changes in the international agenda on environment, trade, population, special development and the role of women. Following the Brundtland report (WCED: Our Common Future) in 1987, the Consolidated Group for International Agricultural Research (CGIAR) evolved its own sustainability concept, which has subsequently been upgraded in response to Agenda 21. The CGIAR has stressed the potential of the system to contribute to the realization of agricultural sustainability, improved management and conservation of natural resources.

Past experiences have shown that investment in agricultural research to generate new technologies and knowledge has consistently given high rates of return. High economic returns to agricultural research occurred from the 1970s to 1980s in Asia during an era when new land and water resources were still being brought into production in many developing countries. Many of the past successes were due to concentration on high-potential areas and generic technologies including high yielding varieties that had widespread application.

In future the scope of bringing new land and water resources into production and reliance on expensive inputs appear to be slim. The CGIAR's meeting in Lucerne in 1995 had noted that the green revolution had by-passed Africa because of its emphasis on non-traditional African crops, the scarcity of water resources for irrigation and lack of adequate fertilizers. African representatives had proposed that Africa requires more support for national research and extension systems, and promotion of stronger links to the farming community, particularly women farmers who produce the bulk of the food. The meeting further recognized the need for continued concentration of research in high potential areas and an intensification in lower potential areas where rural poverty and associated resource degradation is increasingly accumulating.

It is also widely acknowledged that many of the target countries still lack sufficient capacity, and that public research aimed at low costs, sustainable, and environmentally friendly food production technologies is more likely to meet the needs of all relevant stakeholders. Acknowledging that there is no simple recipe for successful agricultural development the CG has called for appropriate targeting of agricultural research and extension, ensuring adequate farmer access to credit, inputs and marketing services.

In developing countries agriculture plays multiple roles in development: it serves as an engine of growth, helps alleviate rural and urban poverty, contributes to food security and sustainable use of natural resources, and to social cohesion.

The new global vision of agricultural research that is emerging calls for a more open partnership with stakeholders in setting strategies and priorities, as a means to improve research relevance, increase ownership of the research agenda and to pursue research in a more coordinated fashion. This is particularly important in identifying the strategic questions that will influence the shape of tomorrow's agricultural research, orienting the development of new working relationships with advanced institutions, laying out pathways through which NARS can substitute for the CGIAR or both groups can further complement each other's work.

A large majority of Africa's poor live in rural areas and depend on agriculture for their well being. Agriculture itself is dependent upon the quality of the land resource which is influenced by the way soils are managed by farmers. Continuous cropping has led to severe nutrient depletion which results in repeated low crop production.

Past agricultural research has recommended use of packages of fertilizers. But these technologies which have been focused on interests of commercial farmers have not benefited resource poor farmers due to lack of access to expensive inputs. Quite often even those who can afford fertilizers have shied away because of attendant risks.

1.2 History, definition and potential of agroforestry

Combinations of trees and crops in land use systems is an old tradition world wide. Until fairly recently, however, the approaches to land-use-related research and development had either crops, livestock or trees as the points of departures. Rarely was the integration of various components in land use, which is a reality for farmers, recognized.

During the 1960s and early 1970s international development cooperation aiming at development of tree and forest resources were entirely focusing on development of forest plantations and forest industries, usually with little or no involvement of local communities. In fact, development projects of those days were quite often conflicting with the interests of local communities.

The growing understanding of the importance of the integration of trees on farms paved the way for the formation of ICRAF. Following studies and meetings organized by IDRC in 1975, ICRAF was established in 1977. After a preliminary year in the Netherlands it was set up in Kenya with support from four donors during 1978 as an autonomous, non-profit, international research council governed by a Board of Trustees.

Currently, agroforestry is defined by ICRAF as '*A dynamic, ecologically based, natural resources management system that, through the integration of trees in farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels*' (Leakey, 1996, ICRAF Medium Term Plan 1998-2000).

The current definition replaced an earlier one that was used by ICRAF during the 80s and early 90s. The early definition emphasized the integration of trees and shrubs with crops and/or livestock on the same piece of land with both economical and ecological interaction between the components. The earlier definition sometimes led to controversy on what was, strictly, agroforestry and what was not. The current definition is more flexible.

Trees in land use systems provides both products, e.g. timber, fuelwood, fodder and raw material for medicine, and service functions e.g. amelioration of soil properties and micro climate. Both these functions can contribute to increased overall productivity and sustainability of land use.

Initially, most research in agroforestry in Africa focused on development of technologies that could address soil fertility and soil conservation issues. In recent years emphasis has been given to the direct profits from agroforestry systems, and the focus of research has been broadened to include e.g. tree domestication, but trees for soil improvement still also remain crucial.

1.3 ICRAF: History and evolution

Since its formation as a council for research in agroforestry in 1978 the development of ICRAF can broadly be divided into four phases:

- The 'think tank' period of the late 70s and early 80s. A small group of professionals without mandate or resources to carry out 'own' research, but with a mandate to develop and promote the concepts of agroforestry.
- The period of an established council during the 1980s. ICRAF grew and developed an approach based on collaborative programmes implemented primarily by the national agricultural research systems (NARS) and with support from ICRAF. Focus on answering questions relating to 'how' trees and crops interact and geographically a main focus on Africa.
- During the 90s: Development into a *centre* for research in agroforestry, and operating as one of the institutions guided by the Consultative Group on International Agricultural Research, with a research mandate and with programmes in Africa as well as in Latin America and South East Asia. Focus on understanding the processes of interaction between trees and shrubs and other components, i.e. 'why'-questions replaced the earlier 'how'-questions, taking research into analysis rather than the earlier 'descriptive' focus.
- A research and development focus from 1998 onwards as manifested in the medium term plan 1998 - 2000 and by restructuring the centre into a Research Division and a Development Division supported by a third Division for Administration and Finance. The approach based on collaboration with NARS developed during the 1980s remains important.

1.4 ICRAF's role in the CG-system

The CGIAR was created in 1971 when the world was facing a food crisis. The aim was increased food production by developing new technologies for

increased yields of the main cereals in developing countries - rice, wheat and maize. Since 1971, the mandate has been broadened to include different commodities such as grain legumes, roots and recently agroforestry, irrigation management and forestry.

ICRAF became a member of the CGIAR in 1991, and is now one among the 16 research centres that are guided by the CGIAR. ICRAF's mandate within the CGIAR is global responsibility for research in agroforestry.

CGIARs goals

The group's primary concerns are people-centered, aimed at achieving food and nutrition security, poverty alleviation and environmental protection.

CGIAR's priority setting mechanism

CGIAR sets priorities at different levels, following standing procedures as follows:

- with the CGIAR group where overarching goals are laid out.
- with TAC where goals are translated into research allocations
- the centre management level sets priorities around major programmes, projects by systems goals,
- the programme leaders set priorities for approved projects and set targets.

Global initiatives on soil fertility

Many international institutions are currently working through a number of networks with national agricultural research systems (NARS), on different aspects of soil fertility in Africa, notably IITA, IBSRAM and ICRAF in humid West Africa; ICRAF, CIMMYT and TSBF in Southern Africa; ICRAF and TSBF in East Africa; IFDC, OSTROM, ICRISAT and ICRAF in semi-arid west Africa. ICRAF considers soil fertility replacement as one of the five pillars of its research agenda.

The Swedish financial contribution to the CGIAR

The total budget for the joint research agenda of the CGIAR is for 1998 some 345 million US \$, and Sweden is the eighth largest donor to CGIAR during 1997. During 1973 - 1997 the total Swedish contribution has amounted to some 659 MSEK of institutional support and some 30 MSEK of targeted support.

A summary of the Swedish institutional support to the CGIAR centres in 1992 and 1998 is provided in Table 1. In addition the main recommendations by an evaluation mission with regard to funding levels (Lundgren et al, 1994) has been included as well as the Swedish contributions in the form of targeted ('project') support to the various centres during 1998.

Table 1: The Swedish support to international agricultural research through the CG-System: Institutional support 1992, recommendation of the evaluation by Lundgren et al (1994) and the level of institutional as well as targeted support during 1998.

Institution	Level 1992	Rec. Lundgren et al 1994	Level 1998	
	Inst.		Inst.	Targeted
CIP	7.3	Reduce, conc. to Africa	7.0	
IRRI	5.0	Reduce	5.0	
WARDA	3.7	Moderate red. of core support	3.7	
ICRISAT	4.7	Retain, conc. to Africa	4.5	
IITA	2.0	Increase significantly	2.9	
CIAT	2.1	Retain, conc. to Africa	2.1	
ICARDA	3.9	Reduce	3.5	
ILCA, ILRAD (ILRI)	4.5	Retain	4.5	
CIFOR	1.4	Retain	1.5	5.0
ICRAF	1.7	Increase	2.1	11.0
IPGRI	3.6	Increase	4.2	
ISNAR	0.6	Increase, conc. to Africa	1.0	
IFPRI	-		1.0	3.0
CIMMYT	-		2.5	1.0
IMI	-		2.5	
ICLARM	-		2.5	1.0
TOTAL	40.5		50.5	21.0

From Table 1 it is noted that ICRAF is the centre receiving most support from Sweden in terms of combined institutional and targeted support. The institutional support is however modest as compared to the targeted support.

1.5 ICRAF: Current mandate and strategies

The Medium Term Plan 1998-2000 indicates some new directions for ICRAF. A revisited definition of agroforestry and the establishment of a Development Division are important elements.

The ICRAF *mission* statement, however, is still valid:

'To increase the social, economic, and nutritional well-being of peoples in developing countries through the use of research and related activities to integrate woody perennials in farming and related land-use systems in order to increase productivity, profitability, sustainability, diversity of output and the conservation of natural resources.'

ICRAF's *vision* has been adjusted in the Medium-Term Plan 1998-2000 to meet the current challenges and is simply:

'to contribute to improving human welfare and environmental resilience through improved agroforestry systems'.

ICRAF's work builds on collaborative efforts together with NARS and farmers in a multidisciplinary approach to development of agroforestry technologies.

In the medium-term plan the following six components marking some recent shifts in approach are emphasized:

- Build on ICRAF's accomplishments and partnerships developed during the past 20 years.
- Work on natural resources management at different spatial scales: plot, farm, landscape, national, regional and global.
- Through a multidisciplinary approach, shift to integrated systems thinking.
- Shift research attention from competition and profitability issues to those of ecological processes, environmental resilience and household welfare.
- Continue to implement approaches to research and development that are sensitive to social, economic and cultural issues, particularly gender differences.
- Expand strategic alliances to private sector.

ICRAF's research agenda is determined by a process that starts with priority setting in the regions where it operates. The result has been identification of some common themes that give global coherence and perspective and constitute the pillars of ICRAF's work. There are three pillars of research and two of development. These five pillars are:

- Diversification and intensification of land use through domestication of agroforestry trees.
- Soil fertility replenishment in nutrient-depleted lands through agroforestry and with other inputs.
- Socio-economic and policy research leading to enabling policy environments for small-holder farmers.
- Acceleration of impact on farm by ensuring research results are utilized.
- Capacity and institutional strengthening in agroforestry.

The five pillars are reflected in the division of ICRAF's work into programmes, and in ICRAF's new operational structure.

1.6 Organization

Under the previous Medium Term Plan, activities were implemented in the regions through the programmes axis of the matrix. ICRAF has now decided that from 1998 the regions will have greater control of their own activities and be strengthened accordingly. From 1998 ICRAF will have a matrix organization consisting of five programmes x six regions. The operational structure under the Director General and his Deputy are divided into three Divisions each headed by a Director:

- A Research Division
- A Development Division
- A Division for Finance and Administration (FINAD)

The Research Division is made up of a Research Services Unit (RSU) and three of the five programmes:

- Natural Resources Strategies & Policy
- Domestication of Agroforestry Trees
- Ecosystem Rehabilitation

The Development Division is made up of an Information Services Unit (ISU) and of two programmes:

- Systems Evaluation and Dissemination
- Capacity and Institutional Strengthening

Geographically, the regions where ICRAF has its main focus are:

- East African Highlands
- Southern Africa Plateau
- Sahel
- Humid South East Asia
- Humid Latin America
- Humid West Africa

The Directors of Research and Development will supervise activities in three regions each. To assure ownership of all ecoregions by the two Directors and in spirit of a team-based institution, the Directors will switch these responsibilities periodically.

Further, the two mentioned Directors are also responsible for two CG-System-wide programmes, i.e. the African Highland Initiative (AHI) supervised by the Director in charge of Eastern and Central Africa (currently the Director of Development), and the Alternatives to Slash and Burn (ASB) Programme supervised by the Director in charge of the humid tropical ecoregions (Currently the Director of Research).

1.7 Current funding

As per indications in the Medium Term Plan the ICRAF budget proposal for 1998 totals some US \$ 23.7 million, out of which some 59 % represent staff costs. This funding proposal has however not been fully met by the donors, and the present indication is therefore a level of around US \$ 22.5 million. The rapid growth of ICRAF is noted, comparing the current funding level with a yearly budget of around US \$ 10 million for 1991.

ICRAF is now a medium-sized CG-center. The ICRAF management indicates that this is a satisfactory level, and quality of work is more important than volume of work in the next few years. However, the Medium Term Plan reveals ambitions to grow to a funding level of US \$ 27 million by the year 2000, which is however a slower growth rate than in the earlier years.

ICRAF is one of the youngest among the CG-Centres. For historical and other reasons ICRAF relies very much on project and restricted core support. Only some 30 % of the total budget is unrestricted core, and more

than 20 out of these 30 % are used for rather fixed costs for running the institution. Therefore, in a real sense, only 10 % of the total budget remains fully flexible for the management to use for whatever priorities ICRAF has identified. The 70 % restricted core and project support is negotiated with donors such that it is used for activities in line with ICRAF priorities, but remains restricted for the purposes agreed with the donors.

The low level of unrestricted core support, 30 %, can be compared to a level of up to 70 % that is common among the older CG-Centres. Thus, it may be valid to note that ICRAF is more guided by donors than other centres, and ICRAF programmes may also be more vulnerable to donors willingness or unwillingness to provide funds for specific activities. The room for ICRAF to mitigate shortfalls by reallocations are limited.

In spite of the feature highlighted above it should be noted that with few exceptional years of decline, ICRAF has maintained a rather steady growth ever since its inception 20 years ago. This is in sharp contrast with many of the other CG-Centres which are in a state of decline due to drastic reductions of funding. An example is ICRISAT that is likely to close two of its three centres in Africa in the near future.

The contribution from Sweden is US \$ 1.55 million for 1998, i.e. some 7 % of ICRAF's total budget. Sweden was the fifth largest donor in 1996.

The Nordic countries combined provided 32 % of the total funding of ICRAF in 1996. Denmark and Norway are mainly providing unrestricted core, and Finland only core. Administration of core support is easy for ICRAF since there are no special reporting requirements. Donors providing core support accept ICRAF annual report as the report to the donor. ICRAF management regards the Nordic donors as generally easy to work with. Many other donors have more elaborate requirements as per 'their' standards which generate more administrative work for ICRAF.

2. The Swedish Collaboration with ICRAF

History

In the mid 1970s FAO launched the Forestry for Local Community Development Programme, which attempted to find ways of working with local communities in forestry development. Projects designed were initially focusing on assistance to communities for establishment of communal plantations as an alternative to the earlier Government-lead development efforts in forestry.

The formation of ICRAF was another event that contributed to a major shift in Swedish development cooperation in the forestry sector away from industrial forestry that was predominant in the 1960s and 1970s to an approach based on peoples participation in integrated natural resources management.

2.1 Sida/DNRE

SIDA has supported ICRAF since 1982. The support has had different contents over the years and has always been provided in the form of project support.

During the 1990s the following components have been or are being supported by Sida through its Department for Natural Resources and the Environment (Sida/DNRE):

- ICRAF's Field Station in Machakos, Kenya
- The African Network for Agroforestry Education, ANAFE
- South East Asian Network for Agroforestry Education, SEANAFE
- KARI/KEFRI/ICRAF research in Embu (Bilateral funds Sweden-Kenya)
- East African AFRENA: Research activities in Kabale, Uganda
- East African AFRENA: Research activities in Maseno, Kenya
- Dissemination: ICRAF's magazine Agroforestry today
- Dissemination: Production of a TV/Video film on agroforestry
- Secondment of Swedish Associate Experts to ICRAF

2.2 Sida/SAREC

SAREC, now Sida/SAREC has been providing both core and project support since 1987:

- Research activities in Chipata, Zambia.
- Core support in the magnitude of US \$ 200,000 - 400,000 annually.

2.3 Other

Some other aspects of collaboration between Sweden and ICRAF deserve mentioning:

- Collaboration between Swedish universities, notably the Swedish University of Agricultural Sciences, SUAS, and ICRAF with regard to Swedish Ph. D. students doing their research in collaboration with ICRAF scientists.
- ICRAF housing RSCU since 1994, from 1998 RELMA.

2.4 Additional discussed activity

There is an ongoing discussion between Sida/DNRE with regard to funding some support to capacity building in agroforestry research and dissemination in Vietnam.

2.5 Funding levels for the various components

The history of Swedish funding in the 1980s is summarized in Table 2 and the funding from Sweden in the 1990s as reflected in the ICRAF accounts is presented in Table 3.

2.6 Earlier evaluations

The SIDA supported components were evaluated in 1990. By then, the support to the following activities were reviewed:

- ICRAF's Field Station in Machakos,
- Agroforestry for Development in Kenya
- Second Kenya National Agroforestry Seminar
- Swedish Associate Experts, Senior Visiting Fellows and Special Studies.

Table 2: Swedish funding to ICRAF in the 1980s ('000 US \$)

	SAREC core	SAREC restr.	SIDA	Total
1982	-	-	80	80
1983	-	-	51	51
1984	-	-	144	144
1985	-	-	217	217
1986	-	-	65	65
1987	185	108	448	741
1988	214	298	635	1,147
1989	198	255	529	982

Table 3: Funding levels per components and years ('000 US \$)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	TOT
<u>Sida/DNRE</u>										
Machakos	300	13	709	504	605	264	181	37	-	2,613
ANAFE (1)	-	22	222	282	615	416	393	406	634	2,990
SEANAFE	-	-	-	-	-	-	-	4	174	178
Uganda	-	-	-	-	-	-	-	38	90	128
Maseno	-	-	-	-	100	175	315	217	206	1,013
Sen. fellows/studies	116	-	-	-	-	-	-	-	-	116
Dissemin.	-	-	-	-	-	121	-	33	100	254
Ass. Experts	59	59	64	-	38	31	7	1	-	259
Overheads	-	-	-	-	144	176	172	-	-	492
Subtotal (2)	475	94	995	786	1,502	1,183	1,068	736	1,204	8,043
<u>Sida/SAREC</u>										
Chipata	232	250	240	280	288	221	229	187	200	2,127
Alt. to slash & burn	-	-	-	-	307	-	-	-	-	307
Core	244	234	292	232	216	232	430	267	340	2,487
Subtotal	476	484	532	512	811	453	659	454	540	4,921
<u>Bilateral funds Sweden-Kenya</u>										
Embu	103	52	106	103	183	119	87	-	27	780
Dissemination	83	63	-	-	-	-	-	-	-	146
Subtotal	186	115	106	103	183	119	87	-	27	926
GR. TOTAL (2)	1,137	693	1,633	1,401	2,496	1,755	1,814	1,190	1,771	13,890
ICRAF TOT BUD.	9,283	10,996	13,438	14,066	16,472	18,883	20,144	23,464	21,782	148,528
Swed. funding % (3)	12	6	12	10	15	9	9	5	8	9

Notes:

(1) ANAFE funding 1990 - 1992 reflects the costs for preparatory work before ANAFE was launched

(2) The significant variation between years partly reflect differences in schedule of payment and the fact that Sida and ICRAF have had different budgeting periods

(3) It is noted that although the Swedish funding has increased, the Swedish share of ICRAF's total funding has declined somewhat in recent years.

