SSE PROGRAMME

PROCEEDINGS FROM THE

REGIONAL RESEARCH MEETING

ADDIS ABABA 22 - 26 AUGUST 1992

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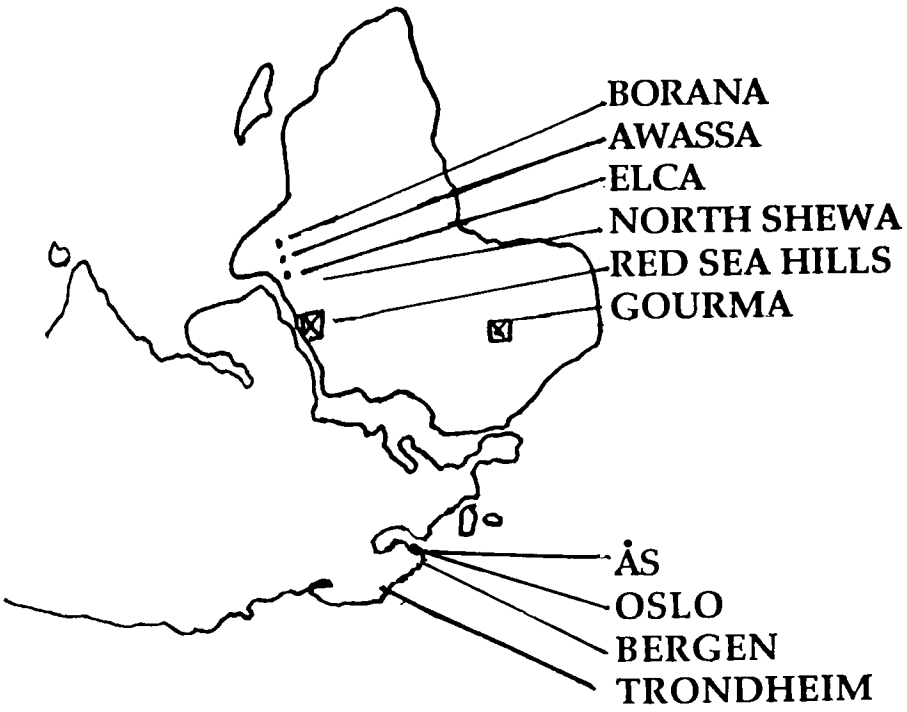

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Foreword

On behalf of the participating research institutions in Mali, Sudan, Ethiopia and Norway, we hereby submit the proceedings of the Regional Meeting of SSE Research Projects held in Addis Ababa on 22 - 26 August 1992. Funds for the research collaboration are drawn from the Norwegian SSE programme originally administered by the Research Unit in the Norwegian Ministry of Foreign Affairs and later transferred to the Norwegian National Committee for Development Research and Education (NUFU). The meeting was financed by the Norwegian Ministry of Foreign Affairs. It was organised by the Research and Publications Office at Addis Ababa University. The International Livestock Centre for Africa (ILCA) availed their conference facilities and provided excellent assistance to the logistics of the meeting.

The meeting covered, through presentations and discussions,

- the planning process; establishment of international research agreements, the professional debate on methods and approach, and the logistics of field operations,
- the main achievements; competence building, institution building and research results,
- challenges and ideas for how to continue and further develop international research cooperation, both South - North as already started and South - South through regional contacts within Africa.

It is clearly documented that the participating institutions have managed to establish operational and productive projects despite serious social and political conflicts in Mali, Sudan and Ethiopia. Personal and institutional links have been strengthened and provide a sound base for long term cooperation. Enthusiasm about the ongoing research, expectations for continuation and hope for finding the paths to improved livelihood for the drought affected target communities have been created.

Ås, Oslo and Bergen October 1992

Aregay Waktola, Trygve Berg, Alida Jay Boye, Johan Helland, Leif Manger

Editorial committee.

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Executive Summary

I. Introduction

A. Background for the SSE research programme

After the 1984/85 Sahel drought, the Norwegian Government launched a special programme for development of drought affected areas. Thematic objectives were focused on food security, ecological rehabilitation and women's situation. Geographically, priority was given to Mali, Sudan and Ethiopia, hence the programme name; the Sahel, Sudan, Ethiopia (SSE)-programme.

The programme consists of three components: support to projects under international organisations, development aid through NGOs, and finally a component for development research.

Development research was intended to generate knowledge and build competence relevant to the thematic objectives of the SSE-programme within participating institutions in Norway and Africa. In addition, funds were allocated for strengthening research infrastructure within the African institutions.

The research projects were established during 1988 and 1989. The country programme for Mali involved the University of Oslo and various institutions in Mali. The Sudan programme was based on collaboration between the universities in Bergen and Khartoum. In Ethiopia, the research projects involved University of Trondheim, Centre for International Health (Bergen), Christian Michelsen Institute and NORAGRIC (Agr. Univ. of Norway) and various units of the Addis Ababa University. In addition, there was one project involving University of Oslo and Ethiopian Wildlife Conservation Organisation.

The research programme was administered under the Research Unit of the Ministry of Foreign Affairs in Oslo, but was in 1991 transferred to the Norwegian National Committee for Development Research and Education (NUFU).

B. Background for the meeting

During the years of establishment of these programmes there have been several research seminars within the individual countries. At the NUFU conference in Harare in 1991, a need for a regional meeting that brought together the Ministry in Norway, NUFU and the involved research institutions in Africa and Norway was clearly expressed. Although the SSE programme was established in 1987, there was a great variation in the establishment of the different countries' programs ranging from 1988 to 1990. Funding was meant to cover five years, to 1991. Recognizing of the late start of many of the programmes, an extension of funding was granted for 1992/93. The meeting marked the end of the first phase for all parties, and gave an opportunity to make a scientific review of the projects

and exchange experiences and views between researchers working on similar problems in the different countries of the SSE-programme. The meeting was also used to make recommendations as to the future of the SSE programme and the projects covered by it. A committee in Norway did the preparatory work and asked the Research and Publications Office at Addis Ababa University to organise the meeting.

C. Objectives of the meeting

The objectives of the meeting as set by the organizing committee and approved by NUFU, were:

1. Bringing together research leaders, working under the SSE Programme, for regional interaction and exchange of scientific information.
2. Sharing experiences and challenges faced in the conduct of North-South cooperative researcher as conducted under the SSE-programme.
3. Summing up the experience from SSE-collaboration and of status quo of the different programmes.

With these objectives in mind, the meeting was conducted as guided by the following themes:

1. the approach to the challenges of the SSE research programme,
2. review of achievements,
3. applicability, prospects and challenges for the continuation.

Contact between countries and exchange of experiences with particular emphasis on the opportunity of communication between representatives of francophone West Africa and anglophone East Africa was a particularly important aspect of the expectations from the meeting.

This means that the meeting was not meant to be a researcher's seminar with presentation of scientific papers. It was rather a research leaders' meeting and participation was limited to Norwegian and African project leaders and with invited representatives from Addis Ababa University, Ministry of Foreign Affairs in Oslo, NUFU, and the SSE NGO-programme. The purpose of the meeting was to distill the scientific achievements and grounds covered, as well as to propose a strategy for continuation.

Since the activities in Ethiopia are organised as five independent projects while Sudan and Mali have one country programme each, Ethiopia got a slight over-representation compared to the other countries. The meeting was in English and French with simultaneous translation of all presentations and discussions.

Participants in the Regional Research Meeting			
Institution	Africans	Norwegians	Total
Mali-programme	5	2	7
Sudan-programme	4	1	5
Ethiopian-projects	4	5	9
Addis Ababa U.	2		2
NUFU		2	2
M. Foreign Affairs		1	1
Total	15	11	26

II. Opening Session

The meeting was opened by Dr *Makonnen Dilgassa*, Acting President of Addis Ababa University. He reflected upon the ecological crisis, the drought and famine, and the social and political conflicts which have resulted in deaths and destitution in all of the three SSE-countries. While this has necessitated immediate action in the form of relief operations, development research is one of the strategies that can play a vital role in finding long term and sustainable solutions.

Dr Makonnen said that Addis Ababa University has appreciated the opportunity to participate in this research programme and is committed to continue with the ongoing collaborative efforts. Finally he stressed the importance of contacts between African universities and opportunities to serve mutual interests through South-South collaboration.

The representative from the Norwegian Ministry of Foreign Affairs, *Mr Geir Løkken*, reviewed the background of the SSE research programme and its objectives and expectations. He mentioned the on-going evaluation of the entire SSE-programme and stressed the importance of this conference as a contribution to the process of evaluation and formulation of new programmes for aid to the region.

Dr Gunnar Øygard addressed the meeting on behalf of NUFU. He presented the mandate and objectives of NUFU and the agreement with the Ministry of Foreign Affairs on funding of long-term cooperation between universities in developing countries and Norway. The form of cooperation is still under debate and NUFU representatives were open to take into consideration the views expressed by the project leaders.

III. Country Reports

A. Environment and Development in Mali

1. Introduction

Mali has as of yet no university structure, but an educational system with opportunities up to the level of Ph.D.. In addition, there are research institutions under various ministries. This project is linked up to the following institutions in Mali:

National Centre for Scientific and Technological Research (C.N.R.S.T.).
Institute of Rural Economy (I.E.R.)
National Institute for Research in Public Health (I.N.R.S.P.)
Institute of Human Sciences (I.S.H.)
National School of Public Administration (E.N.A.)
Upper Secondary Teacher Training College (E.N.S.U.P.)
Rural Polytechnic Institute (I.P.R.)
National School of Engineering (E.N.I.)
School of Medicine

The following departments/institutes at the University in Oslo are involved:

Centre for Development and the Environment
Department of Geography
Department of Geophysics
Nordic School of Nutrition (Institute for Nutrition Research)
Audio-visual Centre
Department of Biology*

The project is made up of the following sub-projects:

Natural Resource Management:
- Demography/Geography
- Pastoralism/Ecology
- Water Resources

Ethnobotany: Use of wild plants for food, medicine and handicrafts

Food security at the household level, and the role of women in the management of natural resources and food security.

Project planning started in 1987 and the project activities were established in the field in the fall of 1989.

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* Project on the Ecology and Physiology of the Senegalese grasshopper

2 Approach and Methodology

The project is located in the Gourma area in northern Mali. The Gourma is a multi-ethnic predominantly pastoral district, about the size of Denmark. It confronted the researchers with difficult challenges of establishing operational contact and communication with local communities, logistics of field operations, and with special problems in connection with an armed rebellion within the area. Communication between Malian and Norwegian researchers with their different cultural backgrounds and languages proved to be another important challenge during the formative years.

Efforts to carry out inter-disciplinary research also raised the issues of integration within the project. The researchers advocated two different models based on either a *systems* or a *matrix* approach. The one aims at producing a systems model of resource use and survival strategies in the context of the eco-system and the socio-economic system. The other lists the individual studies on both axes of a matrix where the "pure" studies are represented by the diagonal and where combinations appear outside the diagonal.

Choice of methods for individual studies has been under debate within the project. While the Malians have a tradition of large scale surveys or inventories, the Norwegians preferred more sharply focused studies on selected topics in limited areas. It appears that both approaches have their place within the project.

3. Achievements and Highlights

Several planning documents, more than 80 working papers including four annotated bibliographies, and a video on the formation of the research collaboration have been produced. Preliminary results were presented in a seminar in Bamako in May 1992. Participants included the involved researchers and colleagues from their institutions and representatives from development organisations.

Competence building has concentrated on the upgrading of relevant research skills for both Malian and Norwegian researchers. Institution building in Mali is primarily manifested in the progress of the scientific staff. However, a special grant of NOK 1.8 million for institution building enabled the project to provide significant support to the local research infrastructure.

4. Applicability, Prospects and Challenges

Seminars and research activities have given an opportunity for Malian and Norwegian researchers to work in an inter-disciplinary and cross-cultural setting. The Malians felt that the Norwegian researchers have contributed to an improvement of the technical quality, accuracy and analyses of research data.

The project has opened for contact and communications with the international research community.

There are still challenges on the development of inter-disciplinary and cross-cultural research collaboration. Dissemination of research results, particularly publishing in scientific journals will have to be emphasised. Continued training in modern research methods as well as contacts with modern research institutions is essential for upgrading the competence of the Malian research community. South-South dialogue in the Sahel zone within the context of the SSE-programme should be pursued. Training of Malians for post graduate degrees is an important condition for the establishment of a Malian University.

B. The Red Sea Area Programme (Sudan)

1. Introduction

The main objective is to contribute, through research, to increased food production and sustenance of the production base in the Red Sea Area. Secondly competence building and institutional support to participating researchers and institutions are part of the agenda.

Participating institutions are the universities of Khartoum and Bergen. Involved disciplines include botany, geography and social anthropology. The project was planned in 1987 based upon earlier collaboration, and started in 1988. The project has involved 58 researchers from Khartoum and 4 from Bergen. Number of post-graduate students is 14 from Khartoum and 4 from Bergen. 5 workshops with an average attendance of 60 persons have been held.

2. Methods

The project used both basic and applied research, emphasised interdisciplinarity and worked closely with NGOs and local authorities. Competence building was achieved through formal post-graduate education in Khartoum and in Norway.

The project faced different perceptions and expectations by various groups. Other factors and constraints that influenced the project operations included lack of a data base to start with, limited time available for field work both for Sudanese and Norwegian researchers, large scale of operation, huge and remote area, language and cultural differences, instability in the University of Khartoum, and the economic and political situation of the country in general.

The presentations describe how the project coped with these factors and constraints through organisational and methodological means.

3.Achievements

Achievements include 1 completed Ph.D. and 4 in progress, 9 completed M.Sc./M.A. and 8 in progress. 83 workshop papers and 5 commissioned reports are produced and several consultancies for NGOs have been carried out. Documentation materials also comprise climatic records, ground verification of satellite imageries, local rituals, and a comparative slide show on vegetation in 1940s, 1950s and 1990s.

The research has revealed and documented the alarming rate of environmental degradation in the area and has analysed the socio-economic implications and discussed the development needs.

4. Reflections

The researchers presented their reflections on the cultural and social situation of the Beja of the Red Sea Hills who no longer can sustain themselves with traditional pastoralism as their economic backbone. They further reflected upon the situation of the NGOs who during the transition from relief assistance to development aid have to look for immediate solutions. Finally the researchers find themselves in a situation where their immediate contributions are but little more than what can be provided by short term consultancies. However, the research is a learning process. The human capital is being enriched and constitutes the real achievement.

C Ethiopia

1. The Borana Health and Nutrition Study

Participating institutions: Department of Community Health, Addis Ababa University and Centre for International Health, University of Bergen.

The project was started in 1988. The main objective is to study the vulnerability profile to drought and drought prone communities in southern Ethiopia, and include research on population dynamics, food system and nutrition and sickness among children and adults. Field research is located in drought prone areas in Borana (pastoral community) and Elca in South Shewa (settled agricultural area).

The project has worked closely with the social anthropology project on an interdisciplinary framework to the problems of the Borana community. The Elca study also involves agricultural and food sciences provided by the Awassa College/NORAGRIC project with the scope of understanding the interaction between health,. nutrition and agricultural production system. Psychologists are involved in a study of association between psycho social development of a child, mother child interaction and state of nutrition.

The project also has established functional links to authorities and NGOs working in southern Ethiopia and thereby communicated the research findings.

The project has resulted in five scientific publications and a number of conference presentations and contributions to teaching in community health in both the participating universities. Formal competence building include one M.Sc. and two Ph.D. degrees (one awarded and one in progress).

Some support to strengthen the research infrastructure of the Department of Community Health is provided.

2. The Cooperative Agreement in Social Anthropology

Participating institutions: Department of Sociology and Social Administration, College of Social Sciences at the Addis Ababa University and Christian Michelsen Institute in Bergen.

The main components of this project are the establishment of a MA-teaching programme at the Addis Ababa University and field research on resource management in pastoral communities in the Borana area in Southern Ethiopia.

Before this project started there was no postgraduate training in social anthropology in Ethiopia. The SSE-programme provided external financial and professional support which enabled Addis Ababa University to start post graduate education in this subject. The students are drawn from various academic and governmental institutions. They are expected to work two or three days a week and are therefore only part time students. The first group was registered in 1990 and will graduate in 1993. The second is doing their coursework and the third group is about to start.

The project has started a *Sociology and Ethnology Bulletin* and so far the two first issues are produced.

The field research is done in collaboration with the Borana Health and Nutrition Study and examines pattern of resource management in general and resource availability at the household level in particular.

In addition to reports and scientific papers which are now coming out of this project, community contact and field infrastructure which is essential for the research component of the MA-training is established.

Support to technical research infrastructure and funds for study tours within and outside Ethiopia, and international staff exchange has significantly upgraded the institutional base for work on social anthropology in Ethiopia.

3. Studies of Farming Systems in Southern Ethiopia

Participating institutions: Awassa College of Agriculture, Addis Ababa University and Norwegian Centre for International Agricultural Development (NORAGRIC), the Agricultural University of Norway.

The project started in 1989 with components of research on dryland agronomy, soil characterization, animal science, agricultural resource economics and food technology.

The project has chosen a systems approach which means that traditional commodity or disciplinary research has to be related to an overall understanding of the constraints within the production or food system. Competence building is achieved through formal postgraduate education on sandwich programmes and informally through experiences gained in project participation.

Agronomy research as well as work on soils and animal nutrition has exposed the potentials and possibilities of increased productivity and yield stability in Southern Ethiopia. Food science research has described the milk handling and processing technology and characterised the bacteriological and chemical quality of the milk products. Milk is an extremely valuable food item, but poorly utilized mainly because of inability to take properly care of seasonal surpluses. The project is working on the bacteriological aspects of improved quality and shelf life for locally produced dairy products. The project has also developed a prototype for an implement which will ease the burden of women in connection with the processing of enset (the main staple for 8 million people in Southern Ethiopia). This implement is now ready for testing at household level.

Resource economics is a main agricultural contribution in an interdisciplinary study of the production system in the village of Elca where the Borana Health and Nutrition Study analyses the interaction between nutrition and health.

The project has contributed to one M.Sc. in animal nutrition and four M.Sc. in management of natural resources. There is one Ethiopian and one Norwegian Ph.D.-programme, both still in progress.

There has been a considerable contribution to the research infrastructure including two vehicles, laboratory equipment, computers and other office equipment and books and journals for the library.

A number of scientific papers are published, submitted or under writing. Follow up research which will emphasise on-farm experimentation and increased NGO-involvement is being initiated or planned.

4. Wildlife ecology: Integrated Wildlife Management and Utilization in Borana

Participating institutions: Ethiopian Wildlife Conservation Organization (EWCO) and Department of Biology, University of Oslo.

The project has three major objectives: (1) Research on resource competition between wildlife and livestock in the semi-arid Borana environment; (2) general technical assistance to EWCO through material support and informal training of field staff, and specific assistance by developing management proposals for Yabello Wildlife Sanctuary; and (3) competence building in EWCO through training of two staff members to graduate level (M.Sc. in Natural Resource Management) in collaboration with NORAGRIC.

Objectives number 2 and 3 are already accomplished. Since field research only started in August 1990 and was later interrupted by local unrest, achievements under objective number 1 are limited.

Field work is done mainly in the Yabello Wildlife Sanctuary and to a lesser degree in the Sarite plain, both areas in Borana in Southern Ethiopia. The production system is traditionally nomadic cattle herding, but with an expanding agriculture around the towns.

A total of 41 species of mammals (excluding bats, insectivores and larger rodents) and 293 species of birds are identified. Particularly noteworthy findings are the rare Grevy's Zebra and two species of birds which are endemic to Borana. The area also has a small number of Swayne's Hartebeast, a critically endangered subspecies which is now confined to a few localities in Ethiopia since its extermination in Somalia.

The cattle population is increasing and has reached 40 animals/km^2. The camels are few but are increasing very fast. Their number, in 1990, was estimated to six or seven times that of 1982.

No clear relationship between occurrence of livestock and distribution of wildlife was discovered. The pastoralists themselves are not very concerned about competition for food and water between wildlife and livestock. Most of them consider the common zebra as the only important competitor.

Much of the project work so far is centered around animal surveys and assessment of the wildlife resource in Borana. The planned follow up involves use of radio-telemetry in order to monitor zebra movement and range use, and evaluate their relationships with land use activities. The Borana plateau where a number of development activities are going on, is one region where fruitful wildlife-pastoralism interplay can be brought to market.

5. Peasant Production and Development in Ethiopia

Participating institutions: Institute of Development Research, Addis Ababa University and University of Trondheim.

The main objectives are to expand the knowledge of peasant conditions in North Shäwa, to produce a series of studies based on direct field research, and to build up research capabilities. The ultimate aim of these efforts is to identify viable development strategies - from improved management of land and animals to the political structure conditioning peasant decisions.

The project employs a broad field of studies developed from a common understanding of the general research problems, and involves researchers from disciplines such as political science, public administration, sociology, economics, history, geography, social anthropology, and literature.

A number of scientific reports, papers and conferencee proceedings are published or in process. The project has acquired a high number of library accessions, and has also contributed to the infrastructural upgrading of IDR and some of the departments at the AAU, especially in the form of computers and a computer network, as well as paper and spare parts. A field station has been constructed in the core of the research area in Mafud, Northern Shäwa, with lodging and working facilities for researchers. A pool of field assistants is permanently available for the project's researchers. The field station and the pool of assistants have greatly improved the possiblities of effective fieldwork for all PPDE researchers.

IV. OVERALL CONCLUSIONS

1. The conference showed the different starting points for the different projects. All have had their problems, but all report that there is now a sense of direction and that the realization of aims of competence building, cooperation with NGOs as well as formulating the research contribution is underway.

2. Such considerations were underlined as being important premises for Phase II of the SSE programme. A great concern was expressed therefore over the unclear situation in Norway about the future of the programme. This was particularly underlined by the African participants, who felt that the process of competence building and institutional support should have a long term perspective. In their local contexts the funds represented by the SSE programme were a significant contribution to such efforts, and a cut would represent a serious set back.

3. The need to learn from the past 5 years was also underlined. An automatic prolongation of the programmes would not necessarily solve the problems identified. There was a need to assess past performance and to formulate aims for the coming period. Such intermediate aims should build directly on what was seen as the positive achievements and should aim at promoting these.

4. Of particular importance in this respect was to advance the South-South cooperation within the programme. The positive feeling in the meeting clearly signaled a potential for furthering such links and types of networks.

5. It was also underlined that on the Norwegian side the new orgnaisations of direct relevance to the SSE programme (NUFU for research and NORAGRIC for the NGOs) should be involved by the Ministry in the future planning of the programme in order to secure contact between the various components and to develop a better platform for the realization of positive aims. In addition, the importance of maintaining clear and consistent objectives for the research programme was stressed.

OPENING ADDRESSES

Opening Address

Dr. Makonnen Dilgassa, Acting President, Addis Ababa University

Mr. Chairman,
Distinguished Participants,
Ladies and Gentlemen,

It is my pleasure and honour to welcome you all to this regional conference on behalf of Addis Ababa University. I like to express my gratitude, particularly to our guest participants from Mali, Norway and Sudan. We do feel honoured by your presence. We hope that the meeting will be fruitful and worthy of the time and effort you have made to come to Addis Ababa.

Mr. Chairman,

From the conference programme, I understood that the primary objective is to make a scientific review of the performance of the SSE Projects in each of the countries and sum up the experiences in order to draw lessons to improve or strengthen North-South and South-South cooperation. In this sense, I believe I am not expected to set the tone of the conference. The organizers have provided pertinent themes to guide your deliberations. I think what I should do, given this opportunity, is to share some general concerns about the development problems and the prospects for cooperative action in order to ease the situation.

First of all the region has been under ecological crises for many years. Harsh and hostile climate, serious degradation of natural resources, recurrent droughts and famines are threatening the survival of our nations. To aggravate the situation, we have of course, seemingly endless social and political conflicts through out the region. As a consequence, hunger, mass starvation, deaths and destitution have become the norm in each of our countries.

In facing the predicament we have enjoyed the sympathy and generous support from the international community. Norwegian Government and NGOs have been among the prominent supporters which provided relief and rehabilitation assistance. They have helped to save human lives. This has been a remarkable contribution. Nevertheless the task of resolving the root causes of famine is much more complex and demands sustained long term strategies. Development research is one of the strategies that can play a vital role in addressing the social and ecological issues confronting us.

In my view, it is in this spirit, that the SSE projects were initiated with financial allocation by the Norwegian Government in Ethiopia, Mali and Sudan to pursue far reaching and fundamental objectives. For the benefit of those who are not aware of this, let me state the fundamental objectives of the SSE Programme.

1. increased food production and food security

2. ecological rehabilitation and development of sustainaable production systems in areas affected by drought and over-exploitation

3. upliftment of the poor in the peasant sector with special emphasis on women.

When the opportunity was presented to Addis Ababa University to participate in this programme for joint Ethiopian-Norwegian research collaboration, in pursuit of these objectives, there was no hesitation at all. Within a short period of time, we managed to conclude agreements, individually, with NORAGRIC, Christian Michelson Institute of Bergen, Centre for International Health at the University of Bergen, University of Trondheim and University of Oslo after pertinent projects were formulated in line with the above objectives. And in spite of the problems and political uncertainity these projects faced during the course of the past five years, they remained operational with a reasonable measure of success. We have at least created a workable collaborative framework to facilitate our cooperation.

The results achieved specially in terms of capacity and competence building are no less significant.

I know that the Norwegian Universities' Committee for Development Research and Education (NUFU) is now entrusted with the task of facilitating Norwegian-African Universities' research collaborations. I also understand that the emphasis is on competence building through graduate programmes carried out in African universities under sandwich arrangements. This is consistent with our thinking and practice. I want to assure NUFU officials , who are present here, that we are committed to continue with the ongoing collaborative efforts and open newer avenues of cooperation.

We are also interested to activate and strengthen the agreement we have with the University of Khartoum. We talk a lot about the need for a South-South cooperation but seldom practice it. This is a challenge for us and let us use the opportunity available to serve our mutual interests.

After having said this, it remains for me to thank the Norwegian Universites Committee for Development and Education (NUFU) for sponsoring and providing financial assistance which enabled this conference. I am also grateful to ILCA for availing their excellent facilities and last but not least I wish to thank the organizers of the conference.

With this I declare the conference open.

Thank you.

Mr. Geir Løkken, Ministry of Foreign Affairs, Oslo

Mr. Chairman,
Honorable delegates, ladies and gentlemen,

Let me, on behalf of the Royal Norwegian Ministry of Foreign Affairs, express my sincere hope for the success of this conference.

The Sahel-Sudan-Ethiopian Programme - the SSE-programme - was initiated in 1985 to channel Norwegian assistance to countries in Sub-Saharan Africa affected by drought, poverty and environmental degradation. One billion Norwegian kroner were set aside for a period of five years - 1986 to 1990. The programme was continued in 1991 and 1992 in order to utilise the unused funds. The future of the programme is still uncertain. We are about to present the aid budget to the Norwegian parliament. Therefore, I have reason to believe that the financial support for the programme will continue in 1993.

Three channels were identified for implementation of the programme, namely:

- multilateral organizations
- NGOs, and
- research institutions

The NGOs and the research institutions have been operating in Mali, Ethiopia (including Eritrea) and the Sudan. While the multilateral organizations have had a somewhat broader area of operation.

The rational behind the programme concept was the belief that the comparative advantage of each of the channels be more visible. The key words were NGO's participatory approach, the multilateral organizations' potential of mobilizing the smallholders and, of course, the research institution's potential of gathering useful information and giving input to the other projects.

These three days we are supposed to discuss the research component. As a background let me just briefly bring to your attention the main objectives of the Research Programme.

Three objectives were stated in the programme document. I have the impression that the weight put on the different objectives has varied over time. The development of a research policy in the Ministry has of course contributed to where the emphasis is put. However, let me quote:

> "- to improve the Norwegian research competence
> - to improve action-oriented research, where research is a tool for project planning and implementation; and
> - to develop competence and capacity in research institutions in the SSE countries."

(The last objective was implemented mainly through North/South research collaboration).
I trust that many of you know that the Ministry of Foreign Affairs in 1991 decided to commission an evaluation of the Programme. The Danish COWIconsult was given the responsibility and the evaluation was carried out by an international team.

A draft synthesis report was received in the Ministry one week ago. Last Friday the report was sent out to institutions which have received funds from the programme. A number of other draft reports have been presented as well, including a Documentation Study, a Regional Context Study and Field Studies from Mali and from Ethiopia, Eritrea and Tigray. The Sudan programme is not included. That programme has, however, been evaluated in another context.

The Ministry is planning a broad discussion concerning the evaluation, and further devlopment aid to the region, and we certainly appreciate your participation in this process.

An important criticism in the evaluation report is the various signals sent out by the Ministry during the programme period. I shall therfore try to avoid falling into the same trap, and consequently not involve myself in a broader discussion of the future. The Ministry has now started the process, and no conclusions have yet been reached.