The 1990 evaluation identified some constraints, but the overall impression was favourable. The mission recommended the following:

- The 'special project: Field Station' should be discontinued and replaced by core support, preferably unrestricted core finance.
- Fellowships and special studies should be continued.
- The arrangement with Swedish Associate Experts should continue (on-farm research and technical training curricula).
- Secondments of qualified Swedish researchers for periods of two years.
- SIDA and SAREC should continue to discuss the coordination of Swedish funding.
- The total of Swedish funds should be maintained or slightly enhanced from current levels (1989/90 total SIDA and SAREC: around 7 MSEK)

Since 1990 the nature of the Sida support has changed considerably, whereas the SAREC support has not. The main changes as related to the recommendations 1990 are:

- The support to the Field Station was discontinued but not replaced by core. Instead various other activities were supported.
- Fellowships were continued, but as part of the new ANAFE (African Network for Agroforestry Education) project.
- Special Studies have been discontinued.
- Recommendation followed with regard to Associate Experts.
- Secondment of Swedish researchers was not achieved.
- The relationship between Sida and SAREC funding is by and large still as in 1990.
- The total Swedish funding has increased from some 7 MSEK in 1990 to some 12.4 MSEK in 1998. Meanwhile, however, the SEK has been devalued against the US \$, so in real ICRAF terms the increment is less significant.

The support to the research activities in Embu was evaluated in 1995.

The SAREC support has not been reviewed since the inception of the support in 1987.

ICRAF was also subject to an External Programme and Management Review (EPMR) in 1993, and an 'Internal and Interprogramme Review of the Zambia/ICRAF Research Project in Chipata, Eastern Zambia' was conducted in 1995.

3. The Evaluation Methodology

3.1 Scope and Purpose of the Evaluation

As per the Terms of Reference, appendix 1, the scope and purpose of the evaluation is to evaluate the Sida-supported programmes and projects *as a basis for the discussion and the planning of a possible next phase of the support*. Further, the ToR indicate that all relevant aspects of the projects and programmes supported by Sida (DNRE and SAREC) over the period 1990 - June 1997 shall be covered.

3.2 Approaches and Methods Used

The work of the mission has included a preparatory phase during which various contacts were made in Scandinavia, e.g. with Dr. A. Reenberg, University of Copenhagen/Member of ICRAF Board of Trustees, Dr. Sten Ebbersten, Swedish University of Agricultural Sciences/Former member of ICRAF Board of Trustees, Dr. Björn Lundgren, Director International Foundation for Science/Former Director General ICRAF and with Sida/DNRE and Sida/SAREC. During the preparatory phase contacts were also made with ICRAF to prepare a programme for the main phase of the evaluation.

The main phase included a week in Nairobi for briefing and discussion at ICRAF HQ followed by a three week period of visits to Zambia (Chipata), Malawi (ANAFE members and Zomba), Western Kenya (Maseno and ANAFE members), Machakos, West Africa (ANAFE members in Mali, Burkina Faso, Ghana and SALWA/ICRISAT in Bamako). In order to economize on resources the team has often split during the visits, but met regularly for internal consultations.

In order to get information from as many ANAFE members as possible, the mission has hired contact persons in Zambia, Tanzania, Uganda and Ethiopia who have visited ANAFE member institutions and carried out interviews as per an agreed format.

All in all the mission managed to make personal contacts either directly or through the contact persons with some 30 out of the 97 ANAFE member institutions.

During a final week in Nairobi further consultations were made with ICRAF, and the mission also contacted the Swedish Embassy in Nairobi, the Kenyan Ministry of Agriculture, Kenya Agricultural Research Institute and finally had further discussions with RELMA.

A list of people met is enclosed, appendix 2.

3.3 Limitations of the study

The mission has deliberately not attempted to evaluate ICRAF in its totality. Several evaluations or reviews are on-going or just about to start, and the mission refers to other reviews for an over-all assessment of ICRAF. The most important one is the planned External Programme and Management Review, EPMR, due to start soon and due to be officially presented to donors in October.

The mission also notes that the CGIAR as a whole is subject to a review. The findings of that review will be relevant to take into account when a possible next phase of Sida-support to ICRAF is to be planned.

Although not suggested in the ToR, the mission has taken the liberty to make comments on both activities that have started later than June 1997 and on activities that are being discussed but not yet supported.

Further, the mission has also discussed aspects of collaboration between Sweden and ICRAF which are not related to funding, i.e. collaboration between Swedish Universities and ICRAF and the interface ICRAF - RELMA.

Since the Embu activities were evaluated fairly recently the mission has paid less attention to these activities.

Most attention has been paid to the following components:

- Machakos
- Chipata
- ANAFE
- Maseno
- 'Dissemination' i.e. Agroforestry Today and the film production.
- Swedish Associate Experts.

Several of the components of the Swedish support are co-financed by other donors. It appears that there have not been any discussions between Sida and other donors on coordination, but ICRAF has divided the finances available. Examples are Chipata that is co-financed with e.g. CIDA, and Maseno that is co-financed by e.g. EU. The mission has decided to review the whole continuum from 'on station activities' to 'outreach activities', even if the Swedish funding is not directly used in the 'outreach activities'. It makes however little sense to omit the perhaps most crucial part, i.e. how research findings are adapted and adopted by farmers and how research and extension systems work together. It is noted, however, that the mission therefore occasionally makes comments on activities which are not funded by Sida.

4. Detailed Information on the Components of the Swedish Collaboration with ICRAF

4.1. Machakos

ICRAF's Machakos Field Station has been funded by Sida since its inception in 1981. Initially the station was established to demonstrate agroforestry practices and concepts for agroforestry promotion. With a changing mandate of ICRAF from a think tank council to a research centre, the station was later utilized for the development of methods for agroforestry research. Some of the main activities at the station have been:

- **Research:** Main themes: tree/crop interactions, soil fertility improvement through trees, soil conservation on sloping lands, pest management

- **Training:** Training has been provided for technicians and students at under-graduate/diploma and post-graduate levels.
- **Dissemination** of research results and awareness creation on agroforestry through demonstrations, field days and publications.

Sida funding of Machakos was gradually reduced from 1995 and ended in June 1997. Most Sida-funded research activities at Machakos have been concluded over the years and results are now being synthesized for publication. At the end of 1997 only three experiments were left at the station:

- Differences among *Melia volkensii* provenances with regard to competitiveness with crops (DFID funding),
- Evaluation of *Leucaena* spp. for resistance to the leucaena psyllid (DFID funding), and
- Conservation and competitive effects of grass vs. shrub vegetative barriers (ICRAF core funds).

ICRAF's programme on domestication of agroforestry trees is now utilizing the station for tree seed orchards and for research on vegetative propagation techniques. As currently the activities at the station are scaled down collaborators and NARS are encouraged to make use of the facilities. In such arrangement the International Institute of Biological Control (IIBC) and the Kenya Forestry Research Institute, KEFRI, are evaluating the potential for biological control of the leucaena psyllid. The KARI Katumani Research Centre has expressed interest in collaboration with ICRAF in soil conservation research and joint management of the existing soil conservation experiment at the field station is being discussed. Until 1998, the Field Station has housed ICRAF's soil and plant analysis laboratory that has, however, now been relocated to ICRAF's expanded headquarters in Nairobi.

Earlier, the station has received many visitors - farmers, donors, researchers, extensionists, students and NGO staff. In 1997, the number of visitors to the station declined, since many Kenyan institutions now have agroforestry research projects providing opportunities for training and demonstrations.

4.2 ANAFE

In the 1980s a senior research fellow, Prof. Ben Asare, was attached to ICRAF with finances from SIDA. The objective with the attachment was to find out and document what training in agroforestry that was offered at African Universities at postgraduate level. At the same time RSCU was working closely with some technical colleges with curriculum development supply of literature and staff training relating to the subject areas agroforestry and soil conservation.

These two processes led eventually to the formation of the African Network for Agroforestry Education, ANAFE. The network was officially launched in April 1993, with a goal *'to promote and support a multidisciplinary approach in the teaching of agriculture and natural resource management, with special focus on agroforestry'*.

The network had initially 29 members, but has since its launching grown to currently some 98 members in 34 African countries. Members are universities and technical colleges offering education programmes in agriculture, forestry and related natural resource management subjects in Africa. The specific objectives of ANAFE are to

- strengthen the content and delivery of tertiary education in agriculture, forestry and natural resource management with special focus on the incorporation of agroforestry.
- facilitate linkages among education, research and extension to maintain the relevance of the education programmes delivered.

ANAFE works within existing institutional frameworks in a collaborative mode with research institutions and extension and on a cost-sharing basis with participating institutions. A general meeting is held every 2nd year, at which members determine the main aims and activities to be undertaken by the network. A steering committee, consisting of 10 members representing different regions is elected at the general meeting.

The Coordination Unit comprises the coordinator based at ICRAF HQ, with responsibility for the overall management of the network, and two senior fellows who support colleges and universities. One of the senior fellows is based at ICRAF HQ with responsibilities for eastern, central and southern Africa, and the other is based in Bamako, Mali for West Africa and the Sahel.

ANAFE activities can be classified under three major themes:

- strengthening the content of curricula
- strengthening the delivery of agroforestry education
- facilitating dissemination of information and documentation.

Under the *first theme* ANAFE has contributed to method development for curriculum reviews and can provide various types of support for revision of curricula in member institutions.

Under the *second theme* focus is on the following activities:

- M. Sc. fellowships
- Research internships
- Exchange of academic staff
- Participation in short courses
- Academic staff and lecturers to develop locally adapted agroforestry teaching materials

- Developing teaching materials and equipment, e.g. laboratory equipment, computers, books, and establishing agroforestry demonstration plots and tree nurseries.
- Reviewing agroforestry research proposals submitted by universities for funding by various donors.

Under the *third theme*:

- The ANAFE Newsletter, issued twice a year with reports on current activities of ANAFE members.
- The agroforestry education data base on institutions, human resources and education programmes worldwide that offer agroforestry education at the tertiary level.
- Publication of proceedings and reports on ANAFE activities.
- Publication of locally produced and adapted teaching materials.

4.3 Core Support

Sweden has provided core support under agreements with SAREC, now Sida/SAREC to the magnitude of 200,000 - 400,000 US \$ annually since 1987. It can be noted here, that it appears that ICRAF has had the freedom to either charge or not to charge overheads on projects. Overhead costs have been charged 1994-1996, with a total of US \$ 492,000, whereas other years no overheads were charged.

It is noted that Sweden provides a lower ratio unrestricted core support/restricted support (20/80) than the total ICRAF ratio of 30/70.

4.4 Zambia /ICRAF Agroforestry Research Project in Chipata, Eastern Province, Zambia

The Zambia/ICRAF agroforestry research project based at Msekera Agricultural Research Station near Chipata in Eastern Province, Zambia has been operating since 1987. The project, partly funded by SAREC (around 50 %), falls under the Southern Africa AFRENA. Other contributions to the project come from ICRAF core, GRZ, CIDA (especially for the on farm work) and IIP (International Institute of Parasitology) investigating nematode populations under the fallows. Out of a total of 44 people working in the project, four are core professional staff paid by ICRAF, three are seconded from GRZ and the rest are support and associate staff paid by the project.

Main project objectives are to develop appropriate agroforestry technologies for small holders within the maize/livestock landuse system in Eastern Province, addressing the problems of low soil fertility, dry season fodder shortage and fuelwood shortage. The project aims at strengthening national research systems (NARS) capabilities to conduct and manage agroforestry research and to enhance adoption by farmers.

As elsewhere, much of the research is carried out on farm with various levels of farmer participation. ICRAF generally classifies on-farm trials as follows:

- Type 1: Designed and managed by researchers

- Type 2: Designed by researchers, managed by farmers
- Type 3: Designed and managed by farmers.

The research at Chipata has generated improved fallow technology based on *Sesbania sesban* as a lead technology among others. Other species, e.g. *Tephrosia vogelii* have also been tried for improved fallows. The generation and dissemination of the improved fallow technology was justified by declining food-crop yields as a consequence of removal of subsidies on prices of inorganic fertilizers in Zambia in the 1980s. This made the inorganic fertilizers unaffordable by a majority of resource poor farmers.

The dissemination of improved fallow has been based on partnership with several extension agencies including NGOs and mainstream agricultural extension service. ICRAF has taken a pro-active role by employing a dissemination specialists in 1997, by organizing and implementing agroforestry courses in Farmers' Training Centers, and promoting Type 3 trials whereby Camp Officers facilitate farmers' access to technical information through interaction with researchers, and provision of seed.

4.5 National Agroforestry Research Project (NAFRP), Embu, Kenya.

NAFRP is a collaborative project implemented by KARI with the support of KEFRI and ICRAF. Sida has provided financial support through the cooperation agreements with Kenya (bilateral funds) channeled through KARI since 1991. Initially bilateral funds were also channeled through ICRAF to support a Senior Scientist posted in Embu, but that support ended in June 1996. Some additional funds were received from IDRC during 1997 in addition to the funding from Sida and from USAID through the East and Central African AFRENA. Currently there are 10 scientists working with the project; KARI (5), KEFRI (3), ICRAF (2).

The project, based at the KARI Regional Research Centre in Embu is within the East and Central African AFRENA with a mandate for applied research in the coffee based land-use system of Central Kenya. In the AFRENA context, the project has a lead role in development of technologies related to livestock fodder with *Calliandra calothyrsus* as the most promising fodder species. Research is also conducted on soil and water management and tree products.

Strong links have been developed with the agricultural extension services mainly through the National Dairy Development Project and the Sida supported National Soil and Water Conservation Programme. A large proportion of the research is on farm involving collaboration with the MoALDM extension staff. There is a high adoption rate among farmers of the project-promoted technology with fodder production of calliandra.

An evaluation carried out in 1995 was positive to a continuation of the project. It was found that the project has succeeded in doing research on

small-scale farms and with the active and beneficial involvement of the farmers themselves.

4.6 Uganda

The Sida support to the AFRENA research and development activities in Kabale in south-western Uganda, started in July 1997. The project is a collaboration between Forestry Research Institute (FORI) and ICRAF aiming at re-establishing trees as a component in the farming system to support food security, household income and increased availability of tree products. In the AFRENA context the project has a leading role in development of technology for terrace management on sloping land.

The project collaborates with non-governmental organizations (e.g. Two Wings Agroforestry Group and Uganda National Farmers Association). The Sida support is aimed at strengthening the on-farm testing and technology dissemination by supporting ICRAF technical back-stopping, providing some operational funds as well as paying for one national scientist (on-farm research) and the project administrator. This project is co-financed by USAID, EEC and ICRAF core, and the Sida support meets around 20 % of the total cost of the activity.

4.7 Maseno

The KEFRI-ICRAF-KARI Maseno agroforestry research center was started in 1986 with KEFRI as a lead institution. The Centre falls under the East and Central African AFRENA with flagship mandate of research on soil fertility replenishment and enhancement targeting the humid area of the East and Central African highlands, where population pressure on land is pronounced.

The following problems related to land use have been highlighted in surveys carried out in the area by the Centre:

- Naturally infertile soils with low levels of nitrogen and phosphorus and that also fix phosphorus,
- the striga weed is a serious problem,
- farmers can not afford fertilizers resulting in little or no application,
- a food deficit area,
- a shortage of fodder during dry season, and
- a shortage of wood.

The Centre has following objectives:

- Develop, in participation with farmers, technologies to improve soil fertility and crop yield.
- Promote the planting of high value trees; timber and non-timber.
- Disseminate promising technologies to extension workers, NGOs and farmers.
- Strengthen capacities of national institutions to undertake research and technology dissemination.

Sida is mainly funding the research whilst EU funds the extension components. The Swedish support constitutes some 20 % of the total budget of the activity. Specifically, the Sida supported components are:

- Research on soil fertility improvement.
- Research on striga, nematodes and insects.
- Contribution to establishment of soil fertility laboratory (particularly through procurement of equipment by Sida funded Research Associates).
- Funding of national scientists, some technical staff, vehicle maintenance and running costs (electricity, telephone etc.).
- Manpower for research in the form of Swedish associates that come with operational funds (not common for associates from other countries).

Since the inception the Center has been collaborating with various actors to enhance dissemination of agroforestry technologies. Collaborators include: MoALDM, Forest Department, TSBF, Care-Kenya and other NGOs, Churches and Schools. The framework of collaboration has been informal, e.g. in the form of invitations to joint training and extension activities. Hence, extension agencies facilitated visits by farmers to the station or fields of contact farmers to observe and discuss technologies. Researchers from the station also participated as resource persons for agroforestry courses by extension agencies..

Four main channels are used for disseminating agroforestry technologies in western Kenya:

- Through the general extension service of the Ministry of Agriculture,
- Through the Soil and Water Conservation Program of the Ministry of Agriculture,
- Through NGOs, and
- Through a currently evolving village based approach similar to the catchment approach of the Ministry of Agriculture.

The current staffing at Maseno includes six scientists and six associate scientists seconded by KEFRI, one scientist seconded by KARI and two international scientists, four national scientists and five associate scientists from ICRAF.

4.8 Agroforestry Today

During the bridging period July 1997 - December 1998 Sida started to support the ICRAF magazine Agroforestry Today. Agroforestry Today is according to ICRAF 'the flagship publication of ICRAF' and 'a most effective and immediate means of reaching a broad range of readers who have an interest in agroforestry'. In recent years, the magazine has transformed itself into a medium through which researchers and Agroforestry practitioners share practical information and news around the world. In 1994, the magazine changed considerably in style, appearance and content. The style became much more 'popular' and now carries straightforward and easy-to-read articles rather than lengthy and weighty scientific papers.

With requests for more free subscriptions coming in by hundreds and increasing printing and production costs, ICRAF decided to introduce paid subscriptions, US \$ 40 for individuals and US \$ 60 for institutions from 1996. A reader survey was conducted to cull out and reduce errors in the mailing list. The reader survey and the introduction of fee for subscriptions slashed the number distributed to about half. Readers from third world countries can still get the magazine for free if they write to ICRAF presenting their 'case'. Out of the total approximately 3,000 subscribers 169 are paying (94 institutions and 75 individuals). Out of the subscription fees 45 % goes to the agent handling the subscriptions and 55 % goes to ICRAF.

The reader survey showed e.g. that

- 27 % of readers are involved in research, 15 % in conservation and resource management, 15 % in extension and outreach, 13 % in training and education and 8 % in development work.
- 88 % of the readers are male, only 12 % female.
- An 'average' copy sent is read by not only the recipient but by some 4 additional people.
- 35 % of the readers said that the magazine is 'excellent', 59 % 'good', but 6 % felt it needed improvement.