What I can do is to share with you some issues from the Evaluation Report concerning the research component. Let me first, however, remark that the Evaluation Team makes reservations regarding this component, because the research collaboration mostly started only in 1989.

The team suggests that the objectives were unclear and mutually conflicting. It is commented that competence building in Norway and in the SSE countries, simultaneously, has caused confusion and led to considerable delays in the implemetation.

The report says that the varying experience of the involved institutions, from working in the region, has been a major problem.

It further suggests that the research component has existed in isolation from the other components of the programme, namely the NGOs and the multilateral organisations.

I find it difficult to comment on this critisism at this stage, but trust that these issues will be prominent in the coming discussion this fall.

I would like to draw your attention to one other issue:

The Norwegian National Committee for Development Research and Education (NUFU) has been given the administrative responsibility for the ongoing research cooperation within the SSE Programme, that is those programmes where Norwegian universities are involved. The agreement between the Ministry and NUFU is ruled by a set of policy and operational guidelines. In the NUFU arrangement, funds are not set aside for the financing of competence building in Norway. The rational behind this decision is the supposition that if we do not have the adequate competence in Norway, we do not have a solid basis for entering into research collaboration with institutions in Third World countries - given the fact that competence and capacity building in Third World countries is the main objective of Norwegian support to research over the development aid budget.

We have tried to solve this specific problem by, within the economic framework of the agreement, earmarking an amount limited to ten million kroner to facilitate the participation of Norwegian researchers in the SSE programme for 1992 and 1993.

The evaluation team recommends, however, that a research component for the future be split into two parts, namely competence building in Norway and competence building in the SSE countries.

I guess we all have got different expectations to this conference. I have also got one:

To the extent we are going to discuss the organization of the future research collaboration or competence building in the SSE countries, we should allow ourselves to look beyond the SSE Programme or discuss alternative modalities for contributions to capacity and competence building.

Let me close by saying that research collaboration across boarders, both between different continents and between neighbouring countries is exciting, demanding and time consuming. Within the SSE programme it will hopefully contribute to the production of important research results to the benefit of this region, contribute to competence building and contribute to understanding between countries and people.

Last, but not least, let me extend my graditude to the University of Addis Ababa, ILCA and to the preparatory committees, for hosting and arranging this important conference.

Thank you.

Dr. Gunnar Øygard, NUFU

Mr. Chairman,

We NUFU representatives are very pleased to be present at this SSE research conference.

The NUFU committee for Development Research and Education is the joint body for coordinating work carried out in the field of development research and education by Norwegian universities and university colleges.

The tasks for the NUFU committee are the following:

- to learn from you about options and possibilities to reach our common goals, improving the conditions for the people in the SSE committees;

- to contribute to institutional cooperation between Norwegian Universities and similiar insitutions in developing countries;

- to contribute to the coordintion, division of work, and cooperation between institutions in Norway;

- to discuss issues concerning the Norwegian institutions long term plans in development related activities, and in particular evaluate new, national programmes for research and education;

- to finance development projects for allowances and grants to member institutions of the Norwegian Council of Universities.

To fulfill NUFU's objectives NUFU signed an agreement with the Royal Norwegian Ministry of Foreign Affairs and the Norwegian Council of Universities which has as its main goal to finance long term cooperation between universities in developing countries and Norwegian university institutions for the purpose of competence building at university institutions in developing countries. Thsis agreement is named the NUFU-programme. The method to achieve the goal of the NUFU programme is "by utilizing competence with Norwegian universities and alleviate existing needs in developing countries" by building cooperation programmes. The programmes must be based on the priorities of the university institutions in the develping countries.

The SSE research projects were included in the NUFU programme for the ongoing projects.

NUFU's policy and objectives will be the basis for the planning of the cooperation with SSE countries which will follow when the present programmes are brought to an end.

- What forms that cooperation will take, is open to debate. It is an issue that this conference will address on the basis of the experience of the various projects and that interests NUFU greatly.

- First of all we expect to learn from the participants in the various projects their views on the status and the achievements of the projects.

- We would be interested in hearing about the strategies that you have developed and to see them in the light of NUFUs parameters.

- Your experience and views on the role of the universities in the development of the countries, the options and constraints involved in institutional cooperation would also be much appreciated.

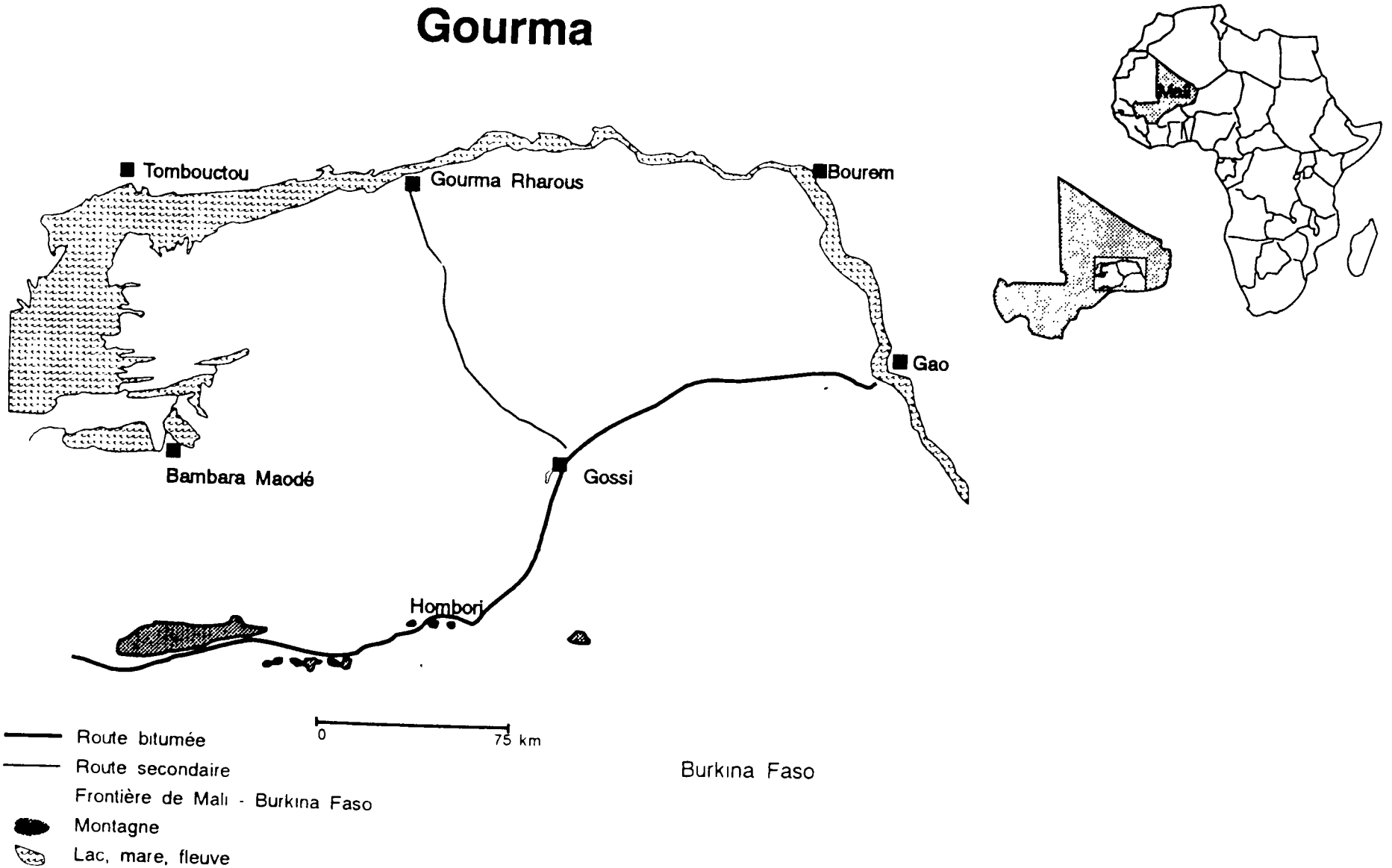
- We would also be interested in hearing about the possibilities and impossibilities of cooperation with the NGOs, since it never became a dominant feature of the SSE projects.

- Given the experience you now have of the initiation and building of the SSE-programme, what advice would you now give the launching of such programs?

These are some of the issues we are interested in hearing about and in debating. But first of all, we are here to listen and to learn. For this opportunity we are grateful to you for being invited to this conference.

THE MALI PROGRAMME

Gourma


Tombouctou
Gourma Rharous
Bourem
Gao
Bambara Maodé
Gossi
Hombori
Mali
0
75 km
Route bitumée
Route secondaire
Frontière de Mali - Burkina Faso
Montagne
Lac, mare, fleuve
Burkina Faso

The Mali Programme

Background

General and specific objectives

The general objectives of the SSE research programme "Environment and Development in Mali" (here referred to as the Mali-Project) are :

1. to describe and analyse the processes which influence use and management of natural resources and food security;

2. to upgrade Malian and Norwegian research expertise through research activities;

3. to communicate insights gained through research back to local communities and authorities in Mali and thereby assist in improving local food production.

4. to present analytical data and information which can be used as a basis for planning sustainable development in Mali.

The project is an ambitious one and it has therefore been extemely important to keep the objectives clear and to progress one step at a time. The main objective (nr. 1) has been to carry out an inter-disciplinary research project, an ambitious task in itself. At least during the first phase of the project, upgrading of expertise of researchers has been a means to this end. Communication of research results has been seen as a special sub-project necessitating special expertise. The original intention to include this sub-project from the beginning as an integral part of the project was re-considered due to lack of financial resources. Great importance has been placed therefore on carrying out this objective during the current phase of the project. The last objective is a long-term objective which will be accomplished to a certain extent within the present project period (1989 - 1993).

Structure of the Mali-Programme

The project, "Environment and Development in Mali" is part of the overall Programme of collaboration between the University of Oslo and Mali (the "Mali-Programme"). The programme is governed by a Programme Board ("Comité Technique et de Gestion") consisting of directors of the institutions involved in the collaboration with the University of Oslo.

Mali does not at the present time have a university structure; however degrees up to PhD level can be acquired through the Malian System of Higher Education.

In addition, many government research institutions exist in Mali under the direction of the various Ministries. The University of Oslo cooperates with the following institutions:

National Centre for Scientific and Technological Research (C.N.R.S.T.)

Institute of Rural Economy (I.E.R.)

National Institute for Research in Public Health (I.N.R.S.P.)

Institute of Human Sciences (I.S.H.)

National School of Public Administration (E.N.A.)

Upper Secondary Teacher Training College (E.N.S.U.P.)

Rural Polytechnic Institute (I.P.R.)

National School of Engineering (I.P.R.)

School of Medicine (E.N.M.P.)

The C.N.R.S.T. is the equivalent of a national research council with a function of coordinating research in Mali. I.E.R., I.N.R.S.P. and I.S.H. are research institutes while the last five are schools of higher education. Teaching staff at the "academic schools" often come from the research institutions and the schools carry out a certain amount of research.

One advantage with this structure is that the project maintains contact with both the academic schools and research institutions which have close contact with concrete development problems. The disadvantage is that these institutions often have varying interests.

The structure of the Mali-Programme is designed to encourage inter-institutional cooperation both in Mali and at the University of Oslo. The following departments/institutes are involved in Oslo :

Centre for Development and the Environment

Department of Geography

Department of Geophysics

Nordic School of Nutrition/(Institute for Nutrition Research)

Audio-Visual Center

Department of Biology

There is a coordination unit in Mali which facilitates general project operations as well as creating an environment for inter-disciplinary research.

Project components

The Mali project is made up of the following sub-projects, each linked to a scientific unit at the University of Oslo.

Natural Resource Management:

Demography/Geography
Pastoralism/Ecology
Water Resources

Ethno-Botany: Use of wild plants for food, medicine and handicrafts

Food security at the household level, and the role of women in the management of natural resources and food security.

In addition, the Department of Biology at the University of Oslo has a collaboration with the Institute of Rural Economy in Bamako concerning research on combatting the Senegal Grasshopper. This project has only just started and includes a training component for two PhD candidates in the field of zoology. This project is not, however, integrated scientifically into the Mali-project being discussed at the SSE conference.

It should also be mentioned that the Ministry of Foreign Affairs gave a special donation to the institutions in Mali for developing infrastructure including purchase of scientific equipment, participation in international seminars and purchase of books, journals and publications. Activities related to this donation are mentioned under institution building.

Timetable

1987/88 Project planning	Initiation of the planning process, integration of the various sub-projects, and establishment of a base for inter-discliplinary, cross-cultural collaboration.
May - Dec. 1989 Project start	Establishment of project infrastructure, renovation of office space, purchase of equipment and vehicles, hiring of support staff, establishment of routines. Seminar on methodology and training of field staff.
Jan. - Dec. 1990	Data collection
Jan. - Dec. 1991	Supplementary data collection, data analysis - training in the use of computers

Jan. - June 1992	Report writing for finalizing initiation stage
July 1992- Dec. 1993	Integration and synthesis of research results, continued training, writing of scientific articles, dissemination of research results.

Theme One: Approach and Methodology

How the population was associated with the research process

The main target population of the research programme is the population living in the Gourma. Participation of the population in the Programme can be characterized by the following three aspects.

First aspect - As resource persons

This aspect was taken into consideration from the very beginning. Actually, one of the resource persons from the Gourma, Mohamed Ag Mahmoud who is an independent researcher with the project, participated in all phases of the elaboration and the initiation of the Programme. In this way, he provided information concerning climate, vegetation and the economic life of the Gourma. With his presence, the point of view of one segment of the population was always represented, but not the point of view of the entire population, given that the Gourma is inhabited by white Tamacheq (Touregs), black Tamacheq, Fulani (Peulh), Songhay, and other ethnic groups; by sedentary as well as nomads and many economic catogories which do not have the same perceptions of the situation in this part of the country.

In the field, the Norwegian and the Malian researchers brought in other resource persons from the local administration, members of the development committees, directors of the schools etc.

Second aspect - During the preliminary studies

During the preliminary studies, the Malians and Norwegian researchers visited the entire study area and discussed and explained the objectives of the Programmes and the process which would follow.

Involving the local population in the research activities is in reality extremely difficult in the case of the Gourma since the population is predominantly nomadic and spread over a vast area (the size of Denmark).

The fieldworkers selected were not always recruited from the local population from the region. The advantage gained was a certain objectivity; however the enumerators did not always have the knowledge of the regional nuances of the local languages or the cultural specificity permitting them to correctly interprete the responses to the questionnaires.

Selection of fieldworkers became even more difficult as the conflicts increased between different ethnic groups.

It is the intention of the Programme to return to the population to verify the results and attempt to bring insights gained back to the same populations. This is part of a special sub-project for dissemination and communication of the research results.

Influence of the conflict in Northern Mali on the Programme

In 1990, an armed rebellion was installed in the northern part of the Malian Republic. The "Problem of the North" as it is commonly called, became a burning issue while the fieldworkers and researchers where active in the region. On two separate occasions, research teams were attacked by rebels and held captive. One project vehicle was stolen. The security situation worsened and constituted a serious handicap to the progress of investigations in the field. Certain transformations were necessary in approach given that the rebels were particularly attracted to vehicles in the field.

The consequence was a certain readjustment of the methods for collecting data. The insecurity in the North also led to a certain delay in the timetable. The work with data entry was done immediately and partial analysis carried out while awaiting complementary work in the field, thus the preliminary nature of the research results.

Problems of communication, perception and methods between researchers

Integration, methodology and inter-disciplinarity
(a personal contribution by Jon Pedersen)

The active collaboration between Malian and Norwegian researchers in the establishment of the different elements of the program can be commended, especially taking into consideration problems linked to for example the use of

seven languages: French, English, Norwegian, Tamasheq, Fulani and Songali and Bambara. In addition, there were major cultural differences between Mali and Norway as concerns research methods used, the way knowledge is acquired in the various cultural contexts as well as differences of perception within the various research disciplines.

Developing a methodology for inter-disciplinary research

One of the greatest and most difficult challenges was the elaboration of a methodology for carrying out inter-disciplinary research. Initially, many researchers on SSE-program had the ambition that all the data collected by the program should be compatible at the data level. Thus, it was hoped that data collected by, say, the Ethno-Botany Group, could be meaningfully integrated in the same statistical analysis as data from, say, the Food Security Group.

To achieve this integration, two main approaches were put forward for consideration. One was to carry out a single large survey in which the need for information for every group would be accounted for. This approach was soon abandoned, as it quickly became clear that many factors would differ widely between the research groups: the units under investigation; the sampling needs; the time frame of investigation. Another reason to abandon this approach was that it was realized that much of the data was not of a quantitative nature, and therefore could not simply be integrated into a common data base in any case.

The second approach was to try to identify the units of investigation as precisely as possible, so that although each group carried out separate investigations, one might still identify, say, the same villages, water points or households. As in the first case, it soon became apparent that households could not be identified across surveys, but on the more aggregate levels or natural features, such as villages, agropastoral units, water points, geographic names, plant names etc., a large effort was made to achieve standardization.

The result of the considerations of integration was that a consensus gradually evolved that any integration had to be on the analytical level rather than on the data level. Thus, a given sub-project would build a model which could depend on the results of another sub-project, but which would not depend on treatment of the raw data from another sub-project.

However, two models still exist as to what form this integration should take. The first model is one which may be termed a systemic model. Here, the idea is that the final result of the program (in terms of scientific results) should be a systems model of resource use and survival strategies in the contexts of the eco-system and the socio-economic system.

Project	Food Plants	Mineral content of Water	Pasture	Nutrition of children	Food used by households	Diseases
Food plants						
Mineral content in Water						
Pasture						
Nutrition of children						
Food used by households						
Diseases						

Figure 1. Matrix approach to interdisciplinarity

The second view holds that a systems model is too ambitious, and that given the general disenchantment with systems models in many fields today, the aims should be more modest. In this view, a kind of matrix approach to interdisciplinarity may be more prudent (Fig 1). Here, each study is identified along both axes of the matrix. The diagonal represents the pure studies (for instance the study of the mineral contents of the water). At the very least, there should be a report or publication for each entry in the diagonal. In addition, there could be combinations, where several researchers in different fields go together to produce something based on data collected in different sub-projects. For instance, one publication is under way where the public health specialist cooperates with the anthropologists and the specialist on the pharmacology of traditional medicines on the classification of disease. Another, related approach is that a single researcher writes an article in his or her own field, but where data from several groups or studies are used.

One should note that the integration is not simply a question of scientific nature, it is also very much related to the social nature of scientific publishing and career building. In both the cases cited above the question of principal authorship and attribution arise. This is a sensitive question in many scientific contexts, but it is even more sensitive in a cross-cultural and cross-disciplinary setting. Although questions of authorship and attribution have been intensively discussed, one cannot say that a satisfactory consensus has been reached.

Methodology of individual studies

Having considered the cross-disciplinary and integrative aspects of the methodology, we now turn to the methodology of the single studies. Here, the approaches naturally vary according to discipline, but one may also note some common elements.

The approach of the Malian researchers and the Norwegian differed at the outset. On the one hand, Malian research, and in particular the social sciences and fields touching the social sciences (nutrition, rangeland management) has a strong tradition of fairly large scale surveys, generally based on questionnaires applied by interviewers. In the natural science fields, there appears to be a similarly strong tradition for inventories, for instance of a given resource.

The Norwegian researchers had, on the other hand, little experience with this type of work, and also to some extent regarded it as misplaced or premature in the context of the Gourma. Many of the Norwegians preferred more sharply focused studies concentrated on selected topics in limited areas. However, most of the research was carried out within the Malian paradigm.

On the background of the experiences from the various surveys some of the main problems may be outlined. Most of the methodological problems stem from the very nature of the Gourma and its population: extreme variability in resource availability in terms of time and space and corresponding variable and flexible survival strategies of the population. The aim of many of the surveys was to obtain an overall picture of the situation in the Gourma, but the variability in time, space and population posed serious problems for the definition of the sampling frame (i.e. what units to include as possible members of a sample) as well as for the actual sampling. This is obviously true for the nomadic population, but it is also true of the sedentary population as well as for features of the natural environment such as pastures, water points or plains where wild cereals are collected.

The common response to such problems is to make a sample as best as one can, and then try to evaluate the sample in terms of other external information. However, in the Gourma such information is hard to come by. Official statistics, for instance, are often obviously wrong (e.g. the last population census).

In addition to the problem of verifying the samples, one should also note that several of the studies have been rather conservative in the choice of sampling methods, in that methods that have been used in the south of Mali or elsewhere with some success have been directly applied to the Gourma without consideration for the differences that require reformulation of the methods. While this evaluation may seem harsh, it should be noted that work on sampling methods for situations such as those found in the Gourma is extremely hard to come by.

Another approach to the question of variability has been to question the idea of an "overall" situation as a research topic. Thus, instead of describing Gourma in its entirety, another approach has been to describe some of the dynamics of the on-going processes. Rather (or in addition to) than to give an overall assessment of say, the availability of pasture and milk production, one has tried to illuminate herd management strategies. Similarly, in addition to depicting the nutrition situation of children in general, one has tried to describe strategies of household viability with respect to children.

Surprisingly perhaps, the main problem with the "process approach" is precisely the variability of the Gourma. A basic premise of the process approach is that the overall context in which the processes take place is fairly stable, and that the units and variables also are fairly constant. Too much variability destroys the model. Therefore, while the study of household strategies identify important aspects of the processes among the Kel Tamasheq "great nomads" of inner Gourma, it does not tell much about the processes taking place around the dry lakes to the west or among the Fulani or Songhay. Similarly, herd management around Gossi is not the same as herd management around Fintrou to the north, or Ndaki to the south. Therefore, in order to get a process oriented perspective really to work in the Gourma, it is for many of the topics of interest necessary to extend the in depth descriptions to more social groups and more diverse locations.

The methodological debates of the Mali program is by no means over, and some researchers are sure to take exception to conclusions presented here. However, it is probably true to say that there has been a gradual *rapprochement* of the different views, toward more detailed and focused studies, based on the descriptions obtained so far. However, large scale surveys still have their place. For instance, there is a lack of reliable data for some central parameters of the resource use in the Gourma, such as population structure and dynamics, especially in a spatial context.

Theme 2: Achievements and Highlights

Research
Highlights of research results

At the present stage of the Mali-project, it is difficult to summarize the highlights of the research as a whole. The research results for the individual sub-projects are, however, summarized in various status reports and working papers produced (in French) by the project. A list of the subjects taken up in the various papers is presented below to give an indication of the results produced. Unless otherwise stated, all results pertain to the Malian Gourma.

Methodology and Approach:

- community approach to development research
- statistical sampling in the Gourma
- validity of data obtained through interviews
- Slafs - Program for entry and control of data
- problems and pitfalls in using age as an anthropometric measure
- soil mapping using high resolution satellite imagery
- methodological approach in the estimation of surface water

Food security and nutritional situation at the household level and the role of women in food production (comparative studies in Gourma and Koutiala)

- malnutrition among children below the age of 5
- eating habits of households in the Gourma: variations in the combinations of food
- distribution-sensitive indices of malnutrition
- composition of meals
- breastfeeding, weaning and diet of children in two regions in Mali
- role of milk in the diet of Tamasheqs
- nutritional situation in Koutiala
- study of morbidity of children below the age of 5 in a nomadic and semi-nomadic region
- evaluation of the vaccination of children 12 - 59 months old in a nomadic and semi-nomadic region
- epidemiological aspects of sickness related to diarrhea
- role of women in the agro-alimentary system
- food and nutrition among Tamasheq children less than 5 years of age
- social stratification, ecological adaptation and food in the Gourma

The use of Wild Plants for food, medicine and handicrafts:

- inventories of plants in latin with their synonyms in Tamasheq, Sonrhai and Peul
- table on seasonal activities
- seasons for the Tamasheq, Peul and Sonrhais
- variation and uncertainties, adaptation strategies
- uses and users of wild plants
- methods for using medicinal plants
- food plants: crisis food or health food
- production and harvest of wild grains
- botanical, toxicological, nutritional, and phytochemical studies of wild food and medicinal plants.

Management of Natural Resources:

- causes and consequences of resource changes
- degradation of natural resources and evolution of wood density
- fuel wood and desertification
- combustible energy
- morphopedilogical study of substrat vegetation
- behaviour and food requirements for ruminants
- pastoral and animal population
- fishery resources
- demographics
- market dynamics
- land tenure
- characteristic of rainfall and its potential for agriculture
- geophysical, hydrogeological, geological studies related to water resources

Bibliographies/literature reviews:

- food security, nutrition and women in the Sahel
- use of wild plants, particularly medicinal plants in the Sahel
- water resources in the Gourma
- geography on the Sahel

A detailed summary of the results on the scientific level are attached. An attempt will be made here to present the quantifiable achievements.

Over 80 working papers have been produced including four annotated bibliographies with over 1000 references.

The preliminary research results were presented at a seminar in Bamako in May 1992. Participants included researchers from the SSE-program and representatives from their institutions (ca. 80 total). In addition, representatives from development organisations, for example Norwegian Church Aid, UNESCO, WHO, UNDP, ILCA, ORSTOM, and CILS attended.

Competence Building

Upgrading of expertise of both Malians and Norwegians has consisted primarily of improving research skills for carrying out inter-disciplinary research in the Sahel zone. These achievements are not easily quantifiable, but include particularly development of questionnaires and data entry and analysis as well as development of new methodologies for carrying out research in the Sahel. For this purpose seminars and courses were held in Bamako and in Oslo on research methodology and use of specific statistical programs.

Cross-fertilisation, or expertise which a researcher from one field has drawn from a researcher in another field has been significant.

Institution Building

Direct support to strengthening national research institutions and institutions of higher learning in Mali was not considered one of the major objectives of the SSE Research Programme in Mali. Institution building was manifested rather in upgrading expertise of researchers from the individual research institutions. The fact that the Malian researchers worked part-time for the research project and part-time for their institutions meant that indirectly, the institutions would profit from the Programme. Special efforts were made to encourage inter-institutional collaboration rather than focussing on the needs of individual institutions. In this respect, needs were rather defined from a national development perspective, the need that is, to improve local knowledge of the Sahel zones in Mali.

As is the case for all involved in the SSE Research Programme, in 1990 a special donation was granted by the Norwegian Ministry of Foreign Affairs, a total of NOK 1.800.000 in the case of Mali. Due to various circumstances beyond our control, (a coup d'etat early in 1991 and the political unrest which followed), it took a long time before the funds were allocated to specific activities. These activities included the following (the amount used for the various activities is mentioned to indicate the priorities of the institutions as a whole):

> **Health Conference** - (NOK 160.000) The National Institute for Research in Public Health (I.N.R.S.P.) made a special request to organize an international conference for the 10th anniversary of the I.N.R.S.P. in January 1991. Funds were used for general organization of the conference

as well as for participation of researchers coming from West Africa. In all 100 researchers participated, including 18 from European countries who covered their own expenses.

Publications (NOK 30.000) - Several institutions purchased books as well as subscriptions to international journals. In addition a video was produced to document the formation of the research collaboration.

Rehabilitation (NOK 120.000) - Particularly the schools of higher eductaion had very basic needs concerning rehabiliation of existing infrastructure.

Materials & Equipment (NOK 400.000) - These funds were used for smaller items such as overhead projecters, chemical supplies, etc.

Participation in international conferences (NOK 150.000) - Priority was given to researchers wishing to participate in regional conferences in Africa.

Computers project (NOK 800.000) - In many ways, this activity was probably the most original. This activity was largely orchestrated by the Director of the C.N.R.S.T., Mamadou Diallo. The University of Oslo introduced one condition, that purchase of computers must include a training component and that purchase be centralized according to the general needs of the institutions as a whole.

First a study was made of the needs of the various institutions particularly as concerned software for carrying out research. Choice of computers and software was made in consultation with the University of Oslo. The C.N.R.S.T. however made the final decision on which computers and software to buy and where.

Upon arrival of the computers, (22 in all), accessories and software, a series of training workshops were held in Bamako. Prior to the workshops, data experts (a total of 34) from the various institutions had their own series of workshops to update their information and design the up-coming training workshops. Finally, three types of workshops were held. One in basic word processing techniques for secretaries and researchers, another a series of workshops for use of software for carrying out research (SPSS, SAS, dBASE, Statgraphics...), and a third for institute directors on administration and maintenance of computer parks.

To assure the sustainability of this activity, a team of experts will be available to follow-up within the various institutions. To avoid problems with lack of financing for repairs, several spare parts have been purchased.

The computer project has been assessed by the C.N.R.S.T. and those involved in the seminars as being extremely useful especially as concerns

inter-institutional collaboration and strengthening the Mali's institutional capacity to participate in research on an international level. All in all, a success.

The problem with institution building in Mali is that the basic infrastructural needs are so great that it is difficult to know where to start. One gets the impression that it is particularly the non-prestigious activities such as renovation and repair which in many cases are needed and are often lacking given that Mali has very little national funds to allot to such activities and is heavily reliant on donor assistance.