Agroforestry Today is currently produced only in English, but selected articles are translated into Spanish and Chinese. Earlier French and Chinese versions have been discontinued due to shortage of funds.

4.9 Agroforestry film

Fields of Trees, an educational and informative video was produced by ICRAF in 1995 jointly with the Television Trust for the Environment (TVE). The video, focusing on 4 families in 3 continents shows how agroforestry interventions can help in solving some of the problems faced by these families. To date over 250 copies of the 30-minute video and its 18-minute version have been distributed. Of these 200 were issued free to non-profit organizations, educational institutions, extension workers and media outlets while another 42 were sold to individuals or groups that could afford to buy. Excerpts from the video have been broadcast on various TV stations, including CNN, BBC and WTN. Sida contributed some US \$ 121,000 to the production.

4.10 Associate Experts

Since the late 1980s ICRAF has hosted young Swedes working at ICRAF (Called Associate Experts by Sida, Research Associates by ICRAF). All in all seven people have been given a chance to work 1 - 3 years in ICRAF:

- Mats Lundberg: 'Alternatives to Slash and Burn'
- Gustav Böcklin: 'Alternatives to Slash and Burn'
- Eva Ohlsson: 'On farm research in Maseno'
- Björn Hansson: 'Agroforestry Education in Technical Colleges'
- Per Rudebjer: 'Agroforestry education through ANAFE'
- Hans Sjögren: 'On farm research in Maseno'
- Jennie Andersson: 'Agroforestry Education through ANAFE'.

Currently no Swedish Associate Expert is working within ICRAF.

4.11 South East Asian Network for Agroforestry Education, SEANAFE

Sida support for this activity was initiated during the 18 month bridging funding period (July 1997 - December 1998). Building on the experiences of ANAFE in Africa, an idea has emerged to initiate a similar network in the three SE Asian countries where ICRAF has its focus in Asia, i.e. Indonesia, Thailand and the Philippines. Funding has been allocated for various start-up activities, as well as for a Swedish consultant based in Indonesia (at ICRAF SE Asia, housed by CIFOR) from February 1998. In a recent discussion on support from Sida to ICRAF it has been indicated that SEANAFE also could expand to cover Vietnam. In principle, SEANAFE falls outside the scope of this evaluation since its funding from Sida commenced after 1 July 1997.

4.12 Other cooperation

Ph. D. students

A number of Swedish students have carried out Ph.D. studies at ICRAF through different funding arrangements (SAREC funded Soil and Water Management Programme at University of Nairobi or SAREC funding through Swedish Universities). A total of four Swedish Ph. D. students have been or are doing their research in collaboration with ICRAF. Details are as follows:

Name	Subject	Time	Supervisors
Kerstin Jonsson	Agroforestry in dry savanna areas of Africa: interactions between trees, soils and crops.	1993 - 1995	Peter Högberg Chin Ong Julius Odongo
Eva Olsson	Mineralisation potential in the subsoil.	1993 -	Keith Shepherd Lars Olander Börje Lindén
Ylva Tillander	Competition for and conservation of water, nutrient and light resources in agroforestry systems in Burkina Faso	1997	Chin Ong (external examiner)
Lena Ståhl	Studies on dynamics of nitrogen and carbon in agroforestry-important factors for optimizing management and selection of species.	1993-	Peter Högberg Roland Buresh
Gert Nyberg	The role of trees in carbon cycling and mineralization: processes in carbon dynamics above and below ground in improved fallow systems.	1996-	Peter Högberg Roland Buresh

ICRAF - RSCU/RELMA

Another area of collaboration between Sweden and ICRAF is the cooperation between Sida's Regional Soil Conservation Unit in Nairobi, from 1998 transformed into the Regional Land Management Unit, RELMA. Through the 1980s RSCU collaborated with ICRAF on a range of activities, and from 1994 the collaboration also includes that RSCU/RELMA is housed in the ICRAF premises.

5. Performance of the components to be reviewed

5.1. Machakos

The activities at the Field Station can broadly be divided into:

- Development of research methods and actual research
- Demonstration and training.

Development of research methods and actual research

- Screening of species of trees and shrubs for semi-arid areas.
- Tree establishment techniques.
- Contour hedgerow technology for soil conservation on sloping lands.
- Tree/Crop interface.
- Constraints to alley cropping in semi-arid climates.
- Better understanding of trial designs for agroforestry, e.g. need for control of interference among trial plots to avoid distorted results due to root penetration into adjacent plots. Initially too small plots were occasionally used, and it was of major importance that this was recognized at Machakos before massive collaborative research started.
- Research methods developed:
 - Tipping bucket system for soil erosion measurements.
 - Sap flow technique for measuring transpiration of large trees.
 - Heat pulse technique for study of water uptake by individual roots, used to determine extent of competition for water between tree and crop roots.
- About 50 scientific papers were published in international journals and conferences during 1990 - 1998.

Demonstration and training

- The station received large numbers of visitors (peak in 1992 with around 2,300 visitors now reduced to around 400 visitors in 1997).
- Between 1989 and 1997 group training has been offered to 50 technicians.
- Training on individual basis has been offered to 18 M. Sc./Ph.D. students, 38 Polytechnic/undergraduate students and 10 in-service trainees.

Relevance

- The station has been relevant to ICRAF objectives and strategies of strengthening national capacities to conduct agroforestry research and dissemination of agroforestry information through training.

- Activities has been in line with Sida strategies of support to development of sustainable agriculture and forestry production with special emphasis on soil and water conservation. Developed technologies have been geared at support to small scale farming sector for improved food security.
- The activities have also contributed to building of knowledge and institutional capacity through research collaboration and higher education.
- The initial demonstrations of agroforestry technologies and work on development of research methods and concepts were not immediately directed towards the needs of the local communities. However, studies that were initiated later on local practices (fanya juu terracing, *Grevillea robusta* planted on boundaries etc.) has contributed to a better understanding of limitations and opportunities for technologies benefiting the Kenyan farmers.

Development over time

From initial observation trials, the scientific approach became more advanced in capturing strategic aspects of tree crop interaction, essential for the understanding of impacts of agroforestry systems.

Soil conservation research has been carried out by ICRAF as well as by the neighbouring Katumani Dryland Research Station. Although having had similar research set-up (run-off plots) different aspects have been studied by the two institutions. Trials with hedgerows as cross slope barriers were effective for soil and water conservation but even with wide spacing had no advantage in crop yields due to high water consumption by the trees. The soil conservation research is still on-going in close collaboration with Katumani. A spatially dynamic soil erosion model is being developed. A number of research institutions have been collaborating at Machakos, e.g. Swedish University of Agricultural Sciences (SAREC funds), University of Nairobi (SAREC and other funds), Institute of Hydrology (ODA funds), University of Florida, University of Nottingham, Texas A & M University).

Costs and benefits

It was not possible for the team to analyze cost and benefits for the station in depth. However, it was noted that investments in infrastructure has been kept low, by e.g. constructing buildings by use of own work force. Laboratory analysis are deliberately kept simple for ease of replication at other stations in the region.

In terms of costs and benefits in a larger perspective the use of the Field Station as a testing ground for research methods has been cost-effective, since follow-up from Nairobi was easy, and inappropriate research designs could be avoided in the larger collaborative programmes under the AFRENAs. Another major benefit from the strategic research is that findings have assisted in avoiding further promotion of inappropriate technology in semi-arid areas, e.g. alley cropping. This achievement alone has contributed to large savings.

Major reasons for phasing out the activities at the Station

- Biophysical characteristics represents only very limited area of Africa (bimodal and semiarid).
- ICRAF has consciously developed a strategy of collaboration with NARS that aims at sustainability.

Some of the ICRAF researchers nevertheless regards the phasing out of the Field Station activities as a loss of opportunity for closely monitored and fully ICRAF-controlled research. Although most activities at the station are being phased out, the facilities are still functional and well managed.

Research plots in on-going programmes are well kept. Large areas earlier used for trials are now turning back to bush. Workers are however encouraged to utilize some of the land for farming. Other parts of the land will be used as seed orchards.

Conclusions

- The station has successfully met its objectives of promoting agroforestry through demonstrations, development of research methods and concepts and by receiving large numbers of visitors.
- The station has been most instrumental in developing research methods.
- The Field Station has contributed to clarification of the agroforestry concept and promoted the build up of ICRAF as an organization.
- A large number of scientists and technicians have been trained at Machakos and are now actively involved in agroforestry research.
- Much of the research findings are not site specific and have assisted in development of agroforestry technologies and research methods globally.
- The strategic research supported by Sida is an important foundation for further development of agroforestry systems. It is realized that understanding of underlying processes governing the interaction between components of agroforestry systems is essential before promoting new technologies at a large scale.
- It is interesting to note that after having studied the adaptability of a wide range of exotic nitrogen fixing tree species with good performance in their natural habitat, most, if not all of these species have gradually been rejected in favour of indigenous species and some exotics introduced to the region long time ago.
- Similarly, trials on alley cropping have been valuable in establishing constraints to this technology in semi-arid areas.
- Current studies of tree root systems, water extraction and competition with associated crops assist in improving the understanding of below ground interactions explaining why certain trees are less competitive.
- A confirmation on positive findings is through farmers' adoption rate. *Grevillea robusta* (earlier accepted as part of farming systems in the high potential areas) is now also widely planted on farms surrounding the Machakos Field Station. Positive results from trials have assisted in promoting this practice.

- Strengthened on-farm research components and farmer-extension-research linkages now make ICRAF favour collaboration with NARS rather than focusing on an ICRAF Field Station . This is also part of ICRAF's effort to assist in national capacity building.
- It is finally also noted that the training aspect that was part of the Machakos station mandate can now be well covered within the NARS collaboration.

5.2 ANAFE

Relevance and justification

The ANAFE network is potentially a very powerful tool offering chances for ICRAF (and potentially RELMA) to reach currently 98 member institutions in 34 African countries with an estimated 90,000 students out of which around 30 % are exposed to agroforestry as part of their education.

Agricultural education was much discussed and emphasized in Sida's investigation of issues related to food security in East and Southern Africa, and the need for support has been discussed also in the subsequent meetings in the RELMA context. With ICRAF organizing itself into a research division and a development division, it appears that ANAFE will be an important activity of the development division. Therefore, ANAFE is well in line with both Sida's and ICRAF's policies.

Quality and effectiveness

Among the activities that ANAFE is offering the degree of impact varies.

Most significant impact is noted on:

- Encouragement of agroforestry education. Many institutions now offer courses or 'majors' in agroforestry. This applies to all levels.
- Curriculum development: ANAFE both developed a method for development of agroforestry curricula and assisted many institutions in reviews of curricula. Occasionally ANAFE facilitated collaboration between institutions in the process.
- Networking: Staff of educational institutions have met and got to know each other.

Some impact has been achieved on:

- Equipment distributed but to few institutions and in some instances relatively expensive equipment, e.g. computers and advanced type of slide projector.
- Literature distribution, but limited number of titles and only one or a few copies of each. Still most libraries are very poorly equipped, and lecturers also use only few books, and occasionally not very relevant ones.
- M. Sc. fellowships. Fellowships have been awarded, but not always to lecturers but to e.g. researchers. It is noted that fellowships serve dual purposes: build human capacity through training of individuals, and provide incentives to institutions that offer good-quality training by students who are capable of paying tuition fees. All fellowships awarded are for studies at African universities.

- Lecturers have been given opportunities to attend short courses organized by ICRAF. However, need are far from met.
- Staff exchange has been arranged, but many institutions have not yet benefited.
- Newsletter: Has been produced and been appreciated, but more recently it seems not to have been distributed effectively.

Little impact was achieved on:

- Development of training materials.
- Improved field practicals and demonstrations.

Other achievements that deserve mentioning are:

- Successful linking of ANAFE initiatives with those of other stake holders, e.g. IFS, AAS, RSCU, UNESCO and others.
- Publishing and circulating ANAFE outputs, e.g. process in curriculum reviews, comparative analyses of education systems in anglophone and francophone Africa.
- Lecturers generally appreciate the promotion of agroforestry in education since it brings an integrated approach to education in land use.

Output, cost efficiency

ANAFE started with 29 institutions and with a wide range of services offered. Realizing the benefits many institutions opted to become members. Thus, the membership grew rapidly. The growth in terms of membership initially coincided with strength of the coordination unit, with, in addition to regular staffing, active Swedish Associates that served for relatively long and also an education fellow that worked for a considerable time. Later, however, the coordination unit has suffered from turn over or absence of Swedish Associate and education fellow. A budget break down over the years is reflected in Table 4.

Table 4: ANAFE budget 1993 - 1997

Area of cost	1993	1994	1995	1996	1997
Postgraduate fellowships	102,617	214,642	181,500	94,868	74,320
Education fellows	19,880	79,200	92,754	54,088	48,662
Curriculum reviews	24,091	28,580	23,952	25,599	36,119
Teaching material supply	16,389	35,007	3,161	13,556	25,000
Teaching mtrl developm	0	4,183	2,100	4,334	4,118
Equipment support	34,848	35,140	0	0	450
St comm & gen meetings	33,034	20,743	36,697	13,706	19,763
Coordination	62,523	138,232	44,665	136,560	155,004
Office expenses	13,478	34,778	14,442	14,741	22,950
Workshops	15,778	33,767	5,398	18,954	16,295
Internships	0	12,974	8,759	7,881	0
Staff exchange	0	11,887	2,893	8,396	3,001
Totals	322,638	649,133	416,321	392,683	405,682

If costs are separated on

- actual direct support to institutions (postgraduate fellowships, curriculum reviews, teaching material, equipment, workshops, internships and staff exchange and on
 - Costs for manning and running the network (education fellows, steering committee and general meetings, coordination and office expenses),
- one will find that the two groups are of almost equal sizes for the whole period. However, for the first two years some 60 % of the resources were used for direct support to institutions and some 40 % for running and managing the network. For the two most recent years the ratio is reverse, 40 % for direct support and 60 % for manning and running the network.

If this finding is linked to the growth in membership one will find that the resources allocated to actual and direct support was in 1994 in the range of 5,000 US \$ per institution, dwindling to some US \$ 1,600 per institution in 1997. It is also noted here, that fellowships were not always targeting lecturers but occasionally researchers.

The calculations above serves only as an illustration to what many members reported to the evaluation mission during the survey: 'ANAFE started with a lot of vigour, grew, and lost some of its vigour'. It is emphasized by the mission, that this is entirely related to growth and some staff turn over, and is not related to the performance and dedication of the staff at the coordination unit. The coordination unit has also noted this development.

But all in all it is noted that ANAFE has lost some cost efficiency when it grew.

Management

ANAFE is well managed. The mission has in particular noted the excellent records kept, and availability of all statistics and other information that the mission asked for.

Conclusions

- ANAFE is potentially a very powerful tool linking large numbers of lecturers and students to each other, to research and indirectly to other organizations.
- ANAFE has made significant contributions, e.g. on encouragement of agroforestry education and on curriculum development.
- In relation to demand, ANAFE has had limited impact in several other areas.
- The growth of membership made ANAFE 'thin'. This was aggravated by fellowships not always targeting lecturers.
- There is need to review the focus and mode of operation. The move towards regionalization by selecting focal institutions is one important element.
- ANAFE would probably achieve more if it focused on certain activities at certain times, a 'campaign approach'. Priority in the near future should

be to enhance quality of training rather than to encourage increased volume of training. Literature and staff training will be important.

- ANAFE is still in a stage of experimentation, and close monitoring of impact is therefore important.

5.3 Core Support and some general comments on ICRAF

As noted earlier ICRAF has a low level of core support as compared to many other CGIAR institutions and Sweden provides a below-average ratio of core in relation to project support.

ICRAF generally

The mission makes reference to the EPMPR and to other on-going reviews with regard to an overall assessment of ICRAF's programmes and management. These on-going and forthcoming reviews will yield essential information for Sida's decision on future ratio between core and project support. The mission restricts itself to a few remarks on the impressions of ICRAF as an institution:

- ICRAF has emerged as a strong lead centre in agroforestry science and practice. Its programmes and plans have a good spread between on-station and on-farm environments with effective farmer involvement. The programme's scientific content and vigour compares favourably with those of many other CG centres.
- ICRAF overall scientific output has been substantial, increasing from 32 publications in 1988 to 209 in 1997. The biggest increase occurred from 1993, and stands at an average of 1.64 items per year per internationally recruited scientist and post-doctoral fellow. This compares well to the CGIAR average of 1.38 items per internationally recruited scientist reported in Maclean and Janagap's (1993) study.
- ICRAF's structure is decentralized with middle managers having good knowledge and control over the resources allocated to their programmes. Effective implementation of projects is therefore more depending on the capacity of middle level managers and less on ICRAF's overall management. It is however recognized that performance at the two levels are related: It is only with a conducive work atmosphere that middle managers will perform to the best of their ability. At this point in time, however, the mission concludes that Sida-supported projects generally run well under the guidance of dedicated middle managers.
- The mission notes that it has apparently not been clearly spelt out whether or not ICRAF can charge overheads on Sida-supported projects. Generally, ICRAF's policy is that 23 % overheads are charged on projects to meet costs for general management. Costs for e.g. telephone, office space and computers are charged directly to projects, and thus not included in the 23 % overheads. Given flexibility offered by Sida, ICRAF decided to charge overheads during 1994-96 but not at other times. A complicating factor is that Sida also provides core support, and it could be argued that the core support should also cover overheads on projects. A Sida-policy in this respect is apparently lacking.
- Sida's contribution to ICRAF, with a low ratio of core support, gives in principle ICRAF little freedom in using the support from Sweden.

- In practice, however, at least in recent years, Sida has by and large responded to ICRAF's priorities with regard to allocation of project support, resulting in a rather fragmented support to many components, often with a low ratio of support from Sweden combined with support from other donors. The ICRAF accounting system allows detailed follow-up of how the Sida support is allocated. However, the more thinly it is spread, the more difficult will it be to assess impact, and in fact, the more similar will the project allocations be to core support.

5.4 Chipata

Relevance and justification

The project is well justified with its agenda addressing soil fertility as an entry point for tackling security in terms of food and income generation among small-holders. This is consistent with the goals of ICRAF, Sida, NARS and local communities. The research agenda is appropriate and responds to concerns identified in the D & D survey of 1986 and subsequent surveys which have recognized land depletion, lack of quality fodder, and degradation of natural resources as constraints to enhanced crop yields. Current low yields result in lack of sustainability of the farming system, deforestation and poverty among the small scale farmers in the area. From a Sida perspective the co-existence of a Swedish-supported research project with Swedish support to extension through SCAFE gives added value.

Quality and effectiveness

The implemented research and development process has the necessary controls at the on-station trials while on-farm trials provide flexibility that taps farmers' available indigenous knowledge. Employing a network of contact farmers over a large area has enabled the project to quickly establish appropriateness of preliminary tested technology under different environments

The project has engaged standard biometrical designs appropriate to the working sites, treatments and attendant variables. The mission notes, however, that there is need to strengthen socio-economic and policy research, strengthen and empower the village agroforestry committees and NARS, for a more effective participation in setting priorities, research planning and project implementation.