Theme 3 : Applicability, Prospects and Challenges

Lessons learned from the collaboration between Mali and Norway

(as viewed by the Malian researchers)

The collaboration between the Norwegian and Malian researchers under the framework of the SSE Research Programme has certainly been beneficial for both parties from various points of view and during all phases of the research.

Programme Planning

In relation to how North-South collaboration usually takes place in the Malian context, planning of the SSE-research project was unique, given that from the start, the Malian researchers have been fully associated in the planning process. This has permitted the researchers to regroup according to centers of interest with the objective of designing the totality of the projects during two seminars (Oslo in Norway and Sélingué in Mali).

During these seminars and during the execution of the Project, Malian and Norwegian researchers have learned to work in an inter-disciplinary and cross-cultural setting.

In this regard, a number of researchers had to consider issues going beyond their own speciality. Consequently, they realised the need for new methods and approaches which have actually become important areas of research for many of them. However, in the execution of the Project, communication and coordination between the Malian and the Norwegian researchers was not always carried out in the most fruitful way, partially due to factors beyond the projects control. More frequent and longer visits of the Norwegian researchers to Mali and the Malian researchers to Norway appears to be the best way to resolve this problem.

Methodology

In the area of methodology, the collaboration between Malian and Norwegian researchers was particularly fruitful.

Support from the Norwegian researchers in the conception of questionnaires and especially in the treatment of data on computers was much appreciated. Also, calculation programs such as SPSS, dBASE were used permitting a number of Malian researchers to familiarize themselves with new tools for carrying out research.

Data Collection

The personal engagement of certain Norwegian researchers in the field beside their Malian colleagues particularly in the sub-component Food Security/Women led to a considerable improvement in the quality of the data.

The Norwegian researchers have given significant support to the anthropological aspect of qualitative analysis.

Theoretic support

Here, each individual researcher was able to deepen his/her theoretical understanding within his/her own specialty. A greater maturity in the area of research was also acquired.

The flow of exchange (discussions, various documents, articles) was a great support in certain project components, but one must recognize that this remains a deficiency in the Programme. The absence of subscriptions, the weak participation in scientific encounters at a high level confines the Malian researchers to an established routine.

It is indispensible to allot funds permitting Malian researchers to be more in contact with the scientific reality through publications, colloquiums and international courses.This would permit them to link their experience to the evolution of knowledge and give them a greater maturity in their field of research.

The horizon of the researcher

The collaboration between Malian and Norwegian researchers has allowed Malian researchers to enlarge their horizon and to obtain openings to other scientific environments and international organizations such as WHO, FAO, IFAD, ILCA, and the World Meteorological Organization.

However, many of these contacts have nonetheless been rather superficial and should be strengthened and maintained.

Conclusion

On the whole, the SSE Research Project has provided a unique experience for the Maliens. It has allowed researchers from different disciplines and horizons to come together. During the first phase of the programme, each researcher has already gained noticable experience from this collaboration.

It is a matter of improving and deepening this experience which can be a viable model for North-South collaboration.

Competence building being one of the objectives of the SSE Research Programme, the transfer of competence and training of Malian counterparts should be an essential dimension of the collaboration. This dimension of the cooperation must however be managed in a special way within each of the project components.

Challenges for the Future

(view of the Norwegian coordinator)

Everyone seems to agree that five years is too short to see any long-term benefits of such a research collaboration. The Mali-Programme has only been in operation three years and much time has been invested at the outset in establishing a collaboration.
The future presents a whole range of possibilities; which, however, depends to a large extent on the future organisation and objectives of the SSE-Programme.

Inter-disciplinary, applied research

Perhaps the most difficult challenge ahead of the Mali-Project is to integrate the various project components and come up with a natural resource management scheme for the Gourma. This is a difficult task for many reasons. On the one hand the challenges on the scientific side are great. On the other hand the challenge of maintaining a team spirit between researchers is not always easy. In addition, there is a fear that regardless of how professionally such a management scheme is developed, that there seems to be a lack of will on the part of the authorities to carry out such schemes or to heed research conclusions for political reasons. The conflicts which have surfaced in Northern Mali do not make this task any easier.

Dissemination of Research Results

As part of the conclusion of the present phase of research carried out in the Gourma, communication of the results of the research will be a primary task. As far as dissemination of the scientific results is concerned this includes organization of scientific seminars, distribution of interim and final reports, development of text books to be used in the Schools of Higher Education, publication in international journals, and presentation of papers at international seminars. One of the major conditions for publishing articles in international journals is that researchers are updated on the scientific issues viewed in an international perspective.

In addition, popularization of the research results is an important and often neglected task. Activities which are planned in this respect include production of a handbook on wild plants, organization of an exhibition on the Gourma in the National Museum in Bamako, and organization of special workshops for development workers as well as meetings with the local population. Many of these activities are, however, dependent on a state of peace in Northern Mali.

Improving the Mali-Norway collaboration

Training and open dialogue are key words when it comes to improving the North-South collaboration between researchers. Training of researchers in modern research techniques and methodology are essential steps towards creating equal partnership and a common platform between Malian and Norwegian researchers. Maintaining an open dialogue on basic differences in perception due to cultural differences as well as difference between scientific disciplines are aspects which are often underestimated. Essential here is that the Malian and Norwegian researchers' opportunity to work together (in Mali and Norway) for an adequate period of time. In addition, the importance of improving communication through upgrading language skills (English for Malians and French for the Norwegians) will continue to be important in the future.

South-South collaboration

Through this conference, the researchers became unanimously enthusiastic about building upon and maintaining a South-South dialogue in the Sahel zone within the context of the SSE-Programme. It has been suggested that this collaboration could take the form of frequent visits to the research institutions and participation in joint study programmes, common seminars, exchange of information and publications, establishment of common research projects and comparative studies (East-West Sahel), and writing of common articles or publications. The possibilities are many.

Training in view of establishing of a Malian University

Last, but by no means least, is the question of long-term training and the possibility of obtaining masters and PhD degrees within the Programme. This is a keen interest for individual researchers in Mali, but needs to be carefully planned. Perhaps the greatest constraint for such activities in Mali is the question of language. There are few professors who can council a doctoral or master candidate in French and there are few Malians who master the English language to the extent that they can write in English. This handicap should, however, be possible to overcome.

To initiate such a masters or PhD programme, consideration must be taken first to the needs of the individual institutions and national priorities as defined by the Ministries of Education and Research. For example, there is a great need, as in many countries in Africa, for increasing professional capacity in the social sciences, particularly sociology, social-anthropology, nutrition, economics and law as related to environmental issues.

A more active use of already existing programmes such as NORAGRICs Masters Programme in Natural Resource Management should be encouraged.

In addition, short-term training for upgrading certain practical or theoretical skills as well as updating research methodology for researchers who already have degrees would be a important aspect of such a Training Programme.

Future Research

It is premature to discuss specific plans for future research and area of study in Mali, however, there is an apparent need for studies on population structure and dynamics as a basis for examining the food security situation and resource stress. Some of the research such as ecological monitoring has a timeframe covering several years of ground monitoring to account for annual variations. In addition, there seems to be a clear need to examine more closely both land tenure and marketing systems.

The ideal is to link degree programs to research projects as a supplementary activity, as is the case with the doctoral program in hydrology as well as the project on the ecology and physiology of the Senegalese grasshopper. It may, however, prove to be difficult to obtain financing for both a training programme and a research programme, and it is not always that the training needs expressed by the institutions will comply with the needs of the SSE research programme as it is now defined. In addition, it can be difficult to respect the demands of a thesis in the context of a inter-disciplinary research project. This, however, remains to be seen in the case of the Mali-programme.

The Red Sea Area Programme - Sudan (RESAP)

An Overview of RESAP Research Experience

Hassan Ahmed Abdel Ati, Ex-Programme Coordinator

1.0 Introduction

The main objective of the Red Sea Area Programme was to enhance, through scientific research, the increase of food production in the Red Sea Area and to sustain that production base in order to reduce the loss of life resulting from the cyclical outbreaks of famine in the Region. The basic means to do that were the creation of a data base and the dissemination of knowledge acquired to all actors dealing with production (local people, NGOs and governmental institutions).

Secondary, yet equally important (both as an objective and a means) was the component of competence building and institutional support for researchers and the research institutions.

1.1 Some Basic Facts

A. Disciplines involved:	Botany, Geography and Social Anthropology at Universities of Khartoum and Bergen.
B. Date of commencement:	Planned 1987, Actual 1988.
C. Total number of researchers involved (till June 1992):	Khartoum 58, Bergen 4
D. Research students (M.Sc. & Ph.D.):	Khartoum 14, Bergen 8
E. Local researchers (Red Sea) :	4
F. Average workshop attendance:	60 persons
G. Number of workshops held:	5

1.2 Methods Identified as Means to Achieve Objectives

A. Basic interdisciplinary research
B. Applied research
C. Close collaboration with NGOs and local and regional government institutions
D. Competence building

In what follows an attempt is made to highlight the RESAP experience, successes and failures, expectations and achievements in order to draw some conclusions on the lessons learned and to speculate about an ideal mechanism for future productive cooperation. It must be noted, however, that other than the facts

taken from the records, the ideas expressed represent a perception and interpretation of an eye witness and a participant observer.

2.0 Initial Expectations

A. For the researchers as well as the Ministry of Foreign Affairs (Norway) which funded the programme. The programme was hoped to produce a document that could help shape a development plan for the area or at least a basic policy guideline.

B. NGOs expectations were more oriented to daily activities
- direct answers to problems and puzzles that face them in the process of their relief and/or development effort
- ideas, proposals or plans about things they could put their money in and have some guarantees for results
- academic results that could justify some of their deeds

C. Government officials expectations were either too wide or too personal
- assistance in development via free advice & consultation
- institutional supports (logistics)
- support of individual's research ambitions
- involvement in consultancy - like research

D. Local People's expectations were probably the most realistic and closer to the objectives and capacity of RESAP
- the exposure of their problem
- production of documents that could help their pressure groups (or individuals) to influence decisions by government officials and NGOs personnel
- an assessment of NGOs activities in the area (especially their cost/ effectiveness)
- direct support to local researchers and local institutions.

3.0 Factors and Constraints that influenced RESAP Operation

Apart from the first 8 months of the project, neither money nor logistics was ever a problem for research activities. Some difficulties that appeared in this respect were overcome by the end of year one. However so many other factors have weighed heavily on the work. Some were embodied in the programme documents, others related to the nature of the disciplines involved, the area studied, changes in the political and administrative environment that occurred and the cultural and individual differences. The most important ones among these factors are presented below:

A. Working in a region with little or no data base to start with. (Starting from scratch.)

B. The absence of most of the key (Sudanese) players who participated in designing the programme.

C. The lack of a unified or standardized understanding of the objectives, means, entitlements and limits among researchers and disciplines involved.

D. The absence, except for researchers with consultancy experience, of a past experience with interdisciplinary research. As a result some very naive views were raised in the beginning - geographers to make maps, botanists to do science and measure change and anthropologists to analyze and explain social change .. etc.

E. The limited involvement and short duration of stay of senior researchers from Bergen and the belief in Khartoum that research is only an extra curricula activity carried out in private time. The situation of Khartoum University was made worse by the shortage of staff in the disciplines involved.

F. Difference of emphasis between Khartoum and Bergen researchers. While Bergen researchers tackled the broad intellectual analytical frames, Khartoum researchers always stressed practical development oriented research.

G. The large scale of operation - too many people, too many interests, too large area and too long distances to cover to the study area.

H. Language, cultural and social differences (3 groups: Bergen, Khartoum and Beja)

I. The unstable University Calendar in Khartoum (a function of political instability).

J. Economic conditions in Sudan that made research vulnerable to competition from consultancy commitments.

K. The de facto situation at the time of start:

i. Researchers' teaching and administrative commitments at the two Universities.

ii. The preselection of M.Sc. and Ph.D. students, though satisfied the objective of competence building by meeting departmental needs, largely failed to meet the programme's (topical) needs though very well conceived in the programme document.

iii. The pressing humanitarian needs of the Red Sea population sometimes deviated efforts to humanitarian and/or institutional support.

4.0 How People Manoeuvred with those Factors and Constraints

4.1 A new organizational set up was created in Khartoum

A. A Programme Coordinator (PC) who was in charge of finance, employed staff, logistics, daily running of programme, to coordination between

disciplines, facilitation of research, convening of workshops and the follow up of workshop recommendations was appointed.

B. A Coordination Committee (C.C.) consisting of the PC, 3 discipline coordinators (DCs) and the Khartoum-Bergen cooperation agreement coordinator. In addition to playing the role of the link between the programme and the disciplines involved and the motivation of discipline researchers and looking after its interest, the DCs among them shared the responsibilities of documentation, supervision of local researchers, workshop organization and the programme publications. The agreement coordinator helped coordinate with other Bergen-supported research and tackled some administrative problems at the university level.

C. A letter of understanding was signed with NORCROSS at Sinkat to take care of the RESAP house, supply of fuel, maintainance of vehicles and administration of RESAP local staff in the locality, i.e. guards, housekeepers etc.

D. Maintaining very strong links with local institutions, organizations, community leaders and local resource persons. (e.g. all but one of RESAP workshops were held in Sinkat).

E. An editorial committee was set up largely independent of the coordination committee to oversee RESAP publications.

F. In Bergen ,administration was handled by the Centre for Development Studies in collaboration with departmental coordinators in Botany and Geography. In addition CDS took care of Khartoum affairs with regard to literature, spareparts, stationary, staff travel and students' follow up.

4.2 Involvement of researchers and resource persons from outside the University of Khartoum with a wide experience of interdisciplinary research and development. As most of these researchers were executives of senior standing in the regional Government, the gulf between researchers and bureaucrats was thus minimized.

4.3 Adopting a system whereby the overall policy and activities to be carried out are identified by the workshop participants rather than the coordination committee in the continuous endeavour to fill gaps and improve research outcomes.

4.4 The selection of themes, identified by workshops' participants, to be covered through commissioned studies. The coordination committee decides on the team and the terms for the job.

However these constraints also dictated certain measures that have their negative effect on the overall output such as:

A. The seasonality of work especially for senior researchers.

B. The concentration, almost totally, for the first two years on Sinkat district.

C. The rise in cost to maintain researchers and assistants, partly to compete with consultancy money.

5.0 Achievements

5.1 Total academic output

PhD: Theses planned total, 5 (1 Bergen, 4 Khartoum). Completed 1 (Bergen), 4 in progress (all Khartoum). MAs and MScs: Planned total, 17 (7 Bergen, 10 Khartoum). Completed 9 (5 Bergen, 4 Khartoum), in progress 8 (see table 1).