Results

The project has made good progress. *Sesbania sesban* and *Tephrosia vogelii* improved fallows have consistently produced high maize yields where they have successfully been established. Two main limitations to *Sesbania sesban* improved fallows have however been experienced:

- The need to propagate *Sesbania sesban* through bare-root seedlings raised in nursery (labour intensive method).
- *Sesbania sesban* is suffering from pests, and especially so the introduced, fast growing provenances. They are quite severely attacked by a beetle (*Mesoplatys*), defoliating the trees.

Possibly partly due to these limitations, farmers are cautious on adoption and still remain at trial stage with few plots larger than the normal trial size of 20 x 30 meters. As a response to the problems experienced with sesbania, the research agenda has been broadened to include other species, primarily *Tephrosia vogelii*.

At this time it may be premature to quantify the level of increased crop yield generated through these technologies, the number of families benefiting or additional employment opportunities generated. However the following benefits from the project are noteworthy:

- Somewhat enhanced specialized training of NARS scientists and technical staff and establishment of collaboration between scientists and institutions in the region.
- Formation of informal networks including an adaptive research team of scientists and mechanisms for collaboration between the Government, NGOs, community based organizations and donor-supported projects on the ground.
- A number of promising technologies particularly on improved fallows are being tested by a wide network of farmers and extension organizations with evidence of realizing increased crop and fuelwood yields.

While the collaboration would promote capacity building of local staff, the project remains largely driven by ICRAF's presence. Efficiency has partly been secured by hiring a large number of staff paid directly by the project. Complaints were raised privately about inequities and lack of full involvement in decision making processes. Although elements of capacity building may be realized along the way, prospects at the community or local institutional levels for an early taking over seem remote.

In this context it must however also be noted that the Government institutions are resource poor and may not be capable of meeting the challenges for technical advancement unless there is financial and technical support provided through e.g. ICRAF. A higher-level input can be justified even if the level does not match well with the locally available resources, if, through a higher input, improved technologies will be developed that will lead to sustainable improvements in the farmers fields. Therefore a temporary higher level of support may be well justified even if the level of support to research in the long run may not be sustainable.

The mission is however of the opinion that the actual research has been a lot more successful than the building of capacity for continued research at the national level.

The project has produced a number of quality papers during the years subject to this review, some of which have been published in leading journals such as the Forest Ecology and Management, Annuals of Botany, Agroforestry Today and some presented in conferences and workshops. But out of 17 publications appearing in international journals, only two have

been co-authored by local counterpart staff, and chapters in books and other publications are all authored by the international staff. Out of 9 completed graduate studies, three have benefited locals; while on-going graduate studies are spread equally between locals and foreigners. Participation of students and research fellows stand to enrich the project and should be encouraged.

User friendly material in English and local languages have been produced. An extension manual on Sesbania improved fallows is now available in draft form. The team observed that still it would need to be tested within the extension machinery, possibly to be revised omitting some parts that might be too theoretical for a manual of this nature.

Adoption of technologies in local communities

The project meets farmers and farmer groups through camp officers, NGOs, and community based organizations. This strategy seems to have led to a reasonable level of diffusion. Collaborating organizations have an outreach to an estimated over 15,000 contact farmers.

Although there is high pressure on ICRAF to show results through fast adoption by farmers, it is recognized that as a research organization, ICRAF should not undertake extension work. Rather ICRAF should be a catalyst for technology dissemination initiatives to enhance participation of farmers as extension agents. No financial and material support should be given to extension agents by ICRAF.

In the present context, the improved fallow technology has scope for passive diffusion in the future because the technology responds to a problem that is crucial to farmers and touches on their livelihood. It can thus be argued that provided that the technology holds the promises the adoption by farmers does not entirely depend on a functioning extension service.

There is a need to identify means of acknowledging farmers contribution to technology development through giving prizes at agricultural shows or offering them a possibility to visit other research stations etc. Further, it appears as if there is room for more encouragement to farmer innovation and adaptation of the emerging technologies.

Cost-effectiveness

The AFRENA concept is cost efficient through its eco-regional and collaborative approach and through having many partners who are working closely with farmers facilitating establishment of a large number of trials at low cost.

The cost efficiency of promising technologies is very much related to the cost of commercial fertilizers. Prospects for mitigating nitrogen-deficiency seem promising whereas work on phosphorus appears less advanced. A weakness in the approach is that the intense work on agroforestry technologies for improved fallows is not matched by research on non-

agroforestry improved fallows using e.g. *Crotalaria* spp. or velvet beans, which have been known practices in Zambia. NGOs work on promotion of these technologies, but it seems that comparative studies are few.

Management

Channeling of considerable donor funds through ICRAF gives it a strong position in relation to its "partners". It was reported that through the Adaptive Research and Dissemination Network, all collaborators of ICRAF participate, and that this joint planning ensures that all parties are aware of planned activities. At policy level, there were indications that the Ministry of Agriculture Food and Fisheries is aware of activities by ICRAF and support the same. At the operational level, there were indications that ICRAF's annual workplan was not clearly known to collaborators. The joint planning approach is good and should be extended beyond policy level actors.

The planning goes through the national agroforestry planning processes (such as agroforestry consultative workshops), Southern Africa AFRENA planning process and ICRAF's internal planning processes which include the preparation of the medium term plan within the guidelines of the CG. The project is implemented by a team of ICRAF scientists, local scientists seconded by the collaborating institution.

Financially, the project runs on a basis of imprest from ICRAF HQ. Various expenditures are charged to the different donors, invoice by invoice, by the Chipata staff, imprest returns sent to Nairobi and entered into the ICRAF main accounts. Financial auditing is undertaken internally at the Southern Africa AFRENA level, by the GRZ, the headquarters, and ICRAF's overall external audit also covers the project. The project reports on progress in its different areas of activities, including annual reports, ad hoc thematic papers and its work is also covered in ICRAF's various reports.

Although the review did not go into detailed expenditure by budget lines, available information suggested that budgetary provisions are being spent on intended purposes. Management is generally sound, the project is active and vibrant, under able leadership.

The CGIAR system has developed an elaborate system for monitoring and evaluation with each CG centre subject to regular external reviews about every fifth year, and ad hoc internal and externally commissioned reviews either by the centre itself or by a donor. The reviews play an important role in shaping the centre's accountability and management. The activity in Chipata was subjected to an internal review in 1995. Besides giving a range of detailed technical recommendations on the various research topics, three recommendations were made with regard to hiring of additional staff:

1. A national professional scientist to serve as a Research Liaison Officer between the Chipata Project and the many institutions now involved in its on-farm evaluation of improved fallows.

2. A National Professional Administrative Assistant to help relieve the Team Leader some of the administrative burden.
 3. A Research Associate to take responsibility for the day to day management of on-going and new research at Msekera Research Station.
- The mission noted that research/extension liaison officer has been hired, and that ICRAF has approached Sida with regard to secondment of a research associate.

Sida/SAREC monitoring

Sida/SAREC has not visited the project although this would be of much encouragement to the local team and the headquarters staff. In contrast the other major co-donor, CIDA takes active participation in planning and discussion meetings through a monitorer visiting the project normally three times per year.

Conclusions

- This is a successful programme being in the forefront of participatory technology development and on farm research.
- Farmers are still cautious in adoption of improved sesbania fallows and researchers and extension workers are not pushing as it is felt more experience from farmers own experimentation in Type 3 trials is welcomed. If attractive technology is developed it will spread automatically without any further extension efforts.
- Still there is need for diversification of technologies to avoid set backs from pests and diseases and to reduce costs on labour.
- Partners need to be provided with ICRAF project budgets for improved coordination and planning.
- Desirable complements in research would be strengthened socio-economic research and complementary research on improved fallows using non-agroforestry options. The latter will, however, fall outside the mandate of ICRAF.
- There is room for more efforts on building the Zambian capacity for agroforestry research.

5.5 Maseno

Relevance and justification

The project is addressing problems in land use through development of technologies for:

- Improved fallows,
- Biomass transfer,
- Pest and disease management; and
- Domestication of high value trees.

The research conducted is both process oriented examining e.g. mineralization processes and participatory with all research conducted on farm. Net-working with a broad range of partners provides powerful links.

Two kinds of research on improved fallows are being conducted:

- Relay fallow with woody species (e.g. *Sesbania sesban*, established through direct seeding or from seedlings planted in a maize crop, left to

grow during the short rainy season, and cut back at the beginning of the following long rainy season).

- Screening of promising fallow species including species of *Crotalaria*, *Desmodium* and *Colopogonium*. (Over 60 species of *Crotalaria* occur in East African Highlands. Four species including *C. grahamiana* and *C. palmensis* introduced from Southern Africa, are being evaluated).

The work on biomass transfer has investigated the effect of application of different rates of organic mulch and inorganic fertilizer. *Tithonia diversifolia* (a Central American species, naturalized in East, Central and Southern Africa) applied at 5 t dry matter per hectare gave good response in maize yield with noticeable residual effect extending to the third season after application. Some interesting studies initiated recently investigate the effect of *Tithonia* mulch with or without phosphate rock or super phosphate fertilizer in maize and sukuma wiki (kales) cultivation.

The mission is of the opinion that the project and its major activities are relevant, appropriate and consistent with the development needs in the Districts but also relevant and potentially important for larger areas of Eastern and Central Africa. From a Swedish perspective, complementarity with Sida-supported activities on soil conservation in Kenya and possible complementarity with other initiatives in the Lake Victoria Basin gives added value.

Quality and effectiveness

Maseno has no own experimental fields. All research is done on farmers' fields in four Districts: Kisumu, Vihiga, Siaya and Kakamega. The approach to generation of technology is relevant and conforms with the current farmer participatory approaches for technology generation, but the team noted that farmers' innovativeness may not yet have been tapped to the full extent.

The Sida funding is at relatively low level (around 20 % of the total funding for Maseno-based activities), with EU as another important donor. The EU-funds are mainly directed to the dissemination end of the research-adoption continuum, whereas the Sida funds are more geared to the research *per se*. The programme has benefited from Swedish associate researchers who have filled gaps by providing knowledge and manpower while also bringing their own operational funds. In particular, the work of Eva Olsson, first as an Associate Expert and later as a Ph. D. student has been much appreciated, noting that Eva was instrumental in the early stages of on-farm research.

Addressing the nutrient depletion (low N status) with focused applied and strategic research following standard biometrical designs that are easy to manage provides an effective approach and strategy. Despite a recognition of the role of socio-economic and policy research by the centre, studies in this area are not evident.

The team was somewhat concerned with the procedures for introduction of tree and shrub species that may be new to the area. Their biological

attributes may not be well known in a new environment, for example, potential weediness, pest and diseases associated with the species. It appeared as if the staff at the Station were not aware of species being exotic (e.g. some of the *Crotalaria* spp.), which caused some of the mission's concern with regard for ICRAF's procedures for introduction of new germplasm. Primarily ICRAF refers to the national and international phytosanitary regulations being met, but it seems there is no control function with regard to ecological consequences of introduction of species. This may appear minor, but it should be noted that many of the desirable attributes of agroforestry species are also attributes of potentially weedy species (e.g. fast growth, prolific seeding). There are also several examples of 'agroforestry' species turning into weeds with leucaena and prosopis being good examples.

Results

Given the young age of the project, impact assessment can only rely on performance of a few and intermediate key indicators. A number of promising technologies including the use of improved, and managed fallows of selected species of leguminous shrubs and herbs, their beneficial effects and the contributory value of biomass transfer are beginning to emerge. The growing number of contact farmers (over 12,000 farmers) and the demand for agroforestry information provide good indicators of farmer interest.

The village committees, that are answerable to locational committees, have been constituted by community based organizations and delegates of clans and associates, and they provide a useful vehicle for promoting the project. The presence and participation of national staff particularly through KEFRI staff complement has also increased noticeably.

The national institutions have benefited through establishing bridges between scientists and scientific institutions, and opportunities to work with international scientists on strategic, cutting edge and upstream research, availability of infrastructure, information and equipment for research (a soils laboratory at Maseno), linkages to quality academic environment in close proximity to the farmers.

A considerable number of students have participated in research at Maseno:

Year	From local univ.	From foreign univ.
1993	0	1
1994	0	1
1995	2	3
1996	3	6
1997	9	7

Adoption of technologies in local communities

Much of the results have been published in international scientific journals. Other publications include proceedings of workshops and conferences, book

chapters and ICRAF's annual reports. Brochures, pamphlets, and manuals in English and vernaculars have been produced.

Farmers were reported to have a lot of interest in the promoted technologies. However, the mission could not visit sufficiently many farmers for a proper assessment of the pattern and extent of adoption. Based on observation in the areas visited, the wide adoption of the promoted technologies is not yet evident. Farmers neighbouring ICRAF contact farmers were not observed to have adopted the technologies from their neighbours.

Inter-agency coordination was said to be in place through periodic meetings, but no formal framework like the Adaptive Research and Dissemination Network in eastern Zambia was reported. A relatively strong coordination however exist between the three core partner institutions (KEFRI, KARI, ICRAF).

The informal links that ICRAF has established with non-partner institutions have enabled promotion of agroforestry but a very active involvement of farmers in technology dissemination was not evident. A Village Development Group approach founded on empowerment concept could enable farmers to be planners, decision makers and implementors of agroforestry extension activities within their localities. The approach could build on the experiences of the Catchment Approach of the Ministry of Agriculture.

Cost-effectiveness

Similar positive remarks on the AFRENA concepts can be made as for the activities at Chipata. It is noted that more work appears to be done in Maseno on technologies that are on the margin of agroforestry, e.g. use of *Crotalaria* and less woody legumes for improved fallows. Another remark is that the research in Maseno appears more comprehensive with a strong focus on phosphorus as well as nitrogen.

The project provides ICRAF with an opportunity to undertake good research with farmers, cost-effectively, in consistence with its mandate. By supporting the project Sida/DNRE makes a beneficial contribution to international research efforts towards solving declining agricultural production in Africa.

Management

The project has engaged fairly robust experimental designs that accommodate variations in the conditions of the sites, the populations, the range of treatments and the numbers of replications. It was noted that the project is in the process of adopting ICRAF's new system for data storage and retrieval. This system is user friendly and would employ a network of two to three computers that are linked to the headquarters. The implementing scientists will access the data but no one individual would have a way of tempering with the information.

The project is implemented by a team of international and national scientists and support staff. The regional co-ordinator and the centre director provide joint leadership, and the project also benefits from the guidance of several committees:

- The AFRENA Network with its technical and managerial steering committees.
- The Centre Management Committee constituted by KEFRI, ICRAF and KARI project leaders.
- Centre Administrative Committee constituted by senior centre staff.

The co-operation between the three partners (ICRAF, KEFRI, KARI) is streamlined by a Memorandum of Understanding which appears to have worked out well so far. But according to some national staff, it has become outdated, imbalance in salaries and other benefits and the flow of funds through ICRAF seem to be contentious. In the absence of mention of the farmer and the extension partners in the Memorandum of Understanding, these must rightly be regarded and seen as collaborating beneficiaries, as against being active partners.

Programme management is efficient and on-track. Budgeted resources are used on planned activities and proper accounts kept.

Conclusions

- The research activities at Maseno are relevant and well managed.
- Household heads or village committee leaders met during the review did not seem to have registers in which they record on-going investigations. It was therefore not clear if the farmer - managed experiments are recorded to provide meaningful evaluation at the end.
- The level of supportive socio-economics-policy studies appeared low.
- ICRAF had not always synchronized its activities with the Soil and Water Conservation Programme, something that would save resources as research could be planned and carried out in selected catchments where work is ongoing.
- Niches on-farms between plots and farm boundaries, identified for planting forestry trees have not always been used. Some on-farm species trials for poles and timber have been established in the middle of the plots, which appears inappropriate.
- The village committees, where these have been established, did not reflect elements of strength.
- ICRAF's procedures with regard to 'ecological control' of introduction of new species in a research context appeared to be less clear, at least to the scientists on station.

5.6 Agroforestry Today

General

Agroforestry Today is in the opinion of the mission a good magazine with an interesting coverage of a wide range of issues related to agroforestry. Each issue is normally 32 - 40 pages and includes short articles on e.g. tree

domestication, tree products, agroforestry species and technologies, economics, farmer practices and indigenous knowledge. In addition there are book reviews, calendar with upcoming events and readers 'Questions and Answers'. During the evaluation mission the mission came across many readers of the magazine, who all expressed their appreciation. The mission also met many people who used to get the magazine but who apparently failed to respond to the readership survey and thus were canceled from the mailing list. It is however noted by the mission that the readership survey was carefully done, and genuinely interested readers had good opportunities to be informed and to respond.

Agroforestry Today has now some 3,200 subscribers (See 4.8), and the total cost for production, printing and mailing was during 1997 151,850 US \$, corresponding to about US \$ 12 per distributed copy or US \$ 48 per subscriber. Out of the subscription fee (US \$ 40 for individuals, US \$ 60 per institutions) 45 % is required for the administration of the payments etc., and 55 % goes to ICRAF to cover costs. Therefore, in spite of quite a high subscription fee, in fact not even subscribing institutions pays the actual cost for the magazine. If the full cost was to be recovered an annual fee of about US \$ 70 would be required.

The mission is of the opinion that dissemination of information on agroforestry in a popular form through the magazine is well in line with both Sida's and ICRAF's policies.

There is a gender imbalance in readership, which probably by and large reflects a gender imbalance among the target groups. The producers are aware of this, and tries to address the gender issue by being gender sensitive with regard to the contents of the magazine.

Comparison FFTP Newsletter with Agroforestry Today

In order to get perspective the mission attempted to compare the finances of Agroforestry Today with another somewhat similar publication also financed by Sida, The FFTP Newsletter produced by the Swedish University of Agricultural Sciences. The FFTP Newsletter is also aimed at being quarterly, but only two issues were produced during 1997, but with approximately as many pages as Agroforestry Today's four issues. The costs for production, printing and distribution during 1997 for the two newsletters are reflected in Table 5.

Table 5: Comparison of costs for FFTP newsletter and Agroforestry Today

Item	FFTP: US \$	AF Today US \$
Production (compilation, editing, lay-out)	133,000	83,800
Printing	27,000	34,000
Mailing	18,000	34,000
TOTAL COST	178,000	151,800
Revenues	0	4,800
Other financing than Sida	0	91,600
Sida financing	178,000	55,400

It is noted that for the next phase of FFTP, some US \$ 210,000 are proposed to be allocated for the production (excl. printing and distribution) of the newsletter annually (4 issues per year).

FTPP Newsletter distribution as compared to Agroforestry Today is presented in Table 6.

Table 6: Distribution of FFTP Newsletter and Agroforestry Today

	FTPP	AF Today
Africa (Printing & Distr. Nairobi)	2,500	1,745
South Asia (Printing, Distr. Nepal)	2,000	Asia: 659
Asia/Pacific (Printing, Distr. Bangkok)	1,400	
Europe (Printing, Distr. Sweden)	700	209
America, Caribbean (Washington DC)	300	Amer., Austr: 170
TOTAL	6,900	2,783

The FFTP newsletter is produced also in French (Cameroon) and Spanish (Peru), but all the figures above refers to the English version only. Earlier Agroforestry Today was produced in Chinese and French, but it has been discontinued due to shortage of funds. Only selected articles are translated currently.

It should be noted that the FFTP readership is as recorded before a readership survey, but Agroforestry Today after a readership survey. The readership survey and introduction of a fee reduced the Agroforestry Today readership to half.

On contents it is noted that there is some overlap between the two, but also a recognized difference in that FFTP has more emphasis on approaches and experiences based on farmers and others as main actors in management of natural resources with special reference to trees. Agroforestry Today is somewhat more research related and focuses somewhat more on the trees and their uses. Quite a few people in Africa receive and appreciate both.

It is noted that ICRAF and FFTP have arrived at very different conclusions with regard to the arrangements for printing and distribution. Agroforestry Today is produced in Nairobi but printed and distributed from the UK. FFTP Newsletter is produced in Sweden but printed and distributed from various subcentres, Nairobi being one. It is not possible to determine which approach is better without further analysis since the printing quality, number of copies etc. differs.

Potential and actual readership

In Kenya, as an example, there are some 6,000 people involved in Government agricultural and forestry extension efforts. In addition many people are working with land use through education, research and NGOs. Although difficult to estimate, but one may perhaps guess that about half of the cadres above could be interested in the two mentioned magazines if they

knew of them, i.e. perhaps some 3,000 - 4,000 potential readers in Kenya only. Assume that there are interested readers in 100 countries out of the 193 on the globe, and that Kenya is an 'average' country: There could be a potential readership of about 300,000 - 400,000. It appears as if it is fair to say that both magazines reaches a relatively small group of lucky people who happens to know the possibility.

Cost-effectiveness

The above comparison between FFTP Newsletter and Agroforestry Today indicates that the costs are of the same magnitude for the two. It is noted that Agroforestry Today has come out regularly with four issues even during 1997 when there was a shift of Science Writer at ICRAF. FFTP managed only two, but the two ended up having as many pages as ICRAF's four issues.

A cause of concern for both publications is that they reach only a fraction of the potential readership, and with limited circulation the cost of production takes a great share of the total cost. An additional distributed copy of the FFTP Newsletter (printing and mail charges) is in the magnitude of 4 US \$, and an additional distributed copy of Agroforestry Today would be about 5 \$.

However, it is perhaps fortunate that the two publications only reach the 'fortunate and dedicated few'. If a wide readership was reached the whole concept of free distribution would end up being a very costly affair. From that perspective, the attempt by ICRAF to introduce a fee for the ones that should be capable of paying appears to be appropriate.

Can cost-efficiency be improved from a Sida perspective?

The production cost per copy is high for both publications due to a relatively limited readership. As a commercial enterprise, surely both publications would be non-starters.

There could be two potential ways to reduce the production cost per copy:

- Combine the production of the two (same editors etc.)
- Outreach to more readers.

Combination of the production is not very likely to materialize. Surely, ICRAF wants to produce its Agroforestry Today, and the FFTP Newsletter is an essential tool for the FFTP Network.

The other option could however be explored. If an agreement could be reached between the two publishers that the respective subscribers in third world countries could get both publications if they so wish readership could be extended in a cost effective way. Such 'extension offer' should however build on the expressed interest of readers. Announcement can be made through the two magazines.

Sustainability

It is obvious that Agroforestry Today, as well as the FTTP Newsletter cannot be run commercially in the near future. The production of Agroforestry Today is likely to be sustained as long as ICRAF is reasonably well financed, since most of the production cost is met by Core funds. The Sida input can be seen as a means to ensure that readers who are not capable of paying can receive it for free.

Management of Sida funds

The Sida funds are used as a general contribution to meet cost for production and distribution.

5.7 Agroforestry film and other dissemination

The mission is of the opinion that the film is good but it could be noted that the target groups are not the most needy beneficiaries of agroforestry development, i.e. the farmers in developing countries since they don't have access to TV and video. It is also noted that the production was fairly expensive, in the magnitude of US \$ 120,000. But on the other hand, the film has reached powerful media like the CNN. It is hard to assess the value of reaching a broad audience through e.g. CNN but it can of course be argued that such exposure contributes to awareness among the donor community.

All in all, the mission recognizes that the film was produced and has been successful in reaching a wide audience through TV and by selling/distribution of copies of the Video. It is, however, the impression of the mission that the film is not widely available and used among e.g. members of the ANAFE network.

For 1998 funds under the heading 'Dissemination' can be used for Agroforestry Today, but also for printing costs of other materials. So far, no decision has been made as to how this allocation is to be utilized.

5.8 Associate Experts

The secondment of Swedish Associate Experts to ICRAF has been much appreciated at ICRAF. The young Swedes have been regarded as well qualified and their work has been appreciated. The first two, who were working on alternatives to slash and burn at a time when that issue was not on ICRAF's research agenda, were less well integrated at ICRAF, and their work received relatively little attention from Sweden.

Based on that experience it was decided that Swedish Associate Experts should be recruited to work closely with on-going ICRAF activities, and preferably with activities that had other links with Sweden, e.g. in terms of funding.

Three of the Swedes that followed the two pioneers have been working with ANAFE, and their contributions have been important for the development of ANAFE. The other two have been working with on farm

research at Maseno. Most, if not all of the former Swedish Associate Experts at ICRAF are engaged in international work, and from that point of view the arrangement should be regarded as a success also from a Swedish point of view. It is however noted, that occasionally it has not been well understood at ICRAF whether or not the young Swedes have or have not an option to start working on a Ph.D. The position is that assignment as an Associate Expert has no link to a Ph. D. but occasionally the individual has nevertheless managed to secure funds for Ph. D. work through SAREC while being an Associate Expert at ICRAF.

In a Swedish context it has repeatedly been noted with concern that very few Swedes find their way into international research related to natural resources management. Lundgren et al (1994) reported in detail on the presence or, in fact, rather absence of Swedes in the CGIAR institutions. The short time, maximum three years for a Swede, limits chances to make a further career in international research. As a comparison it can be mentioned that the Dutch Government offers 5 years associate expert assignments. There are also many examples of Dutch Associate Experts who have moved on in international organizations having entered as associates.

It is also noted here, that Swedes working as Associate Experts at ICRAF have no formal link to any Swedish University.

Conclusions

- The secondment of Associate Experts has been successful both from a Swedish and from an ICRAF perspective.
- It is noted with satisfaction that Swedish Associates come with some funds for their operations, as opposed to Associates of some other nationalities. This is appreciated, since it enables Swedes to contribute effectively without increasing competition for operational funds from other sources.
- There are several ideas within ICRAF with regard to suitable posts for Swedish Associates. Posting a person to work with the SAREC-funded research at Chipata and at least one to work with ANAFE are the ideas that are so far most elaborate.
- It would be desirable from a Swedish perspective to expand on this arrangement in order to strengthen Swedish manpower capable of conducting research on natural resources management.
- Given the nature of the work a maximum time of more than three years would be desirable.
- When a Swedish Associate Expert is recruited, the position with regard to targeting or non-targeting a Ph. D. should be analyzed right from the start to avoid confusion and delay if that aspiration is there.
- From a Swedish horizon it would be desirable to establish further similar collaboration with other CGIAR centres (It is noted, here, that currently a Swedish Associate Expert is working at IPGRI.)

6. Comments on collaboration outside the main scope of this evaluation

6.1 SE Asian ANAFE

The initiative on establishing a network among educational institutions in South East Asia is just getting off the ground at the time of this evaluation, with an initial workshop planned and a consultant with ANAFE experience recruited to guide the process. The mission is of the opinion that it would have been advantageous to base an initiative on additional educational networks on an evaluation of the experiences so far of ANAFE.

As mentioned earlier, the rapid growth of ANAFE has made ANAFE thin and member institutions clearly see a loss of vigour during the last couple of years. The reasons for and indications on such development have been elaborated, see section 5.2.

SEANAFE is intended to operate in three countries (Indonesia, Philippines and Thailand), with an indication that it may also expand to Vietnam. The four countries are in terms of population about 2/3 of sub-Saharan Africa, and it appears that there is a considerable risk that the SEANAFE development will end up being thin as the ANAFE evolution indicates. It may be considered for large countries like the SE Asian ones if not national networks would yield sufficient critical mass for cross-fertilization of experience and knowledge.

To re-inject vigour in ANAFE will require resources, and it appears to the mission that Sida's contribution to agroforestry education should be concentrated on ANAFE. It may not be possible to run a vigorous ANAFE without additional funding, and unless Sida funding is increased (The total level of funding is discussed elsewhere), Sida and ICRAF may have to make a choice between

- supporting very thin networks in Africa and in SE Asia
- supporting vigorous networks only in parts of Africa and parts of SE Asia
- supporting a vigorous Africa-wide network only.

The mission is not convinced that it is wise to embark on SEANAFE until it has been demonstrated that ANAFE is effective in the view of the members.

6.2 Embu

In response to major recommendations in 1995 evaluation, the project management committee is now established and soil and water management aspects (including soil fertility) have been included as a separate theme alongside the flagship mandate of research on fodder production and a component looking into other tree products (wood, fruits and nuts).

Nearly all national project staff have completed or are currently undertaking various levels of post graduate training. Three Kenyan staff are pursuing Ph.D. studies while two other project staff are undergoing M. Sc. studies. Financial support to training has mainly been through other

sources, although Sida has contributed towards post graduate training for two project staff.

No funds were allocated for the international scientist in the extended project. The scientist is however still working with the project funded via ICRAF core support. The mission learnt that KARI has gone through an intensive period of manpower development, now considering themselves having sufficient numbers of trained scientists in most fields. However KARI would still like a strong ICRAF representation in the project by providing back-stopping to the soil and water management component by an ICRAF soil scientist on part time basis.

Conclusions

- The Agroforestry research project at Embu has been in the forefront in implementing on farm research and has established good farmer/extension/researcher working relationship.
- Experience of on-farm research is utilized in other projects including the Sida supported National Soil and Water Conservation Programme.
- The project is implementing the main recommendations that were suggested in the 1995 evaluation.

6.3 Uganda

Having supported soil conservation in East Africa for long, the Kabale area could be particularly interesting for Sida. In this rugged terrain most of the land is cultivated. Terracing was compulsory and implemented on all farm land during the colonial days. The farming system influenced by land fragmentation is however not sustainable with serious problems of low and still declining soil fertility. The ICRAF project is very relevant to the problems facing the area.

Sida through RSCU (now RELMA) has been supporting Uganda Soil Conservation and Agroforestry Pilot Project (USCAPP) operating in a neighbouring district (Mbarara) during the last 5 years. USCAPP staff has benefited from interaction with the Kabale project. Sida also supports the Vi Tree Planting Project in Masaka and Rakai Districts. The Kabale AFRENA project is tackling problems that are relevant for all the Sida supported extension programmes.

Continued support from Sweden?

The project area is representative also for conditions in Rwanda and Burundi where ICRAF activities are more or less at a standstill due to political instability. Despite the project having had a slow start, there are great expectations that technology already developed elsewhere in East Africa can quickly be adapted to this area believed to have a good potential for a variety of agroforestry practices. Assistance is indeed urgently needed to achieve intensified production in these very densely populated areas. It could, however, be argued that Sida should focus on fewer sites for its support to ICRAF as follow up of project performance and keeping contact

with projects spread over several sites needs more resources as compared to a few sites.

6.4 Other cooperation

Swedish Ph. D. students

There are several examples on how the work of Swedish Ph. D. students has contributed to further development of technologies and to extended research projects (example: Eva Ohlsson and Hans Sjögren contributed to further KARI research on soil fertility replenishment funded by the World Bank). Through collaboration with SUAS, students have introduced research technologies that have been very useful to ICRAF research at Maseno (examples: method for measuring mineralization in the soil and use of a soil auger developed by SUAS).

For Swedish Ph. D. students, completion of studies is often the end of their work with ICRAF as there is no post doctoral scheme. This has made it hard for them to complete their studies on time and limits chances for them to continue a career in the CG system. Sweden indeed has minimal presence of staff in international research organizations. Supervisors at ICRAF claim that a 2-3 years post doctoral scheme would be desirable, a recommendation that was made already in the 1990 evaluation of the Swedish support to ICRAF.

ICRAF need Ph.D. students in their projects (for example every trial carried out by Dr. Chin Ong now has a Ph.D. student). The presence of students enables ICRAF to carry out research that would otherwise not be done. Another important consideration for Sida, in a wider perspective, is, however, the potential conflict of interest between building Swedish capacity by support to Swedish students and the need to build African capacity by supporting African students.

ICRAF would like to expand on the collaboration with Swedish Universities if funding of students can be secured from Sida. For success, a critical screening of applicants is essential. It is important to maintain a balance between students from developing and developed countries.

A common problem for the Swedish students is how to manage their upkeep at home while finalizing their studies. There are examples of Swedes that have taken long to finalize once they have left ICRAF, and that is problematic for ICRAF since results are not made available early enough. For comparison can be mentioned that Nottingham University send Ph.D. students to work 2 years with ICRAF and with additional funding for finalizing their thesis back home.

Conclusions

- It is desirable to strengthen the links between Swedish Universities and ICRAF with regard to a more formalized collaboration. This may apply both to Ph. D. level research and to Post-doc fellowships.

- Sida/SAREC funding does not cover time for finalizing thesis causing problems for students when returning to Sweden often resulting in delays in submission of thesis.
- Other countries provide better schemes also offering a chance for young Ph.D. holders to establish themselves with the CG system. In contrast, there are very few Swedes posted in the CG system.

Interface RELMA - ICRAF

With the currently on-going strengthening and recent transformation of RSCU into RELMA new capacity is created that may be beneficial to ICRAF, as well as ICRAF being beneficial to RELMA. Generally, with competence on agroforestry and management of soil fertility and 'green' water in both RELMA and ICRAF, some division of work would be called for to ensure that efforts are not duplicated. In the longer run, it could be argued that since both organizations are housed in the same building there should be possibilities to use competence across the institutional boundaries, and RELMA's recruitment of staff should target competence that is not available at ICRAF.

In the near future, RELMA could benefit from ICRAF through:

- Use of ICRAF channels for sale of RELMA publications on the international market, or even co-publishing arrangements with the publishers that ICRAF has links with, e.g. Kluwer Academic Press or CTA.

Of mutual interest may be:

- RELMA could get access to ICRAF publications through co-financing printing and in response to that get copies for free distribution within the RELMA networks. This was an earlier practice but appears to have ceased.
- Joint arrangements for proper storage of originals of publications, both on electronic media and actual artwork.
- RELMA could assist educational institutions by enriching ANAFE with subject matter addition on e.g. extension, soil conservation or agricultural economics/entrepreneurship. This would broaden the ANAFE subject matter without putting more strain on ANAFE's resources. Further links could possibly be established with GEF/UNEP since they have a programme on promotion of biodiversity issues in education.

ICRAF could benefit from RELMA primarily by:

- Use of RELMA competence on soil conservation and extension.

7. Discussion

7.1 Why should Sida support ICRAF?

The mission is clearly of the opinion that ICRAF's agenda is well in line with the ambitions of Sweden since several decades to provide support to sustainable management of natural resources in East and Southern Africa.

This ambition has recently got renewed attention through the Report on Food Security in East and Southern Africa and through the establishment of RELMA. Sida's major bilateral programmes in this field are mainly aimed at improved extension, but there is certainly need for research as one of the mechanisms that feed technical contents into the research machinery.

In another paper touching on Sida's policy (Frühling and Persson 1997) the following statements reinforces the mission's view that Sida's support to ICRAF is in line with Sida's policies:

- 'Support to improved agriculture is often more efficient for reducing deforestation than activities which are directly focused on forests'.
- 'Efforts directly focusing on national realities should be given higher priority, complemented by carefully selected efforts at the international level, such as , for instance, support to regional network building aimed at monitoring and capacity development'.

The mission would like to emphasize the need for research at a regional or continental level in Africa. Most states in Africa are, in monetary terms (e.g. GNP), comparable to a Swedish county. NARS have significant problems with funding, and are likely to remain resource poor in the next 10 - 20 years. At the same time the productivity of African agriculture is in a state of decline, manifesting itself in reduction of per-capita food production as well as availability. The mission clearly recognizes the need to strengthen NARS, but also recognizes the need for coordination and implementation of research at regional and continental levels. The ICRAF concept of collaboration with NARS coupled with some 'own' capacity is promising. The mission also notes, however, that ICRAF's own capacity in terms of e.g. equipment is still no at par with a European or North American University. There is still need for crucial investment, even with the recognition that for certain types of e.g. laboratory analyses cooperation with Universities may be more cost effective than building in-house capacity at ICRAF.

Another important reason that the mission wants to advance is that the Sida-supported activities are well managed, and the general impression is that ICRAF is effective in its work.

7.2. What type of support?

In principle, the support can perhaps be divided into three types:

- Institutional or core support, justified if Sida believes in ICRAF's ability to set priorities, and Sida wishes to contribute to strengthening ICRAF as an institution.
- Project support, where Sida and ICRAF have identified activities that are of strong mutual interest.
- Project support, where Swedish or Sweden-supported countries' interests are in line with, but not central to ICRAF. Here, ICRAF acts more like a consultant.

So far, the mission is of the opinion that the Swedish support has been within the first two categories, both of which are strengthening ICRAF as an

institution. In the distant past, Sweden supported a project with bilateral funds through ICRAF 'Agroforestry for Development in Kenya'. This was closer to the third category. The mission would also agree that the planned support to Vietnam belongs to the third category. Such support should be a lower priority.

7.3. Logic or lack of logic in the Swedish support

The Swedish support directed to research in Embu, Maseno, Kabale and Chipata is very similar in nature, but from a Swedish perspective organized in three different ways:

- Embu: Bilateral Sweden-Kenya
- Maseno and Kabale: Funds through Sida/DNRE
- Chipata: Sida/SAREC.

There is, in principle, no justification for these differences. In practice, however, Embu has been recognized as a Kenyan priority and the funding with bilateral funds has been agreed. Arrangements between Sida/DNRE and Sida/SAREC ought, however, to be streamlined.

The policies also differ between the Swedish support to the stations with regard to whether or not expatriates can be funded. In Embu, Maseno and Kabale the policy recently has been not to provide funds for expatriates, whereas an expatriate position has been funded in Chipata all the time. This ought to be harmonized.

7.4. Fragmentation of the Swedish support

Sida's support to ICRAF commenced in 1982 with restricted grants to the Field Station in Machakos. SAREC came on board in 1987 with core and restricted support.

Since then a wide range of activities have been supported, and the mission notes that during the period for this review the Swedish support has been constituted of more than 10 components. This fragmentation is not a problem for ICRAF, in fact rather the contrary, because the more thinly spread the restricted grants become, the more do they resemble core funding. From a Sida perspective, however, a very fragmented approach with low levels of funding of various activities becomes difficult to comprehend and monitor. Co-financing with other donors should be welcomed since it reduces activities vulnerability in case of withdrawal of a donor, but too much fragmentation should be avoided.

7.5. The level of support

ICRAF is the institution within the CGIAR that receives most support from Sweden in terms of total core and project support. The core support is low, but the project support to ICRAF constitutes more than half of the project support granted by Sida to institutions in the CGIAR. Although it is recognized that the mandate and activities of ICRAF are well in line with Sida's priorities, that is not implying that there are not other institutions whose mandate and activities are also in line with Sida's policies.

Much of the Swedish support is directed to research on issues related to soil fertility maintenance through the development of agroforestry technologies. The mission is of the opinion that non-agroforestry technologies with the same aim would deserve more attention, but that falls outside the mandate of ICRAF. If Sweden would avail more targeted resources to research on these issues, the mission is of the opinion that such resources would in the first instance target an institution that could address the need for development of non-agroforestry technologies, as a complement and for comparison with ICRAF's outputs.