5.2 Workshop papers

Total 83, (Geography (23), Botany (18), Soc. Anth. (17) others (29)).

5.3 Commissioned Reports

A. Trade, trade links and Market Behaviour in the Red Sea Area.
B. Pastoral Management and Herd Dynamics.
C. The Administrative Context of Planning in the RSP.
D. Sinkat, Tokar and Gash: Socio-economic Linkages.
E. A Bibliography on the Red Sea Area.

5.4 Support of Local Researchers from RSP

Four local researchers were supported by RESAP to do research in areas of local relevance but of general interest to RESAP. Topics were:

A. Beja historical relations with the Nile Valley (Nubia) using linguistic evidence.
B. The rituals and traditions of Beni Amir tribe (also documented on video tape).
C. The possible supply of drinking water to the Red Sea Area from the Nile.
D. Basic-preschool and traditional education the RSP.

5.5 Support of undergraduate students research

A. Land tenure problems in Sinkat area.
B. Education services in Sinkat Council.
C. Health services in Sinkat Council.

5.6 Reports to NGOs

A. A socio-economic survey of Derudeib town (for the Danish Red Cross).
B. A socio-economic survey of Kenab, Amboreib and Tundra Khors in Rural Derudeib (for Dancross).
C. Population mobility and labour movement between Derudeib and Gash areas (for Dancross).
D. A survey on the possibility of rehabilitation of the irrigation system of one khor in Arkowit area (for Norcross).

E. A Report on Women in Sinkat (for Norcross).
F. Monitoring and assessment of the impact of NorCross installations in Sinkat District (for the Norwegian Red Cross).
G. A workshop was held on the NGOs, activities in the Red Sea Area (April 1992).
* Note: B-G are still in progress.

5.7 Involvement of Local Community and Institutions

A. Programme workshops were open to all and some Arabic sessions were injected in Workshop programmes for the benefit of non-English speakers.
B. Government officials participation in workshops and as resource persons in their specialized areas was high.
C. Participation of RESAP researchers in training programme for government employees and in the meetings of the Rehabilitation and Development Committee of the Red Sea Provinces.
D. Dissemination of knowledge generated and acquired:

i. Workshop papers, reports, and workshop proceedings, were distributed to Government institutions and NGOs.
ii. Publication of technical papers and their distribution.
iii Arabic translation of RESAP TECHNICAL PAPERS to make them available for local institutions and groups whose language of operation is arabic.

E. Exposure of the regions problems and direct response (putting the region into focus).

i. Prediction and alerting of government institutions to the imminent famine of 1989-90.
ii. Support of university students voluntary (medical and cultural) activities in the area.

5.8 Other achievements

A. Generation of basic climatic data from the three RESAP installed metrological stations in the region (a fourth is installed in collaboration with Danish Red Cross).
B. Ground verification of some satellite imageries spot coverage (not yet out).
C. Production of a documentary on Beni Amir rituals.
D. Slides documentation of vegetation comparing the situation of the 1990s with that of 1940s and 1950s (not out yet).
E. Some of RESAP trained personnel have been employed by foreign NGOs working in Sudan.

6.0 Our Failures

A. The publication of materials was not produced at a time when there was a practical demand for it and when response to it could be debated (practical problems of synchronization).

B. This resulted in an inability to device solutions (expected by NGOs and local community) to pressing problems in the region.

C. The production of a document that could assist directly in formulating an overall development plan.

D. The failure to create any discussion forum other than the annual workshops and the RESAP Seminar Series in Bergen.

E. The failure to generate data on key areas repeatedly described as crucial and/or critical by participants. These include certain aspects of nomadism, the port, fisheries and population dynamics.

F. The failure to cover all the Red Sea Area, geographically. Other problems were tackled largely in isolation of the regional and international set ups.

7.0 The Way Ahead

Some basic findings and impressions:

A. The scale of environmental degradation in the Red Sea area is enormous and has far reaching implications:
   i. It considerably influenced landuse patterns, economic behaviour, social structures and relationships, perceptions and attitudes.
   ii. Most affected are women and children, vegetation cover and the livestock population.
   iii. Population mobility, especially male migration, women and the progressive engagement in outdoor activities and child labour have very much intensified.
   iv. The newly emerging fatalistic attitudes, dependency and reliance on relief do not only threaten the basic fabric of society, but also endanger any possible future measures that might be taken.
   v. NGOs have largely taken over the welfare aspects of the government in the region except for education and their activities appear to be not only desirable but in certain areas critical.

B. Though human behaviour (e.g. deforestation, urban growth, development policies etc.) are to blame for the degradation that occurred, they seem to have hastened the process of degradation rather than caused it as in some cases they were only responses to changing natural conditions.

C. Environmental degradation can be arrested, its impact reduced and the food production base strengthened if:

i. The region's problems are handled in their totalities rather than the sectoral (government) or localized (NGOs) approaches so far adopted. This requires an interdisciplinary approach at the research level and coordination and cooperation during the planning and implementation stages (among government departments and between them and the NGOs).

ii. Use is made of the present crisis to highlight the importance and cost effectiveness of environmentally sound development policies (government institutions) and behaviour (local population).

iii. The region is viewed as a geographical entity rather than an administrative or political one.

D. The development of the region requires:

i. Its treatment in the planning process as a special problem region where social benefits, at least for sometime, can only be generated at economic costs,

ii. Foreign assistance is needed in three key areas:
a. research
b. infrastructure (bilateral aid, UN agencies support)
c. social services (NGOs)

iii. A comprehensive programme of rural animation to enhance environmental awareness and popular participation. This entails taking on board in the planning process the region's "stereotyped" weaknesses (conservation) as a resource rather than an excuse for failure to excel (research) or deliver (development action).

iv. The creation of a competitive (comparative) advantage for the region to bridge the ever growing gap between it and the rest of the country. This could be achieved in the short term for example by using the presence of the country's only port in the region and the presence of the Port Sudan - Khartoum all weather road. In the long term mass education and skill improvement seems to be the most appropriate.

8.0 Practical Lessons for Future Cooperation

A. There is a need to avoid idealistic assumptions e g. expecting students' theses to feed final report, the application of interdisciplinarity, direct research assistance to NGOs and expecting those immediately with the start of the programme and to be realised parallely at the same time.

B. There is a need, at least in Khartoum, to allow more time for researchers to do research and fieldwork. Unless this is stated clearly in cooperation agreements it is in Khartoum case, almost impossible given the economic and academic situation.

C. There is a need to allow for more greater financial freedom for coordinators by cutting down on the bureaucratic procedures.

D. Long stays of researchers from the North need to be included in project proposals.

E. Co-supervision of students, along a defined line of research that fits into the programme objectives.

F. Need to strengthen South-South exchange of experience and information. Except for the reports some of us saw in Bergen in Sudan we know nothing about Mali and Ethiopia Programmes.

Finally there is a need to end the programme with a workshop targeted to identify and debate implementable development measures since key areas have already been identified. This will tighten some of the loose ends, meet some key objectives of RESAP and the SSE Programme and more importantly meet the demands of the local population and NGOs working in the area.

Appendix

Fig. 1. RESAP Administrative Setup

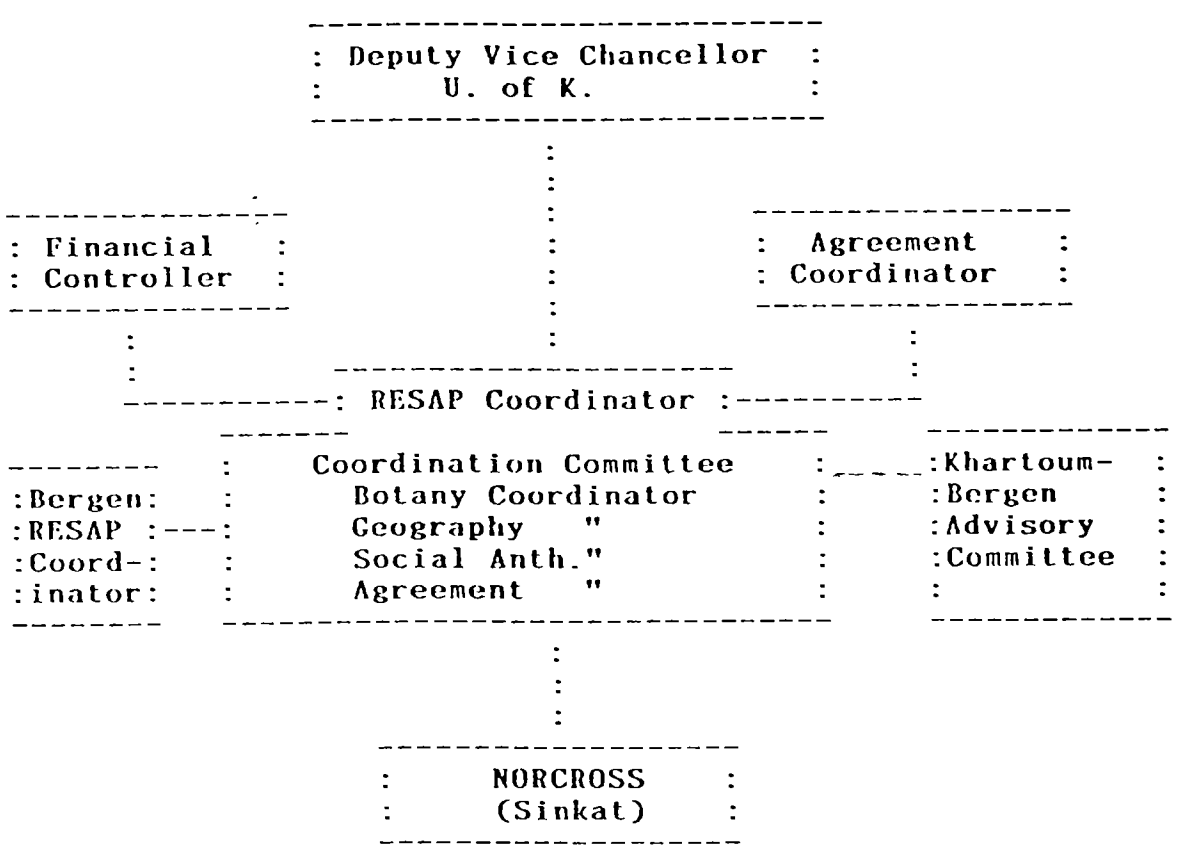


TABLE (1): RESAP students' theses progress

	University	Discipline	Degree	Stage: Started	Data collected collection	Analysis of	Writing	Completed draft	Awarded or submitted
Ole Reidar Vetaas	Bergen	Botany	PhD						x
Alawia Abdalla (Miss)	Khartoum	Botany	PhD				\		
Omer A Egemi	"	Geography	PhD				x		
A/Hameed A Osman	"	Soc Anth	PhD	\					
Badr el Din Taha	"	Geography	PhD	x					
Mohd Osman Omer	"	Soc Anth	MSc					x	
Omeima Sid Ahmed	"	"	MSc					x	
Amal Hassan	"	"	MSc						\
Asim Noiam	"	"	MSc				x		
Sten Bonsaksen	Bergen	"	MSc						x
Mohd Kabbashi	Khartoum	Geography	MA					x	
Adam Ali Yasin	"	"	MA				\		
Vibeke Vågenes	Bergen	"	MSc						x
Ingunn Notøy	"	"	MSc				x		
Maria Bjune	"	"	MSc						x
Anne Christensen	"	"	MSc				\		
Fakhr el Din Ismat	Khartoum	Botany	MSc				\		
Iman Karar	"	"	MSc					x	
Sana'a Ibrahim	"	"	MSc		\				
Nagwa Hassan	"	"	MSc		\				
Gunnar Alstad	Bergen	"	MSc						x
Ylva Blomberg	"	"	MSc				x		

(2) Contribution by workshop

Date	Oct. 1989	March 1990	Oct. 1990	Aug. 1991	April 1992	Total
Khartoum	11	11	27	23	7	79
Bergen	4	8	-	4	-	16
	15	19	27	27	7	95

(3) Workshops' contributors

	RESAP	Departments			U. of K.	Govt.	NGOs	Others	Total
	Geog.	Bot.	Soc. Anth.	Total	Researchers	Officials	Staff		
UoK	26	13	21	60	12	11	5	7	75
UoB	9	11	-	20	-	-	-	-	40
Total	35	24	21	80	12	11	5	7	115

* These figures do not include comments by discussants' or reports.

(4) RESAP contributions (total produced)

		Geog.	Botany	Soc. Anth.	Non-RESAP UofK	Non-RESAP Outside	Others	Total
U of K	A	5	3	4	-	-	-	12
	B	18	7	14	6	19	3	67
U of B	A	2	1	-	-	-	-	3
	B	5	11	-	-	-	1	17
Total	A	7	4	4	-	-	-	15
	B	23	18	14	6	19	4	84
Grand Total		30	27	18	6	19	4	99

Note: A: research proposals and progress reports

B: workshop papers

Others: group reports or studies

(5) Thesis and workshop papers by subject area

Subject area	No. A	B	TOTAL		No. A	B	TOTAL
Climatology	4	1		Population and demography	5	3	
Geology, Geomorphology and Soils	4	2		Economy and Development Studies	15		
Hydrology, Water Supply and Use	5			Urbanization and Urban Labour Relations	6	1	
Env. Degradation and Resource Use	7	6		Landtenure & Production	3	1	
Vegetation Charge and Classification	9	3		Women and Children Studies	5	2	
Forestry	1	1		Culture and Religion	7		
Livestock and Fisheries	3			Politics	2	1	
Social Organization	1			Others	7	1	

(A) Papers (B) Theses

Note: Most-theses are still in progress.