Given the high level of project support from Sweden to ICRAF, the mission is of the opinion that the level has reached a fair size, and should be maintained at the current level in terms of 'real value', i.e. revised upwards with the rate of inflation. With regard to level of core support reference is made to the forthcoming EPMR and other on-going studies. These will yield further important information and the mission is of the opinion that Sida can best form its opinion on level of core support once the reports of the mentioned reviews become available.

7.6 Sida's monitoring and follow-up

The fragmentation commented on earlier needs to be discussed in the perspective of Sida's capacity. The mission has noted that there has been a considerable turn over of staff dealing with the support to ICRAF within Sida during the period subject to review. Some 10 or so different officers in Sida/DNRE and in Sida/SAREC have been dealing with the ICRAF support. Therefore, the institutional memory is weak.

There are two ways of addressing this issues:

- Avoid fragmentation as mentioned earlier
- Ensure capacity to follow up, if need be by hiring external resources. The arrangement that CIDA has made in southern Africa, with a 'monitorer' participating in planning meetings etc. is highly appreciated by ICRAF. ICRAF regrets that e.g. a representative of Sida/SAREC during more than 10 years of support never had the opportunity to visit the station.

7.7. ICRAF in relation to human diversity

Much of ICRAF and ICRAF's collaborating partners is dominated by men. This relates to the fact that ICRAF has a 'bio-physical' orientation, a domain that is traditionally dominated by men. The same applies to the educational activities supported through ANAFE. Some two thirds of the student's population in the institutions are men. Most readers of Agroforestry Today are also men.

ICRAF shows signs of being a gender-sensitive organization. There is a gender policy, Agroforestry Today tries to be gender balanced in its contents and ANAFE tries to give a certain preference to ladies when awarding e.g. scholarships.

ICRAF's capacity in the socio-economic domain has grown with some 21.6 % of the total research resources allocated to economics and social sciences in 1998 as compared to some 15.6 % in 1993 (However, several ICRAF scientists argue that the resources allocated to socio-economic research still are insufficient and a main bottle-neck is reported to be on analysis of socio-economic data). A continued further strengthening of socio-economic research has a potential to result in a better gender balance among scientists since social sciences are generally less dominated by men. It is, however, recognised that setting research priorities is an issue that is different from the desire of having a gender balance among scientists, although there is a certain inter relation between the two issues.

With regard to ICRAF generally, the mission is of the opinion that the institution may not fully have taken advantage of its diversity among staff. The personnel function at ICRAF agrees to that, and has good proposals on how to achieve better management and use of diversity.

8. Recommendations

8.1. Overall recommendations to Sida

The mission recommends that:

- Sida continues supporting ICRAF with both restricted funds and core funds during 1999-2001.
- Restricted funds are utilized for support to the components and with approximate annual levels in US \$ as in Table 7.

Table 7: Recommended Project Support from Sida to ICRAF 1999 - 2001

ANAFE	720,000
Chipata, excl. cost for expatr. to be comp. by incr. core	150,000
Maseno	350,000
Agroforestry Today	80,000
Associate Experts	Operational funds
TOTAL restricted	1,300,000 + operational funds

- Level of core support is considered when reports from EPMR and other reviews become available, and taking into account that an increase is suggested to compensate for (i) the proposed phasing out of funding of the expatriate in Chipata (100,000 US \$), and (ii) that the core support includes overheads on the activities financed by restricted funds.
- Sida considers having a continuous follow-up through recruitment of a monitoring consultant, similar to the arrangement CIDA has. A reasonable time input may be 6 weeks per year. Possibly, the ToR for such consultancy could include a liaison function to promote contacts between ICRAF and Swedish Universities, and Swedish Universities directly with African Universities that are members of ANAFE.

8.2. Overall recommendations to ICRAF

The mission recommends that:

- ICRAF strengthens the socio-economic research capacity linked to the AFRENA sites.
- ICRAF appoints a working group chaired by the Head of Human Resources Unit with a mandate to suggest how ICRAF can make full use of the diversity among staff, including age, gender and other aspects of diversity.
- ICRAF looks into its control functions with regard to cross-border movement of germplasm to ensure that risks for introduction of potential weeds are minimized.

8.3. Recommendations on activities at Machakos

The mission recommends that:

- ICRAF proceeds with its current plan of phasing out research and training at the station.
- To assist ICRAF in carrying on with high-quality strategic and applied research, it is recommended that Sida maintains its support to research in Chipata and Maseno.

8.4. Recommendations on ANAFE

The mission recommends that:

- ANAFE is regionalized
- ANAFE is organized and activities planned in such a way that some 40 % of the costs are set aside for manning and running the network(s), and some 60 % is set aside for direct support to member institutions similar as this ratio was in the initial years.
- Focal or 'campaign' activities during the next two years are (i) distribution and promotion of use of existing literature and (ii) training of lecturers through workshops, short courses and M. Sc. fellowships. Targets could be set, e.g. (i) that all active institutions should have a good supply of books available to students and lecturers, (ii) that all active institutions should have literature (title and pages) references to match the curricula taught, and (iii) that all active members should have benefited from some form of staff training in the next two years.
- ANAFE collects a selection of relevant books, including country-specific ones, that are subject to studies and to be matched to curricula through workshops at relevant levels (institution, nation or region).
- ANAFE subject area is widely understood to encompass not only agroforestry technologies but also to touch e.g. tree propagation, species knowledge and socio-economic issues.
- When an M.Sc. fellowship is awarded it is formalized in a document that includes a schedule of payment of the various benefits and which is signed by all parties, i.e. ICRAF, the student and the host institution.
- M.Sc. students are given an opportunity to yearly evaluate the host institution, and that the evaluations are used by ICRAF in setting priorities on where to send students.
- Equipment support is phased out.
- Other activities are put on temporary hold to allow for a vigorous work on the campaign activities.

- ANAFE newsletter is simplified and made more frequent, to be sent whenever an important date or activity is forthcoming.
- 1998 is used for consolidation: (i) attempts to develop training materials are either completed or dropped, (ii) membership is reviewed to ensure that there are several contact persons in each institution, that are aware of ANAFE, and to give an opportunity to prune off institutions that are irrelevant (e.g. no students), (iv) move on regionalization, (v) recruitment of one or several Swedish research associates to work with ANAFE.
- ICRAF actively looks for another donor to complement Sida on ANAFE in order to reduce dependency on Sida as the only donor.
- Sida/ICRAF make an impact assessment by the end of year 2000 to look into effectiveness and if needed suggest further modifications.
- RELMA analyses how it can contribute to the value of ANAFE by e.g. adding other subject matter.

8.5. Recommendations on activities at Chipata

The mission recommends that:

- Sida should continue supporting the activity.
- The R & D effort should strive to strengthen the multidisciplinary team approach by bringing socio-economics expertise on board.
- The project should provide more information on the basket of options, specifying their strengths and weaknesses.
- The village agroforestry committees should be strengthened. The committee would ideally take the ownership of the activity, participate in setting priority, research planning and project implementation, from a position of strength.
- Cost-benefit should be assessed at all the three levels of research, but quantification of input/output levels in type 3 experiments are most relevant for evaluating technologies.
- Although the D & D of 1986 had established that declining fertility was associated with low nitrogen and phosphorus, the project has concentrated on N to the neglect of P. Studies on the management for restoration of P should be addressed to enable development of a realistic package.
- ICRAF should be discouraged from financially supporting extension workers. Its mandate would rather be to develop extension packages together with extension workers, assist in producing training and extension materials and take part in training of extension workers.

8.6. Recommendations on activities at Maseno

The mission recommends that:

- Sida should continue supporting the activity.
- Socio-economic research should be strengthened. It would promote strengthening of the village committees and farmer empowerment.
- The roles, lines of responsibility, resources and authority between the major stakeholders should be spelt out clearly and be made known at all levels. This would promote the building of a more participatory partnership.

- Management of farmer-designed and farmer-managed experiments should be documented in a register to enable meaningful assessment.

8.7. Recommendations on activities at Embu

The mission recommends that:

- That ICRAF continues providing backstopping using core funds, or jointly with the Sida office in Nairobi look into possibilities of funding such arrangement using the consultancy fund.

8.8. Recommendations on support to Agroforestry Today

The mission recommends that:

- Sida continues the support to Agroforestry Today at the same level as during 1997 and 1998, i.e. some 50,000 - 60,000 US \$ per year, with a possible increase with up to US \$ 20,000 to meet costs for a wider distribution if an agreement of collaboration with FTTP is reached.
- That the Sida contribution is made on the condition that people in developing countries still have a possibility of receiving the magazine for free if they present a justified request to ICRAF.
- Contacts are established between the production units of Agroforestry Today and FTTP Newsletter to explore possible areas of collaboration.
- Institutions that are ANAFE members are included in the mailing list for Agroforestry Today.

8.9. Recommendations on support to Associate Experts

The mission recommends that:

- The secondment of Swedish Associate Experts should continue, and if possible be expanded.
- Recruitment of one associate to work with the research in Chipata and another one or two to work with ANAFE should commence immediately.
- ICRAF scientists have several other proposals that can be considered if Sida is in a position to second more associates.

8.10. Recommendations on support to SEANAFE

The mission recommends that:

- SEANAFE is not funded at any significant level until mode of operation of ANAFE has been revised and effectiveness has been demonstrated.

8.11. Recommendations on cooperation with Vietnam

The mission recommends that:

- Strengthening of collaboration on existing activities is treated as a higher priority than expansion on a new activity like the one proposed.
- Sida supports the activity only if bilateral fund can be utilized, and based on a request from Vietnam.

8.12. Recommendations on other cooperation

The mission recommends that:

- Sida/SAREC looks into possibilities of offering better terms for Ph. D. students enabling them to finish their thesis without delay and possibly

to remain within the research organization longer than during the field work only.

- Students' developing proposals should be facilitated to come to ICRAF for an initial visit. Funds for that, if available, are well used.
- Closer collaboration between Swedish Universities and ICRAF should be promoted.
- RELMA/ICRAF looks into collaboration in areas specified in section 6.4.

9. Lessons learnt

9.1. Long term commitment

The long term commitment by Sida in supporting the Machakos Field Station has contributed to strengthening of ICRAF. The station was very much needed, initially for demonstration of agroforestry technology and later for the development of research methodology and for actual research.

A large number of scientists and technicians have been trained at Machakos and are now actively involved in research. Although biophysically, Machakos represents a small geographical area (low bimodal rainfall), research findings have had widespread applicability. Findings from Machakos have been crucial for realizing constraints to alley cropping in semi-arid climates, turning attention towards alternative agroforestry technologies.

Without the long term commitment from Sida these achievements would not have been made. The learning element here is that research involving trees and crops take long, and it took especially long in the early stages of development of agroforestry research, when appropriate research methods were not well known. The application of this 'lesson learnt' is that Sida should show long-term commitment to the research activities Sida supports, e.g. in Chipata and in Maseno.

9.2. Sida follow-up

The mission wants to point out that the bridging arrangement made in 1997-98 was unfortunate. It relates to the delay of the evaluation. If the evaluation had been done one or two years earlier, better guidance could have been given with regard to start-up of new activities, e.g. SEANAFE. Also for ANAFE an earlier review would have been preferred. Now, in spite of recognizing some need for change, ANAFE was handicapped since future prospects for funding were not very clear. The process of needed change could have been faster and smoother if an earlier review had pointed at the emerging problems.

Generally, the mission is of the opinion that eight years is a too long period between reviews. The Sida support has changed considerably from 1990 to 1998, making it difficult and less meaningful to link this review with the one of 1990. Sida ought perhaps also to clarify why Sida at all makes reviews of the support to ICRAF. The mission assumes that the general purpose is to

provide guidance to Sida with regard to the evolution of the support. If the assumption is correct, it is noted that very considerable changes have been made in the support, with no guidance from an evaluation. Although the changes have by and large been healthy, the mission is of the opinion that some un-necessary fragmentation of the support could have been avoided.

To conclude on this, the mission is of the opinion that Sida ought to develop mechanisms for better follow-up of the support, including more regular external reviews of the Swedish support.



NATUR/AFRIKA
Maria Berlekom

Terms of Reference

1(6th)

1997-09-29

Diarienummer:
Natur-1996-0002

TERMS OF REFERENCE FOR THE EVALUATION Sida SUPPORT TO ICRAF

1 BACKGROUND

The cooperation between Sida and ICRAF was initiated in 1982. During the period 1982-1990 it was directed towards activities that supported Sida's overall aims in East Africa (particularly Kenya) regarding soil conservation and agroforestry. The support, which came from Sida's Department for Natural Resources and the Environment (DNRE), was primarily intended to demonstrate agroforestry techniques and to develop manuals and training and extension material in agroforestry, rather than research per se.

During the 1990s ICRAF has received Swedish support from different sources. These include:

- a) Core support through the CGIAR system, from Sida's Department for Research Cooperation (SAREC) at a level of approximately 1,5 mSEK annually.
- b) Project support to research activities in Chipata, Zambia, from SAREC (initiated in 1987), at a level of 1-1,5 mSEK annually.
- c) Project support to research activities at the Embu-station in Kenya, from Swedish-Kenyan bilateral funding, at a level of approximately 1,5 mSEK annually. This support was phased out by 30 June 1996.
- d) Programme support for education, information and research, from Sida-DNRE, at a level of 6-8 mSEK/annually
- e) In addition, Sida has for a number of years kept Swedish Associate Experts in on-farm research and education at ICRAF. A couple of Swedish PhD students have also carried out their theses research at ICRAF research stations.

1.1 Agreements Sida - ICRAF

Agreements between ICRAF and Sida-DNRE

The earlier agreement between ICRAF and Sida-DNRE covered the period 1991/92-1993/94 with a total amount of 19 mSEK for the 3-year period. Under the present agreement (1994/95-1996/97) this amount was

raised to 25 mSEK to compensate for the weakened Swedish currency. Since the Swedish Government has changed the fiscal year to follow the calendar year, the present agreement has been extended at the same funding level for the period July 1997- December 1998.

According to the present Project Document, ICRAF's purpose is "to work towards mitigating tropical deforestation, land depletion and rural poverty, through improved agroforestry systems". The current Swedish support through Sida-DNRE contributes to ICRAF's overall objective through the following five components:

- The African Network for Agroforestry Education (ANAFE), a network of universities and technical colleges in Africa aiming at strengthening agroforestry education.
- Agroforestry education in Southeast Asia: a new activity starting 1998, aiming at strengthening the capacity for agroforestry education in the Southeast Asia region.
- Dissemination: Production of the magazine Agroforestry Today, and of extension materials.
- Agroforestry research in Maseno, western Kenya—one of the benchmarks of the African Highlands Initiative.
- On-farm systems testing and dissemination in Kabale, Uganda, in a pilot community development project.

The last evaluation of the Sida-DNRE support to ICRAF was undertaken in 1990. The review was basically positive and recommended that the Sida support to ICRAF should continue.

Agreement between ICRAF and SAREC

The Zambia-project in Chipata has been supported by the former SAREC (together with the Government of Zambia, GRZ), an now Sida-SAREC, since 1987. The current agreement covers the period 1994/95-1997, and amounts to 4.5 mSEK. The objectives of the research project are result oriented, rather than capacity building. Appropriate agroforestry technologies for improved fallows with *Sesbania sesban* are studied and developed.

2. PURPOSE AND SCOPE OF THE EVALUATION

A new framework agreement, starting from January 1999, will be discussed by Sida and ICRAF during 1998. It is therefore proposed that an external evaluation of the Sida-supported programmes and projects at

ICRAF is undertaken as basis for the discussions and the planning of a possible next phase of the support.

3. THE ASSIGNMENT

3.1 Expected out-puts

The evaluation is expected to result in a report containing:

- A brief description of ICRAF in general, and of the Sida-supported components in particular.
- A follow-up of the 1990 mission to review the Sida support to ICRAF.
- An evaluation of the components supported by Sida-DNRE and the Zambia-component supported by Sida-SAREC. The evaluation should include a summary of "lessons learnt".
- Recommendations regarding the specific programme and project components in the current agreement.
- Recommendations regarding the design and composition of a future consolidated agreement between Sida and ICRAF regarding programmatic and project support for the period 1999-2001.

3.2 Issues to be covered

The evaluation shall cover all relevant aspects of the projects and programmes supported by Sida (DNRE and SAREC) over the period 1990–June 1997. The evaluation shall concentrate on, but not be limited to:

a) Assessment of the *relevance and justification* of each of the Sida-supported components in relation to:

- the overall objectives and strategies of ICRAF,
- Sida's objectives and strategies (particularly those of DNRE and SAREC)
- the objectives, strategies, capacity and expectations of collaborating organisations in each particular case (are the objectives of e.g. ANAFE consistent with the capacity building needs of universities of colleges?)
- needs and priorities of the local communities in the project/programme areas (Machakos, African Highland Initiative/ AHI/, Chipata)

b) Assessment of the *effectiveness of the programmes/projects*, i.e. have they been *designed in effective ways* to meet their respective objectives:

- Describe objectives and results expected
- Assess: a) the methodologies/scientific approach - including the use of on-farm research (for Machakos, Chipata, and the African Highlands Initiative, AHI), and b) the relevance and relative importance of programme components (for ANAFE, information activities). Is there consistency between the programme/project objectives and the means (research design or programme components. Is e.g. ANAFE designed in a way as to meet the needs of the collaborating universities and colleges? Does some activities require more or less emphasis?).
- Are there other relevant international/regional/national networks or organisations with similar or competing roles and objectives?

c) Assessment of the *results, achievements and impact*:

- What are the outputs of each programme/project? Have activities been undertaken and objectives achieved as planned? If not, explain the reasons and comment on the validity of the causes.
- Discuss the cost-efficiency (input/costs in relation to outputs)
- Management of ANAFE: Is the network running well? Are functioning relationships established among universities, colleges, the National Agriculture Research Systems (NARS) and ICRAF? What improvements are needed?
- Scientific methodology, quality and results Machakos, Chipata, AHI): Results and the quality of the current research in light of other contemporary research findings; Effects of introduced species and varieties on the natural biological diversity (e.g. *Sesbania sesban* in Chipata); Dissemination of results to the research community; Coordination with other research activities (outside ICRAF); Potential importance of the ICRAF-collaboration for the NARS (AHI, Chipata)
- Discuss the research-training-extension linkages: Possible strengthening of research-education through ANAFE?; Dissemination of research results to extension organisations (Machakos, AHI, Chipata) at various levels (country, regional, and others); Practical impact in the rural communities?

The above should as far as possible be analysed from a gender perspective, including activities both of ANAFE and at the research stations.

d) Assessment of the *sustainability* of the programme and projects

- Describe and assess the organisational set-up and institutional sustainability in each case, including: The degree of integration of the programme/project within ICRAF and collaboration with other ICRAF programmes; Capacity of local/regional collaborators and opportunities to decrease direct ICRAF input, e.g. at NARS (AHI, Chipata) and ANAFE.
- "Killing factors"

e) Assessment of the institutional capacity, competence, and *planning, monitoring and reporting routines*:

- Review the administration of the programme/projects, including internal decision making procedures, financial management procedures and quality of planning documents and reports to Sida: Are activities well planned, implemented and suitably monitored?; Are available resources being used for intended purposes?