THE PHYSICAL ENVIRONMENT: OUTLINES AND RESAP ACHIEVEMENTS

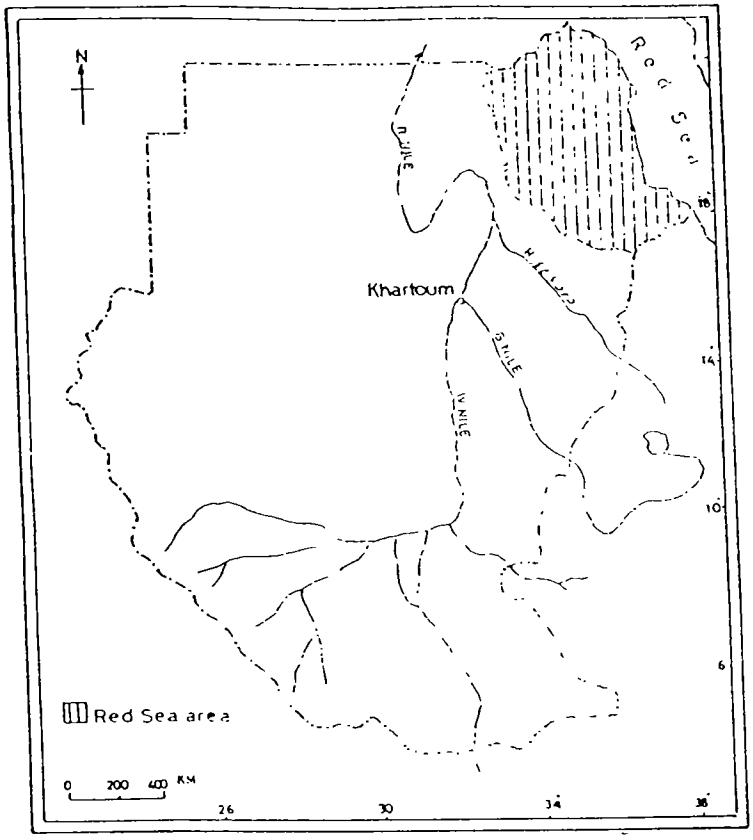
SALAH BASHIR MUSA AND
FATHEL-RAHMAN BABIKER AHMED

Introduction

The Red Sea area occupies the north eastern part of the Sudan. It is bounded roughly by latitudes 17°00 and 22° 30N and longitude 3300 E and the Red Sea coast (Fig. 1). It occupies a total land area of 212 490 sq.km. constituting 63% of the Eastern Region. Its total area is 8.5% of that of the whole Sudan (Baashar 1990).

The paper aims at highlighting the physical environment of the Red Sea region as well as the RESAP achievement in the development of knowledge about the physical environment of the region.

Fig. 1. The Geographical Location of the Red Sea Area



Geology

The Geology of the Red Sea Region is fairly covered in literature as part of the Sudan geology (Andrew 1943, Barbour 1961, Whiteman 1971, Vail 1978 Yassin et.al. 1984). The region, in particular, has been intensively studied and some parts are already mapped. (Delany 1956, Lotfi 1962, 1963, Kabesh 1962, Sestini 1965, Whiteman 1968, 1970, Qureshi 1971 and Ahmed 1972).

According to these works the Red Sea Region is overlain mainly by Basement Complex rocks which are made up of a variety of gneisses and schist. Some intrusive as well as extrusive igneous rocks are also found in limited areas. They are mainly granite and basalt respectively.

Some pockets of Nubian sandstone formation are found at the North (Vail 1978). Other sedimentary rocks overlay the basement complex at the narrow coastal plain. They range in age from late cretaceous to recent, and a number of formations have been recognized on the basis of their fossil content and lithology (Vail 1978).

Superficial deposits, overlay plains and wadi beds, being mainly sand at the western slopes and alluvium deposits at wadi beds.

Since the geology of the region is fairly covered; the immediate RESAP objectives in this field are oriented towards the investigation of minerals and their economic role in the area. In this line the mineral wealth of the region and their role in development were investigated within the RESAP research activities (Shaddad 1990). The region is found to be the richest province in the country in terms of mineral resources. It contains gold, iron, copper, manganese, tungsten, gypsum, limestone, kaolin, talc and marble.

Unfortunately the role played by the mining industry of the region in the local and national economy is limited. Only mining of gold and gypsum is going on and on a small scale.

Soils and Geomorphology

Information concerning these two fields in the region is limited. The available literature touches on them in a rather general way (Younis et.al. 1987, Vail 1978).

From the relief point of view the region could be divided longitudinally to three different parts; the coastal plain, the hills and the western slopes. The hills run parallel to the Red Sea with a maximum width of 200 km and an elevation that rises up to peaks of over 2000 metres (Vail 1978). Between the sea and the foothills is a narrow coastal plain, the width of which may reach up to 30 km, underlined by marine and lagoonal deposits. The western slopes of the hills are a continuation of the desert environment westward. The hills serve as a water

divide between the Red Sea basin to the east and the Nile basin to the west. They are criss-crossed by a number of seasonal streams, which flow for very short periods after heavy rainfall.

According to Younis et.al. (1978) the landscape in the region is divided into a number of physiographic units. These units and their soil groups are shown on t the table below:

Physiographic units	Dominate soil
Desert	Aridisols and Entisols
Hills	Rocks Aridisols and Entisols
Piedment Plain	Aridisols
Wadi Alluvium	Entisols and Vertisols
Tokar Plain	Entisols and Aridisols
Coastal Plain	Entisols

Since the study of soil and geomorphology is very essential to development, RESAP has given it its proper weight and included its investigation on its objectives. But the study and surveying of them both in the whole region is going to be a lengthy and difficult task, therefore the decision is taken to concentrate on specific areas. The choice is controlled by the agricultural and grazing potentialities of the area. The beginning of such studies then, is awaiting the identification of potential sites which needs the output of other different fields.

Therefore soils and geomorphology of the Red Sea Region have not yet been studied, except for some ecological observations on the soils of the Red Sea salt marshes (Ahmed 1991). The importance of this Zone is because it supports an interesting flora and vegetation. These are marshed identified to be most suitable for grazing, but they are being intensively exposed to erosion especially through human activities in the salt industry. Geomorphology is being assigned to a Ph.D. student.

Climate

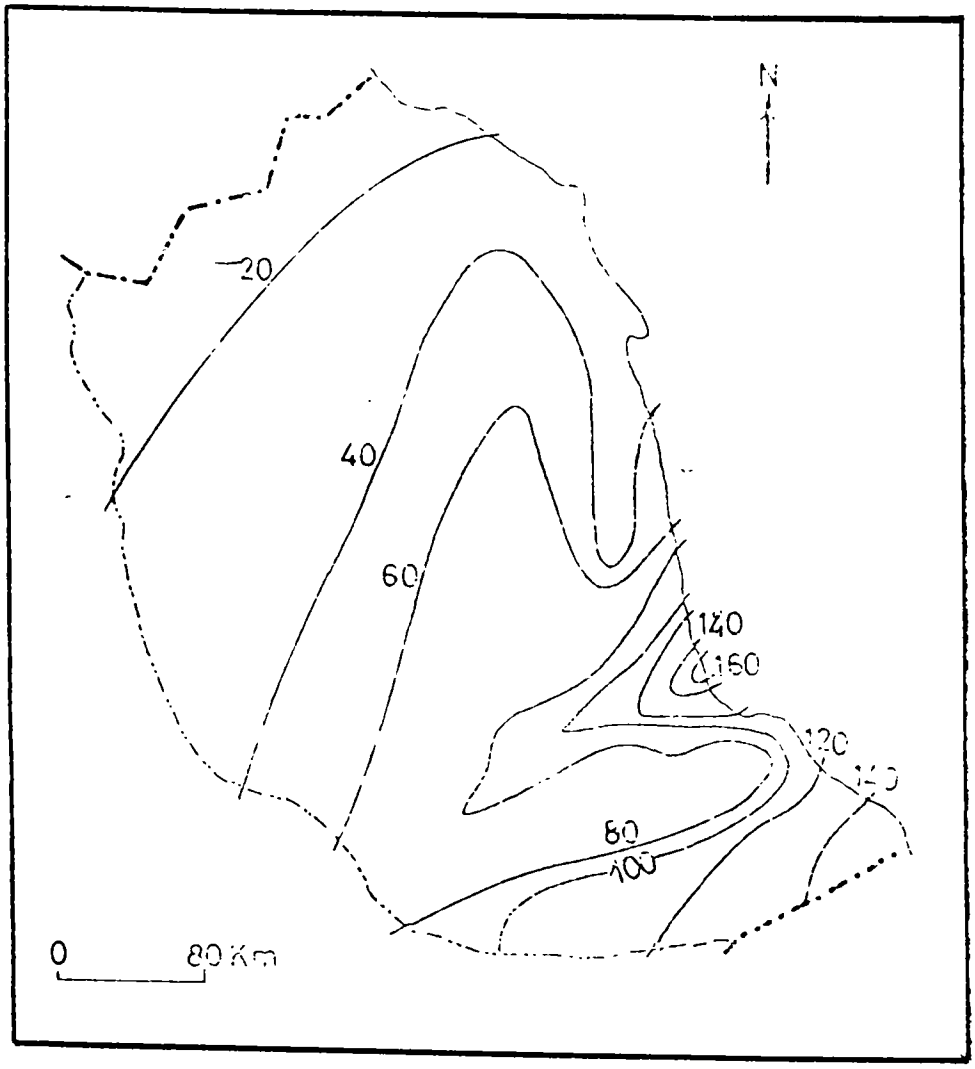
There were no regional climatic studies in the Red Sea Region before the beginning of RESAP activities. The available informations is in the form of raw meteorological data and some general remarks in the limited literature about Sudan climate (Ireland 1948, Barbour 1961, Stakopan 1965, El Shami 1972, El Tom 1974). These works stated that the Red Sea is an arid region, but different from the arid climate elsewhere in the country because it is influenced by the Red Sea water body.

Since the region is located within the Sahel Zone, the most important single factor concerning development is water, which is by far the product of climate. Therefore the investigation of the climate in the region is being considered by

RESAP as a first priority. Hence the climate in the region attracted the attention of many researchers, and the first output was written in 1989 as an outline of the climate of the Red Sea Region, latter published as RESAP Technical paper No. 1 (El Tom 1991). Because this paper is only an outline, the need arises for detailed and up to date research in the climate of the region. Thus RESAP sponsored an M.Sc. research student to conduct this detailed study.

As the result of the new, information made available through RESAP activities the Red Sea climate is conclusively affected by (a) its geographical location, (b) the presence of the Red Sea as a water body and (c) the Red Sea hills as an effective physical barrier.

Fig. 2 Mean annual rainfall (mm.) in the Red Sea province for the period 1961-1980.



Source: after Musa 1989

Due to the tropical location, the temperature is high throughout the year. Within the region there are some temperature variations, that the hills experience the lowest mean annual temperature (22°C), while the southern plain is the hottest area (32°C). The annual mean temperature of the coastal plain is halfway between the two extremes (30°C). Timewise January is the coldest month while June and/or July are the hottest during the year. (EL Tom 1991).

Annual rainfall in the region is quite small as well as erratic. The annual means for the period 1951-1980 are in the range of 36.00 mm at Halaib in the north and 164.00 mm at Suakin in the centre. The rain in the region generally decreases towards the north (Fig 2).

As expected for a tropical region, the rainfall is seasonal. Because of the effect of the Red Sea water body, the region enjoys both some winter and summer rainfall. The summit areas have some rain in both seasons, the coastal plain enjoys a winter rainfall, while the southern and western parts have their rain in summer (Musa 1990).

Evaporation is high all over the year and over the entire region. Mean annual Piche evaporation is between 3912 mm (10.7 mm/day) in the summit areas' and 6303 mm (17.3mm/day) in the southern parts. The over all annual mean for the region is 4690 mm (12.8mm/day). (Abdalla 1992).

On the basis of the Thornthwaite climatic classification the whole of the Red Sea region is an arid climate. Moisture indices of all stations are between -40 and -60 (EL Tom 1991). Potential evapotranspiration measured by the Thornthwaite method is always higher than the rainfall, therefore the region is portrayed as suffering from a continuous water deficit (Fig 3).

On the light of recent evidence (Musa 1991) the above point becomes highly debatable. Abdalla (1992) concluded his climatic investigations of the region by identifying variations within the broad classification of arid climate. He managed to divide the region, on the ground of precipitation, and vegetation to three climatic sub zones (Fig 4).

Fig. 3. Water balance in the Red Sea Area according to Thornwaite PE formula.