4. METHODOLOGY, EVALUATION TEAM AND TIME SCHEDULE

The evaluation shall include an analysis of relevant documents and reports and interviews with ICRAF staff, representatives from collaborating organisations, Sida programme officers and other people concerned.

The evaluation-team shall apart from visiting ICRAF-HQ in Nairobi, include field visits to the field stations in Kenya (Maseno and Machakos) and Zambia (Chipata). The visits to the field stations shall include interviews with researchers, extension organisations and local farmers.

At least two visits (one in Eastern or Southern Africa and one in West Africa) to institutions collaborating with ANAFE should be made.

The evaluation shall be carried out by a team of three persons, covering the following fields of expertise:

- Extensive knowledge of agroforestry research.
- Experience of management and organisational issues.
- Socioeconomic expertise, including gender aspects.
- Experience of education and training.
- Experience of dissemination of agroforestry, and research–training–extension linkages.
- Familiarity with Swedish development policies and objectives in general as well as more specifically for natural resources management .

The evaluation shall take place during six weeks in January-February 1998.

5 REPORTING

The evaluation report shall be written in English and should not exceed 40 pages, excluding annexes. The outline of the report shall follow Sida Evaluation Report - a standardized Format (see Annex 3, p71 of Evaluation Manual for Sida). 5 copies of the draft report shall be submitted to Sida no later than 24 March, 1998. Within 3 weeks after receiving Sida's comments on the draft report, a final version in 5 copies and on diskette shall be submitted to Sida. Subject to decision by Sida, the report will be published and distributed as a publication within the Sida Evaluations series. The evaluation report shall be written in Word 6.0 for Windows or a compatible format and should be presented in a way that enables publication without further editing.

The evaluation assignment includes the production of a summary according to the guidelines for Sida Evaluations Newsletter (Annex 1) and the completion of Sida Evaluations Data Work Sheet (Annex 2). The separate summary and a completed Data Work Sheet shall be submitted to Sida along with the (final) draft report.

Annexes 1, 2 and 3 are retrievable from 'Sida-mallar'/Sida Evaluations.

APPENDIX II: List of people contacted

12.1.98 (AE)

Bruce Scott Deputy Director General ICRAF

20.1.98(AE)

Bruce Scott Deputy Director General ICRAF

22.1.98 (BT):

Anders Tivell	FTPP Coordinator	SUAS
Daphne Tufvesson	Newsletter editor	SUAS
Bitte Linder	Editorial assistant	SUAS
Sten Ebbersten	Prof.	SUAS (ex ICRAF board member)

Anders Höök	Sr Programme Officer	Sida/DNRE
Maria Berlekom	Consultant	Swedforest
Johan Holmberg	Ass. Dir. Gen	Sida
Ingvar Andersson	Dept. head	Sida/DNRE
Kerstin Jonsson	Programme Officer	Sida/SAREC
Karin Gerhardt	Programme Officer	Sida/SAREC
Per Rudebjer	Act. Programme Officer	Sida/DNRE

22.1.98 (AE)

Kwesi Atta-Krah Coord. AHI and East & Centr Afr. AFRENA ICRAF

August Temu	Programme Leader	ICRAF
Meka Rao	Programme Leader	ICRAF

27.1.98 (BT)

Björn Lundgren (tel) Director (Ex DG) IFS (ex. ICRAF D. G.)

28.1.98

Annette Reenberg Ass. Prof. University of Cph
(ICRAF board member)

2.2.98

Per Rudebjer Coord. SE Asian ANAFE ICRAF

3.2.98 (BT, AE)

Kwesi Atta-Krah	Coordinator	East & Centr A. AFRENA, ICRAF
August Temu	Programme Leader	ANAFE, ICRAF
Mick O'Neill	Senior Agronomist	E.A. AFRENA, ICRAF
Roland Buresh	Principle Soil Scientist	ICRAF
George Karanja	Station manager	Embu (KARI) res. station
Meka Rao	Programme Leader	ICRAF
Michael Hailu	Programme Leader	ICRAF
Debra Lodoen	Science writer	ICRAF
Madeleine Shearer	Projects Officer	ICRAF

4.2.98 (AE, BT, JO, AK)

Pedro Sanchez Director General ICRAF

Bruce Scott	Dep. Dir. General	ICRAF
Madeleine Shearer	Projects Officer	ICRAF
August Temu	Programme Leader	ICRAF
Per Rudebjer	Consultant	SE ANAFE, ICRAF
Frederick Ayuke	Student, ANAFE Fellow	Moi University
Olatunji Kadeba	ANAFE Fellow	Fed. Univ. of Tech. Akure, Nigeria
Marie Kimenye	Senior Secretary	ICRAF
Ewnetu Zeleke	ANAFE Fellow	Wondo Genet, Eth.
Olatunji Kadeba	Prof., Sen. Vis. Res. Fell.	Fed. Univ. of Technol., Akure, Nigeria

5.2.98 (BT, AE)

Mats Denninger	Director	RELMA
Keith Shephard	Sr Systems Agronomist	ICRAF
Per Rudebjer	Consultant SEANAFE	ICRAF
Chin Ong	Princ. Plant Physiologist	ICRAF
Meka Rao	Programme Leader	ICRAF
Roland Buresh		ICRAF

6.2.98 (BT, AE)

Continued discussions with ICRAF staff

7.2.98

Document review, Practical arrangements

8.2.98

Travel to Lilongwe and Chipata (BT, AE, JO, AK)

9.2.98 (BT, AE, JO, AK)

Freddie Kwesiga	Reg. Coordinator	ICRAF/Southern Afr. AFRENA
P.L. Mafongoya	Project Leader	ICRAF
B. Siamasonta	Station Manager	Msekera Res. Station
A. Mapiki	Chief Agr. Res. Off.	Mt. Makulu Centr. Res. Station
S. Lungu	Principal Agr. Res. Off.	Misamfu Reg. Centre
R. Chintu	Soil Chemist	GRZ/Msekera
T. Chirwa	Soil Physicist	GRZ/Msekera
Donald Phiri	Ass. Res. Officer	ICRAF/Msekera
R. Katanga	Dissemination Specialist	ICRAF/Msekera
C.P. Simwanza	Agronomist	GRZ/Msekera
H. Mtonga	PS	Eastern Province, GRZ
C. Chimfwembe	Prov. Agr. Coord.	MoA, Eastern Prov, GRZ
Mr. Musonda (AK)	Project Coordinator	World Vision Int.
M. Sishekano (BT, AE)	SCAFE Coord.	MoA
A-L Raunio (BT, AE)	SCAFE advisor	MoA
V. Mumba (AK)	Distr. Agr. Coord	Chipata South
E. Nyirenda (BT)	Project Coordinator	Luth. World Fed.
Mr. Mwanza (BT)	Project Coordinator	Luth. World Fed.

S. Simute (BT, AE)	Prov. For. Ext. Off	Forest Dept. Eastern Prov
--------------------	---------------------	---------------------------

10.2.98 (BT, AE, JO, AK, TK)

Facilitators for the Field trip:

D. M. Phiri	Ass. Res. Off.	ICRAF/Msekera
Stanislaus Phiri	Ass. Res. Off.	ICRAF/Msekera

Farmers in Chiminya Village: Messrs: Whited Phiri, Gastone Daka, Phiri Obster, Abedigo Ndjovu, Mrs. Tembo Blackson, Ms Vanalise Lungu

Listy Kwaambwa	Camp Officer	Jerusalem Camp
Arnold Phiri	Manager	Katete FTC

Farmers in Chamasuko Community Development Project in Katete District:
Messrs: Edison Abinala Mwale, Headman Mwale, Pepetwa Phiri, Masongo Mwale, Ms. Agnes Banda

M. Sishekano (BT, AE)	SCAFE Coord.	MoA
A-L Raunio (BT, AE)	SCAFE Advisor	MoA

11.2.98

Farmers in Chipata North (AE, JO, AK, TK): Messrs. Olivere Zulu, Christon Mwanza.

S. Chikambwe	DAC	Chipata North
F. Kwesiga (BT)	Regional Coord.	ICRAF
B. Siamasonta (BT)	Station Manager	Msekera Res. Station

Final discussion with all staff of Msekera and others
Travel to Lilongwe

12.2.98 (AE, JO, AK, TK)

J. A. Maghembe	Professor	ICRAF, Zomba, Malawi
C. J. Matabwa	Dir. Agr. Res. and T. Serv.	MoA, Malawi
Mr. Chunga	Dep. Prinipal	Malawi Nat. Res. College
M. Kwapata (BT, TK)		Bunda College of Agr.
Mr. Maliru	Lecturer	Bunda College of Agr.
Mr. Kandeia	Student	Bunda College of Agr.
Mr. Kutsaira	Student	Bunda College of Agr.
Mr. Chunga(AE, AK, TK)	Dep. Principal	Nat. Res. College
S. K. Mvula (BT, TK)		Malawi Coll. of Forestry and Wildlife, Dedza

Travel to Nbi (AE, AK, JO)

Travel to Zomba (BT, TK)

13.2.98 (BT, TK)

H. Kabuwazi	Head of Dept	Biology Dept. Chancellor College, Univ. of Malawi
P. Munyenyeembe	Snr. Lecturer	Chancellor Coll.
G. Zimba	Lecturer	Chancellor Coll.

13.2.98 (AE)

Peter Cooper	Programme Leader	ICRAF
Stephen Franzel	Senior Agr. Economist	ICRAF

14.2.98 (BT, AE)

Travel to Nairobi

15.2.98 (BT, AE)

Anders Höök	Progr. Off.	Sida
Travel to Kericho (BT)		

16.2.98

Travel to Maseno

M. Rao	Progr. Leader	ICRAF
R. Buresh	Principle Soil Scientist	ICRAF
Bashir Jama	Soil Scientist	ICRAF, Maseno
W. Omondi	Station Manager	Maseno, KEFRI
A. Niang	Project Coordinator	ICRAF, Maseno
J. Desaegar	Associate, Nematologist	ICRAF, Maseno
E. Gacheru	Ass. Res. Off.	ICRAF, Maseno
S. Radersma	Research Associate	ICRAF, Maseno
Farmers		

17.2.98 (BT)

B. Ogot	Dean, Postgraduate St.	Maseno Univ. College
Mr. Tuguta	Chairman	Dept of Geography Eastern Africa Univ. Baraton
Mr. Angwenyi	Chairman	Dept. of Agriculture Eastern Africa Univ. Baraton
Erick Koech	Head of Dept	Moi University, Dept. of Forestry
Dr. Kijabi	Lecturer	Moi Univ.
Mr. Mbaria	Lecturer	Moi Univ.
Mr. Murithi	Lecturer	Moi Univ.
Mr. Kimani	Lecturer	Moi Univ.

18.2.98 (BT)

Nelson W. Nandili	Principal	Kenya Forestry College
Peter N. Kaigai	Head of Dept	Extension Dept, KFC
Samuel N. Waweru	Lecturer	Extension Dept., KFC
James Tuitoek	Dean, Faculty of Agr.	Egerton University
Mr. Mumioka	Lecturer	Dept. Natural Res. Egerton College

Travel to Nairobi

19.2.98

Bruce Scott (BT)	Dep. Dir. Gen.	ICRAF
A. Temu (BT)	Programme Leader	ICRAF
Ewnetu Zeleke (BT)	ANAFE Fellow	Wondo Genet, Eth.
Marie Kimenye (BT)	Senior Secr.	ICRAF/ANAFE
M. Njoroge-van Roode	Research Associate	ICRAF
Mr. Rao	Programme Leader	ICRAF
Chin Ong	Princ. Plant Physiologist	ICRAF
Other consultations with ICRAF staff (BT, AE, JO, TK)		

20.2.98

Consultations with ICRAF staff

Evaluation team internal meeting

21.2.98 (BT)

Travel to Abidjan

22.2.98 (BT)

Travel to Bamako

Issiaka Zoungrana	Senior Ed. fellow	ICRAF/ANAFE
Edouard Bonkougou	Regional Coordinator	ICRAF/SALWA

23.2.98 (BT)

Issiaka Zoungrana	Senior Ed. fellow	ICRAF/ANAFE
Edouard Bonkougou	Regional Coordinator	ICRAF/SALWA
Tahizou Traoré	Director General	Inst. Polyt. Rural (IPR)
Bougouna Traore	Ing. de Eau et Foret	IPR
Mamadou Djimdé	Sen. Animal Scientist	ICRAF/SALWA
Malick Ladji Sylla	Head, Forestry	IPR
N'Tio Niamaly	Lecturer	IPR
Tidiani Coulibaly	Principal	Centre de Form. Pratique Forestier (CFPF)
Samaké Mouna Tsure	Lecturer	IPR
Konipo Almamy	Lecturer	IPR
Bakary Traoré	Lecturer	IPR
Elias Ayuk	Agr. Economist	ICRAF/SALWA
F. Waliyar	Country Repr.	ICRISAT

24.2.98 (BT)

Travel by road Bamako - Ouagadougou, Burkina Faso

25.2.98 (BT)

Georges Ouedraogo	Director	Inst. de Dev. Rural (IDR)
Henri Ye	Head of Dept.	IDR
Zouré Léonard	Director	Ecole Nationale des Eaux et Forets (ENEF)
Ditalamane Hebie	Agro-economist	IDR
Bacyé Bernard	Lecturer	IDR
Idami Salifou	Lecturer	IDR
Toe Patrice	Sociologue	IDR

Kabré T André	Lecturer	IDR
Millogo-Rasolodimby Jeanne	Lecturer	IDR
Maiga Abdoul-Aziz	Head of Dept.	National Agr. Res. Org. (INERA), D. For. Prod.
Ouedraogo Sibiri Jean	Animateur Scientifique	INERA, DPF
Ky-Dembélé Catherine	Animateur Scientifique	INERA

26.2.98 (BT)

Travel by road Ougadougou - Kumasi, Ghana

27.2.98 (BT)

S. J. Quashie-Sam	Director	Inst. of Renew. Nat. Res. Univ. of Sc. and Techn. IRNR/UST
Ernest Abeney	Dept. Head	IRNR/UST
Several Heads of Dept and other staff of IRNR/UST		
Amoah Alexander	Tutor	School of Forestry, Sunyani
Thobias Sijabaje	M. Sc. Student, ANAFE	Uyole Agr. Centre, Tanz.
Emily Obonyo	M. Sc. Student	KEFRI, Kenya
Kaho Francois	M. Sc. Student	Cameroon
Kwaku Obeng-Okrah	M. Sc. Student	Ghana
Kumordzie, Patrick	M. Sc. Student	Ghana
George Kusi	M. Sc. Student	Ghana

28.2.98 (BT)

Report writing

1.3.98 (BT)

Travel by road Kumasi - Accra, departure for Nairobi in the evening

2.3.98

Arrival at Nairobi in the morning (BT)

Meeting with various ICRAF staff (BT, AE, AK)

D. Nyamai (BT, AK) Coordinator, Kenya agrof. steering comm./KEFRI

3.3.98 (BT)

Anders Karlsson	Councillor	Embassy of Sweden
Tom Anyonge	Programme Officer	Embassy of Sweden
Team meeting (All)		

4.3.98 (BT)

Francis W. Mbote	Ass. Dir. of Agr.	MoA, Kenya
Martin Grunder	Soil Conserv. Advisor	MoA, Kenya
Team meeting (All)		

5.3.98 (All)

Team meeting

Discussion meeting with presentation of main findings and tentative recommendation

6.3.98

Further fact finding at ICRAF (BT)

Report writing (All)

7.3.98 (BT)

Travel to Addis Abeba

Berhe W/Aregay Consultant

Depart for Sweden in the evening

8.3.98 (BT)

Travel day

9- 16.3.98 (BT)

C-G Thornström (tel)	Sr Research Advisor	Sida/SAREC
----------------------	---------------------	------------

Hans Sjögren (tel)	Consultant	ORGUT
--------------------	------------	-------

Bo Bengtsson (tel)	Consultant. Secr. to CGIAR review.	
--------------------	------------------------------------	--

Björn Lundgren (tel)	Director	IFS
----------------------	----------	-----

APPENDIX III: List of references and documentation

Atta-Krah, K., Wakhu, P., 1997. *Agroforestry Research Networks for Africa - East and Central Africa. Proceedings of Eastern and Central Africa AFRENA annual planning and review workshop, February 1997*

Biggs, S. D., 1990. *Multiple Source of Innovation. Model for Agricultural Research and Technology Promotion. World Development, 18:11, pp. 1481 - 1499*

Braun, A. Smaling, E., Muchugu, E., Shepherd, K., Corbett, J. (eds), 1997. *Maintenance and improvement of soil productivity in the highlands of Ethiopia, Kenya, Madagascar and Uganda. An inventory of spatial and non-spatial survey and research data on natural resources and land productivity. African Highland Initiative Technical Report no 6*

Buresh, R., Niang, A., 1997. *Tithonia diversifolia as a green manure: Awareness, expectations and realities*

Buresh, R.J., Tian, G. 1997. *Soil improvement by trees in Sub-Saharan Africa.*

Burley, J., Rabo, A., Chavangi, A. H., 1990. *Report of a mission to review SIDA support to ICRAF*

CGIAR, 1995. *Renewal of the CGIAR: Sustainable agriculture for food security in developing countries. Background documents on major issues. Ministerial-level meeting in Lucerne, Switzerland, February 1995.*

CGIAR, 1995. *Renewal of the CGIAR: Sustainable agriculture for food security in developing countries. Summary of proceedings and discussions at Ministerial-level meeting in Lucerne, Switzerland, February 1995.*

FAO/Swedish University of Agricultural Sciences, 1998. *Programme Component Document. Forest Trees and People Global Networking Component 1999 -2001*

Gamser, M. M. S., 1987. *Letting the piper call the tune: Experimenting with different extension methods in northern Sudan. Social Forestry Network Paper 4a*

Hailu, M., 1998. *The literature generated by ICRAF research: A preliminary impact assessment*

ICRAF and Sida, 1997. *Documentation for the Bridging phase for Sida support to ICRAF: July 1997 - December 1998*

ICRAF, 1987. *Agroforestry Potential in the Unimodal Upland Plateau of Zambia. AFRENA report no 7*

ICRAF, 1988. *Agroforestry Research Project for the maize-livestock system in the unimodal upland plateau (Chipata and Katete) in Eastern Province of Zambia. AFRENA report no 10*

ICRAF, 1991-97. *Annual Reports 1990 - 1996*

ICRAF, 1991. *ICRAF Field Station, Machakos, Kenya. An information brochure*

ICRAF, 1992. *Agroforestry research in the miombo ecological zone of southern Africa. Summary proceedings of an international workshop, Malawi. June 1991.*

ICRAF, 1992. *The Zambia/ICRAF Agroforestry Research Project in Eastern Province. Proposal for a phase 3. AFRENA report no 52*

ICRAF, 1993. *ICRAF: The way ahead. Strategic plan*

ICRAF, 1993. *SADC/ICRAF Agroforestry Research Project. 1993 Annual Report. AFRENA report no 70*

ICRAF, 1993. *Zambia ICRAF Agroforestry Research Project in Eastern Province, Zambia: Socio-economic research 1992 Annual Report. AFRENA report no 68*

ICRAF, 1993. *Zambia ICRAF Agroforestry Research Project in Eastern Province. 1993 Annual Report. AFRENA report no 71*

ICRAF, 1994. *Agroforestry: Research, Demonstration and Dissemination at ICRAF. A proposal submitted to SIDA by ICRAF requesting support for July 1994 - June 1997*

ICRAF, 1994. *ICRAF's Machakos Research Station. Final Report to SIDA on results and activities ,July 1991 - June 1994*

ICRAF, 1994. *SADC/ICRAF Agroforestry Research Project., Zambia 1994 Annual Report. AFRENA report no 80*

ICRAF, 1994. *Zambia ICRAF Agroforestry Research Project. 1994 Annual Report. AFRENA report no 87*

ICRAF, 1994. *Zambia ICRAF Agroforestry Research Project. Socioeconomic research 1994 annual Report. AFRENA report no 88*

ICRAF, 1995. *A proposal to SAREC for the supplementary support for the participatory development and extension of improved fallows at Chipata, Eastern Zambia, 1996 -1998*

ICRAF, 1995. *Agroforestry Research Demonstration and Dissemination at ICRAF (SIDA 2 Grant). A report submitted to Sida by ICRAF covering July - December 1994*

ICRAF, 1995. *Agroforestry Today. Summary of Reader Survey Results*

ICRAF, 1995. *Report of the internal and interprogramme review of the Zambia/ICRAF research project in Chipata, Eastern Zambia*

ICRAF, 1995. *Zambia ICRAF Agroforestry Research Project. 1995 Annual Report. AFRENA report no 98*

ICRAF, 1996. *Agroforestry Research Networks for Africa - Eastern and Central Africa. Annual Report 1995 & 1996*

ICRAF, 1996. *Fields of Trees. Agroforestry for Television. An information brochure.*

ICRAF, 1996. *Improved fallows in Zambia. Report from 2nd Consultative Workshop.*

ICRAF, 1996. *Zambia ICRAF Agroforestry Research Project. 1996 Annual Report. AFRENA report no 104*

ICRAF, 1997. *African Network for Agroforestry Education. An information brochure.*

ICRAF, 1997. *Agroforestry Education News, Vol. 4 No 1 & 2.*

ICRAF, 1997. *ICRAF activities in Kenya supported by Sida during 1997*

ICRAF, 1997. *ICRAF and agroforestry. A vision and a plan of action. An information brochure*

ICRAF, 1997. *ICRAF Medium Term Plan 1998 - 2000*

ICRAF, 1997. *Minutes of the 5th Meeting of the Steering Committee, Benin June 1997*

ICRAF, 1997. *Partners in agroforestry research and development. An information brochure on ICRAF*

ICRAF, 1997. *Proposal for a soil fertility replenishment initiative for small-scale farms in Sub-Saharan Africa. A Concept Note.*

ICRAF, 1997. *Staff list May 1997*

ICRAF, 1997. *The Zambia/ICRAF Agroforestry Research Project. Annual Report 1997.*

ICRAF, 1997. *Understanding, improving and promoting agroforestry options for managing soil fertility in Eastern Zambia. A Proposal to SAREC. October 1997.*

ICRAF, 1997. *Using the wild sunflower, tithonia, in Kenya for soil fertility and crop yield improvement. A handout*

ICRAF, 1998. *Agroforestry Capacity-Building in Vietnam to Develop Alternatives to Slash-and-Burn. A concept proposal submitted to Sida by ICRAF to support initiatives in Vietnam during 1998-1999*

ICRAF, 1998. *Agroforestry Education in Francophone West Africa. A Briefing Note.*

ICRAF, 1998. *Agroforestry Field Experiments. Reprints of five articles on field experiments*

ICRAF, 1998. *ANAFE List of Members 1993 - 1998*

ICRAF, 1998. *ANAFE M.Sc. Fellowships 1993/94 - 1997/98*

ICRAF, 1998. *Draft. Current Research activities at Zambia-ICRAF at Msekera research station.*

ICRAF, 1998. *ICRAF Activities Supported by Sida in 1997*

ICRAF, 1998. *ICRAF's Machakos Research Station. Final Report to SIDA of results and activities July 1994 - June 1997*

ICRAF, 1998. *Programme for the visit of the Sida Review team. Maseno Agroforestry Research Centre. Briefing note incl. documentation of on-going activities.*

ICRAF, 1998. *Programme of Work & Budget 1998*

ICRAF, 1998. *SIDA Support to ICRAF for Agroforestry Research in the Eastern and Central Africa Highlands - AFRENA (Embu, Kabale, Maseno. A briefing note*

ICRAF, 1998. *The administration of the Zambia/ICRAF agroforestry project. A note prepared for the Sida/SAREC review*

ICRAF, unpublished. *Extracts of draft Annual Report 1997*

ICRAF. 1996 & 1997. *Agroforestry Today Issues 1996 & 1997*

ICRAF/KEFRI/KARI, 1996. *Maseno Project Progress Report, September 1995 - September 1996. AFRENA report no 110.*

ICRAF/KEFRI/KARI. Maseno Agroforestry Research Centre. *An information brochure*

Jama, B. Swinkels, R., Buresh, J.A. 1997. *Agronomic and Economic Evaluation of Organic and Inorganic Sources of Phosphorus in Western Kenya*. Reprint from *Agronomy Journal* Vol. 89, No 4

Jama, B., Buresh, R. J., Place, F. 1997. *Sesbania tree fallows on phosphorus deficient sites: Maize Yield and Financial Benefit*.

Kamugisha, JR, Hultin, J. 1995. *External evaluation of the Kenya National Agroforestry Project for the Coffee-based land use system* (EMBU). Agrisystems (EA) Ltd.

KEFRI/ICRAF, 1997. *AFRENA-Kenya project activities 1997-1999 and programme of work and budget for March 1997 - March 1998*. Proposal submitted to EU

Kenya Forestry College, Londiani, 1997. *Curricula for the Two-year Certificate Course and the One-year Diploma (Inservice) Course in Forestry*

Kimenye, M. 1998. *ANAFE activities year by year 1993 - 1997*

Kwesiga, F. and Beniast, J., 1998. *Sesbania Improved Fallows in Eastern Zambia*. Draft

Kwesiga, F., Phiri, D., Raunio, A-L (eds), 1996. *Improved fallows with sesbania in eastern Zambia. Summary Proceedings of a consultative workshop, April 1996, Chipata, Zambia*

Lazier, J. R, 1997: *Monitor's report. 11th Annual AFRENA Planning meeting. June-July 1997*

Lott, J. E., Khan, A.A., Ong, C. K., Black, C.R. 1995. *Sap flow measurements of lateral tree roots in agroforestry systems*

Lundgren, B. 1998. *Soil fertility. A prerequisite for food security. Key-note speech at RELMA inauguration seminar 10 Feb.. 1998*

Lundgren, B., Brinck, P., Birgegård, L-E, Ericsson, G., Khalili, M, 1994. *Swedish Support to the Consultative Group on International Agricultural Research (CGIAR), A quinquennial Review, 1987 - 1992. SAREC Evaluations 1994:1*

Maclean, J. and Janagap, C., 1993. *The publication productivity of international agriculturalist research centres. Scientometrics 28:329 - 348*

Mathuva, M.N., Rao, M. R., Simthson, P.C., Coe, R., 1997. *Improving maize (Zea mays) yields in semiarid highlands of Kenya: agroforestry or inorganic fertilizers? Reprint from Field Crops Research 55 (1988)*

Ministry of Agriculture, Food and Fisheries, GRZ, 1997/98. *Soils and Crops Research Branch. Budget and Workplans.*

Ministry of Agriculture, Food and Fisheries, GRZ, 1997. *Proceedings of Soil and Water Nutrient Management. Review and Planning Workshop, Kafue*

Ministry of Agriculture, Livestock Development and Marketing, Kenya, 1997. *National Soil and Water Conservation Programme. Workplan 1997/98*

Munyua, H., 1990. *Agroforestry Literature: a Citation Analysis. ICRAF Working Paper No 61.*

National Agroforestry Research Centre, Maseno, 1996. *Research on soil fertility and related pest and diseases in western Kenya. Report of a planning workshop, November, 1996.*

Ngugi, D., 1996. *Agroforestry for sustainable rural development in the Zambezi basin. Project management plan*

Persson, R. , Fruhling, P., 1997. *Back to National Realities. Rethinking International Assistance to Forestry Development*

Persson, R. 1997. *Det skogliga biståndet. Utveckling och nuvarande omfattning samt förväntad utveckling och planerade förändringar. Sida.*

Place, F., 1997. *A methodology for a participatory approach to impact assessment: Implications from Village*

Rao, M., Nair, P. K.; Ong, C. K. 1997. *Biophysical interactions in tropical agroforestry systems*

Roling, N., 1988. *Extension Science: Information Systems in Agricultural Development. Cambridge University Press, UK*

Roling, N., 1994. *Facilitating sustainable agriculture: Turning policy models upside down. In: Beyond Farmer First: Rural people's knowledge, agricultural research and extension practice. Scoones, I. and Thompson, J. (eds). Intermediate Technology Publications*

Sanchez, P. et al. 1997. *Soil Fertility Replenishment in Africa: An investment in Natural Resource Capital*

Sanchez, P. et al., 1997. *Soil fertility in Africa: an investment in natural resource capital. Reprint from Replenishing soil fertility in Africa. Soil Science Society of America Special Publication*

Sanchez, P., Izac, A-M, Valencia, I, Pieri, C. *Soil fertility in Africa: A concept note. Reprint from Achieving greater impact from research investments in Africa. Proceedings of a workshop September 1996. Addis Abeba.*

Sanchez, P.A., Buresh, R.J., Leakey, R.B., 1997. *Trees, soils and food security. A reprint from Philosophical transactions of the Royal Society of London Series B, 1997*

Sida, 1996. *Sidas handlingsprogram för hållbar utveckling.*

Sida, 1997. *PM: Extra basstöd genom konsultativa gruppen för internationell jordbruksforskning, CGIAR under 1998*

SIDA/ICRAF, 1995. *Agreement on Swedish Contribution to ICRAF Programme for 1994/95 - 1996/97*

Swedish University of Agricultural Sciences, 1997. *Forest Trees and People Newsletter*

Temu, A. Rudebjer, P., Zulberti, E (eds.). *Integrated land-use education in Africa: Towards the 21st century. Proceedings of the 2nd General Meeting, July 1995*

Temu, A., 1998. *ANAFE 1993 to 1997: An overview.*

Temu, A., Zulberti, E. (eds), 1993. *Agroforestry Education in Africa. Proceedings of the First Workshop of the African Network for Agroforestry Education (ANAFE).*

APPENDIX IV: Findings from survey among 28 ANAFE member institutions. Reports cover period from ANAFE's launching to date.

1. Out of the 28:
 - 8 offer certificate level training
 - 12 offer diploma
 - 17 offer B. Sc.
 - 16 offer M. Sc.
 - 7 offer Ph. D.
2. Main subject areas:
 - 12 agriculture
 - 14 forestry
 - 9 natural resources
3. Number of students (estimate for all 98 members assuming that the sample of 28 is representative):
 - Total: around 90,000
 - Male: 65,000
 - Female: 25,000
4. Estimated number of current students in the ANAFE network that will be exposed to agroforestry during the training:
 - Total: around 28,000
 - Male: 20,000
 - Female: 8,000
5. Year for membership among the 28 surveyed:
 - 1993: 12
 - 1994: 7
 - 1995: 1
 - 1996: 2
 - 1997: 1
 - Claimed not yet to be a member: 4
6. General meeting: 13/28 had participated
7. Steering committee: 6/28 had participated
8. Curriculum review: 13/28 institution had some curriculum reviewed. 7 institutions benefited from technical support, 8 from financial support. Total 19 curricula reviewed.
9. 17/28 institutions benefited from ICRAF training courses.
10. 5/28 had staff attachment to AFRENA research.
11. 8/28 benefited from staff exchange.
12. 8/28 benefited from or hosted M. Sc. fellowships.
13. 11/28 got equipment.
14. 18/28 got publications, usually one of few copies of few titles.
15. 11/28 got other training materials.
16. Receipt of ANAFE newsletter: 19 did not get or got it irregularly, 8 got it regularly.

17. 19/28 reported change in the agroforestry curricula since the institution became an ANAFE member.
18. 15/28 reported that they have field practicals, usually demo-plots, occasionally studies or extension work in nearby villages or study visits to ICRAF/AFRENA research sites.
19. Literature used in agroforestry: Impression that it is a poor use of literature. Normally few books in libraries. RSCU's earlier distribution still featuring.
20. Other training material:
 - 13/28 use slides.
 - 6/28 use video.
 - 5/28 use transparencies
21. Production of 'own' training materials:
 - 10/28 produced lecture notes
 - 3/28 produced hand outs
 - 1/28 produced slides.
22. Staff training:
 - 5/27 had no staff trained in agroforestry
 - 13/27 had 1-3 staff trained in agroforestry
 - 9/27 had more than 3 trained.

A majority of the trained people are teaching agroforestry now.
23. 5/28 institutions collaborated with another institution in 1997 with support from ANAFE.
13/28 collaborated without support from ANAFE.
24. 18/28 of the institutions were involved in research in agroforestry, usually species trials, alley cropping or students research work.
25. 16/28 have links with farmers.
12/28 have not reported any links with farmers or communities.
26. 18/24 reported high interest among students. 5/24 medium. 4 did not report.
27. 13/21 did not know of another organization providing similar support as ANAFE. Others reported IFS, AAS, RSCU.
28. Main constraints to agroforestry education:
 - 13/28 teaching material
 - 12/28 reported staff training
 - 5/28 field practicals, demos.
 - 5/28 equipment
 - 2/28 funds for student's research
 - 1/28 tree seeds.
29. 2/28 were satisfied with ANAFE responses, 4 not satisfied, 4 mixed feelings. Many had not made requests.

30. Institutional needs; ranking with (1) indicating most urgent need:

	Number of inst.	Average rank
Staff training:	24	2.1
Improved field practicals:	21	2.6
Curriculum review:	26	3.0
Collaboration/Staff exchange	24	3.2
Literature:	23	3.5
Equipment:	10	3.6
Teaching materials:	4	3.8
Workshops, seminars	1	6

31. 18/26 receives Agroforestry Today, and they usually read it except in francophone Africa.

32. 14/28 receives FFTP newsletter, and usually reads it.

33. 9/28 do not know who is at the Coordination Unit in Nairobi.

34. 15/28 knows a focal institution, 13/28 don't.

35. Weaknesses of ANAFE:

- 'Thin'
- 'Started with much energy, got many members, became thin.'
- Lack of responses
- Untimely information flow.
- Transparency in choice of focal institution.

36. Strengths:

- Staff exchange
- Provision of materials, literature
- Dedicated staff
- Emphasis on networking.
- Well coordinated
- Timely responses.
- Introduction of integrated approach to natural resources.
- Multidisciplinary nature.
- M. Sc. fellowships.
- Newsletter, but circulation problematic
- Students have become more focused and more interested in the needs of local communities.

37. Students interviewed generally positive to the subject.

38. Students interviewed not happy with the quality of the field practicals.

39. Other networks mentioned:

FFTP, PINEP, Oilcrops (IDRC), IITO, UNESCO, ASARECA, JICA on fish ecology, various within SADCC, UNEP on biodiversity, USAID on

economics and marketing, IDEA, LEAD, IUCN - ROSSA on climate change, SPAAR, SACCAR, Hans Siedel Foundation.

40. 15/21 of management knows of ANAFE.
41. Donor support to educational institutions is very uneven. Some gets a lot, many nothing.
42. Agroforestry regarded by managers as an important subject that targets employment.
43. Other subject areas relevant for networking:
 - Environmental management (5 responses)
 - Soil conservation (5)
 - Extension (4)
 - Population education (1)
 - Individual crops (1)
 - Energy production (1)
 - Soil fertility (1)
 - Business management (1)

Recent Sida Evaluations

- 98/13 Selected Aspects on the University System of Nicaragua. Yolanda Rojas, Jörgen Dahlgren
Department for Research Cooperation SAREC
- 98/14 Expanded Programme on Immunization in Zimbabwe. Per Anders Björkman, Davies Gordon
Dhlakama, Birger Carl Forsberg
Department for Democracy and Social Development
- 98/15 Community-based Rehabilitation Programme in Zimbabwe. S Chidyausiku, J Munandi, M
Marasha, D Mbadzo, F Mhuri, H Oppelstrup, C Nleya
Department for Democracy and Social Development
- 98/16 SAREC Supported Dryland Research Programmes in East Africa. David Gibbon, Bruce
Campbell
Department for Research Cooperation SAREC
- 98/17 Environment-friendly District Heating in China: Five Investment Projects Supported by
Concessionary Credits from Sweden. Karlis Goppers
Department for Infrastructure and Economic Cooperation
- 98/18 Sida Supported Development Cooperation with Thailand 1986-1998. Contract Financed
Technical Assistance and Concessionary Credits in Energy, Environment, Transport, Public
Administration and Finance. Leif Grahm, Ann Charlotte Bauer, Gösta Eléhn, Nils-Gunnar
Hasselberg, Lars-Olof Eliasson, Roland Duberg, Göran Levin, Ulf Weilding
Department for Infrastructure and Economic Cooperation
- 98/19 Twinning cooperation between Kaunas Water Company, Lithuania and Stockholm Water
Company. Martti Lariola, Birgitta Danielsson
Department for Central and Eastern Europe
- 98/20 Cooperation with the Kaliningrad International Business School. Jakub Swiecicki
Department for Central and Eastern Europe
- 98/21 Two International Training Programmes in the Philippines, Tanzania and India. Total
Maintenance Management and Project Management. Kim Forss, Lars Bjern, Suresh Pingale,
Yvonne Swfontek
Department for Infrastructure and Economic Cooperation
- 98/22 Energy Saving and Pollution Abatement in Jiamusi Paper Mill, China. An investment project
supported by a concessionary credit from Sweden. Karlis Goppers
Department for Infrastructure and Economic Cooperation
- 98/23 Programme for Total Quality Management in Russia. Lars Rylander
Department for Central and Eastern Europe
- 98/24 Swedesurvey Projects in Russia and Ukraine. Land registration systems and information
management. Ivan Ford, Susan Nichols, Mark Doucette, Jaap Zevenbergen
Department for Central and Eastern Europe
- 98/25 Sustainable Dry Forest Management. Sida-supported collaborative research project between
Burkina Faso and Sweden. Karin Gerhardt, Kerstin Jonsson, Eva-Evers Rosander
Department for Research Cooperation SAREC

Sida Evaluations may be ordered from:

Infocenter, Sida
S-105 25 Stockholm
Phone: (+46) 8 795 23 44
Fax: (+46) 8 760 58 95
info@sida.se

A complete backlist of earlier evaluation reports may be ordered from:

Sida, UTV, S-105 25 Stockholm
Phone: (+46) 8 698 5133
Fax: (+46) 8 698 5610
Homepage: <http://www.sida.se>



SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

S-105 25 Stockholm, Sweden

Tel: +46 (0)8-698 50 00. Fax: +46 (0)8-20 88 64

Telegram: sida stockholm. Postgiro: 1 56 34-9

E-mail: info@sida.se. Homepage: <http://www.sida.se>