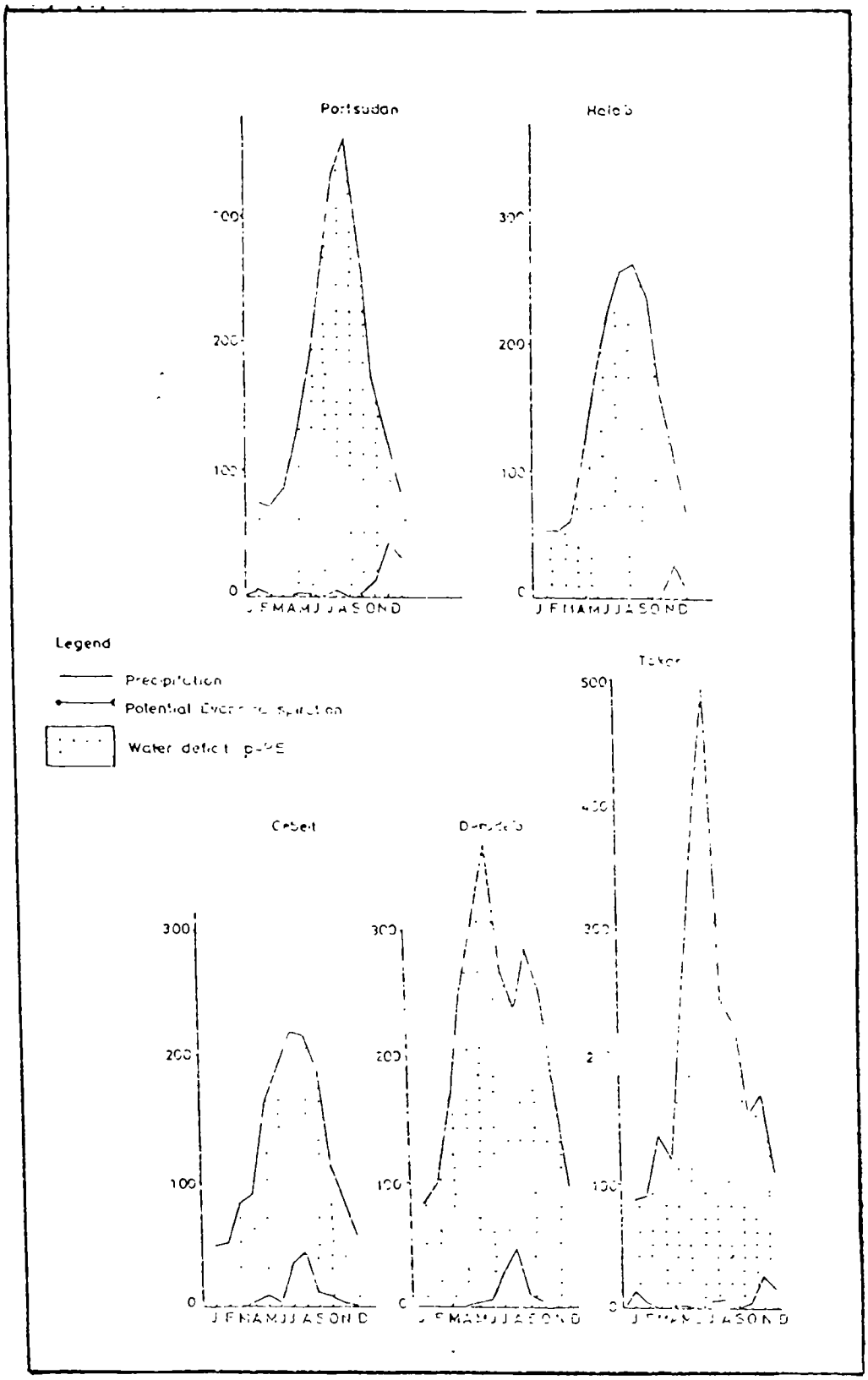
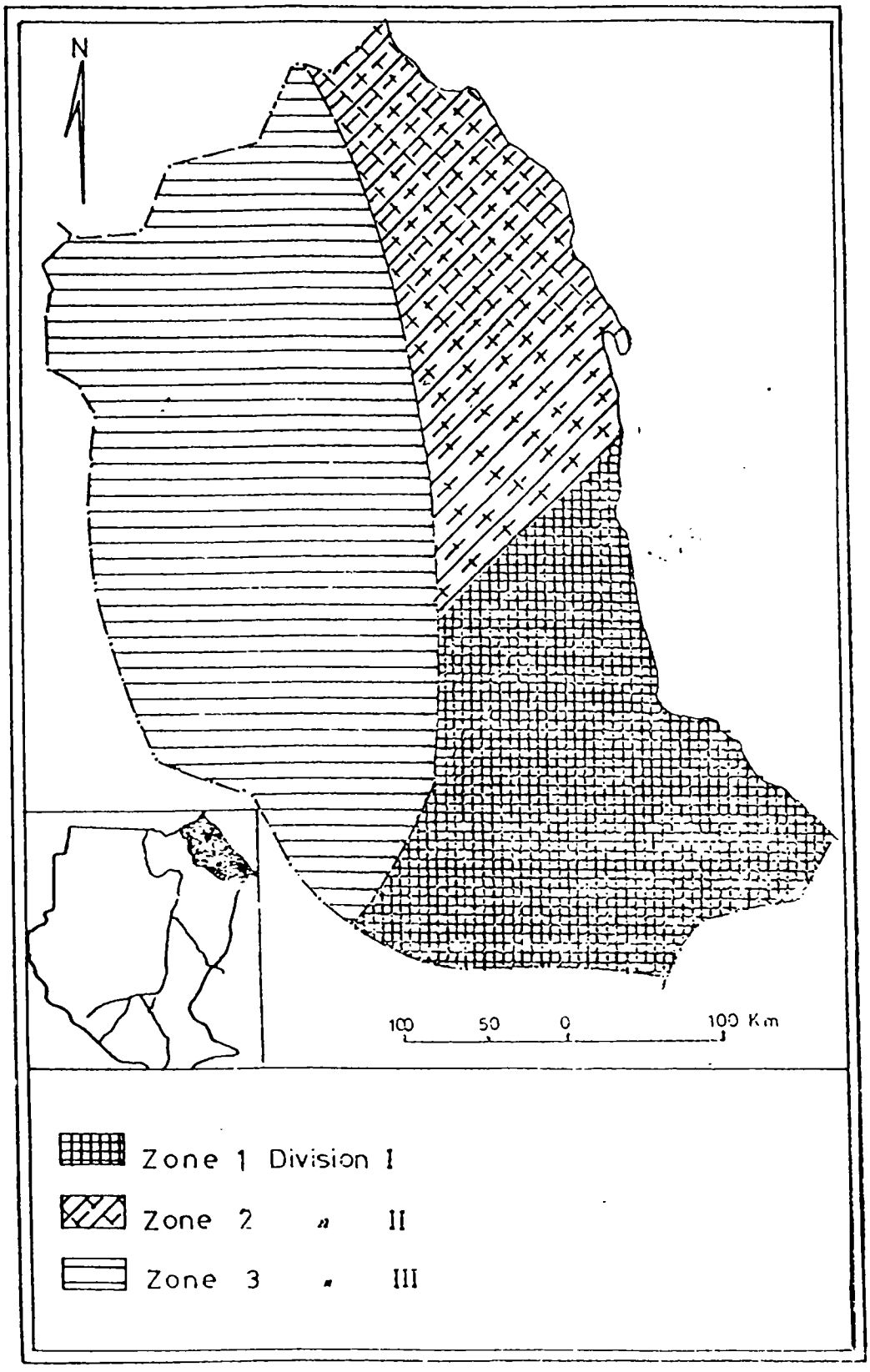


Fig. 4. The main climatic sub divisions in the Red Sea area.



Water Resources

The study of water potentials in such an arid region, no doubt, is the top most priority. This is because it is the key for the past, present and future modes of life and economic activities. On this understanding RESAP attention has been focused on the investigation of the availability distribution and use of water.

Before the RESAP engagement in the region, very little was known about the water resources. Thus, to develop knowledge on this important field many investigations have been conducted in the fields of rainfall (Musa 1990, Abdalla 1991), surface run-off (Musa 1991) and water supply (A/Ati 1990, Dabloub 1990, 1991).

In addition to the fact that the rainfall in the region is quite small, it is highly variable. The annual rainfall at Suakin station during the period 1891-1987, for example, varied between just 2mm to as high as 626.00 mm. At Port-Sudan Station during the period 1906-1987 the extremes of annual rainfall are zero and 421.8 mm. The investigation revealed the fact that rainfall in all the region is declining since the late 1960's with the exception of few years. From 1950 the annual rainfall in the region has been below the period mean as is shown in the examples of port-Sudan and Tokar Stations (Fig. 5 and 6) (Musa 1990).

Rainfall in the region is erratic and highly variable. For example there is less than 40% chance that the annual rainfall at Port-Sudan will reach 100 mm.

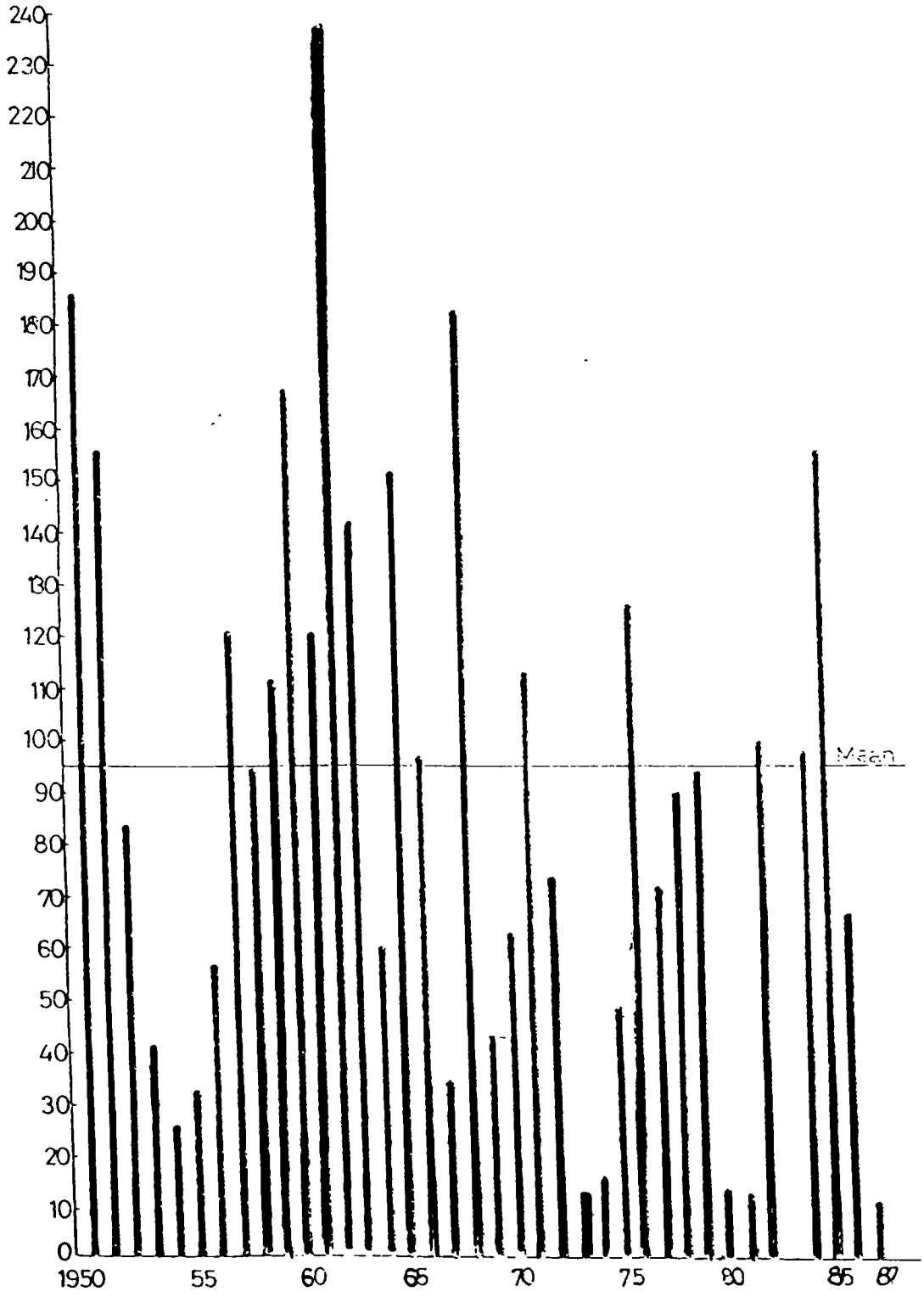
Table 1
Probabilities (%) of receiving annual rainfall amount, (mm) equal to or greater than the specified in three stations within the Red Sea Region.

Prob. % Station	90	80	70	60	50	40	30	20	10	No of years
PortSudan	21.4	34.9	49.3	66.6	84.1	97.6	121.2	153.4	180.4	79
Sinkat	43.0	66.0	79.0	88.0	103.0	117.0	144.0	168.0	212.0	71
Tokar	25.0	41.0	50.0	55.0	67.0	81.6	91.5	112.0	145.0	73

Source: Musa (1990)

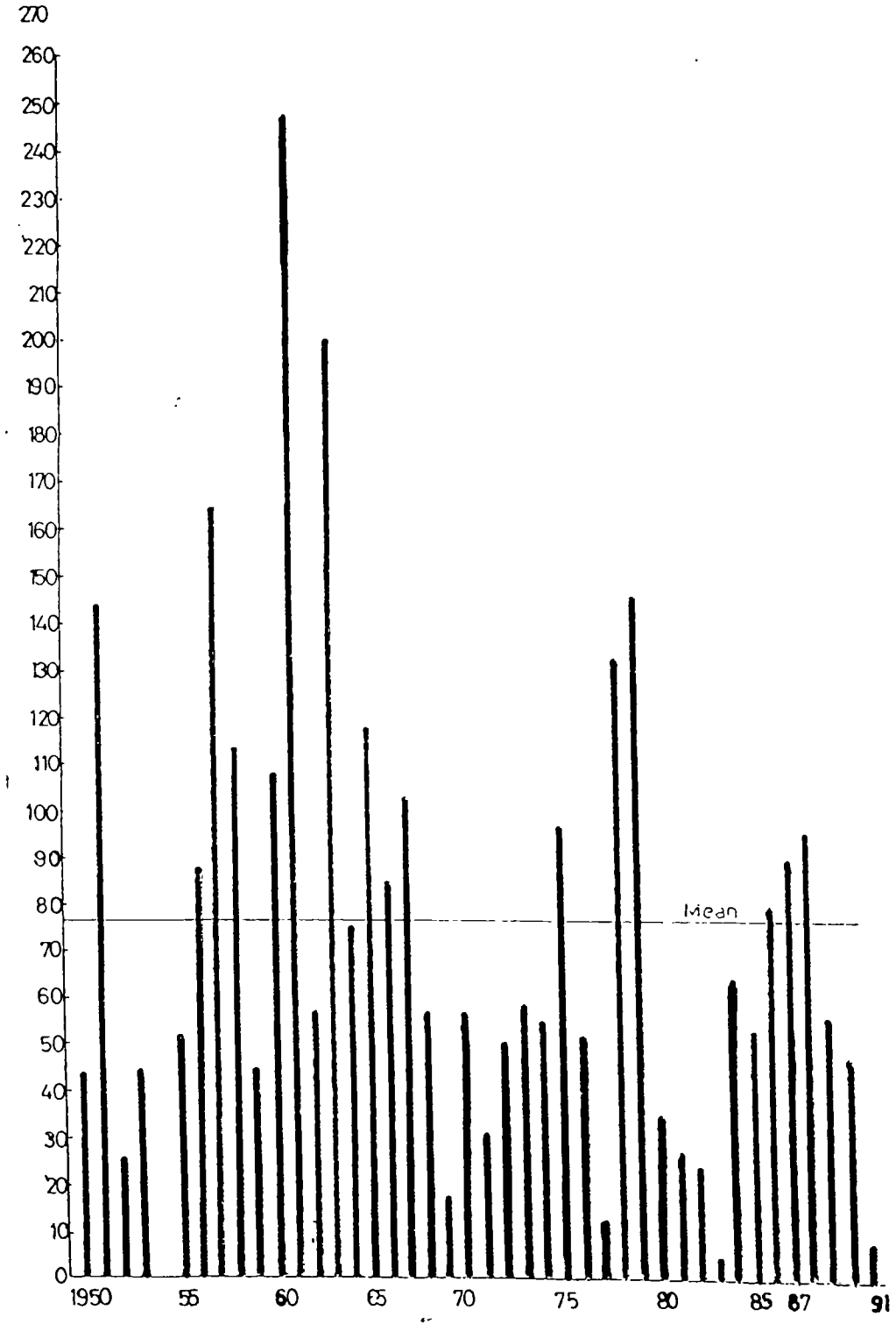
Judging on the 500 mm annual rainfall estimate as the amount of rainfall necessary for successful dura cultivation (Glever et.al. 1954, EL Tom 1972), the amount of rainfall is far below this value. From the above table the probability of receiving only 300 mm annual rainfall in the three stations in below 10%. Thus, cultivation in the region is only practised on the beds of seasonal streams making use of the accumulation of water in the stream course.

Fig. 5. PortSudan Annual Rainfall (mm.) 1950-87.



Abdalla, 1992

Fig. 6. Total Annual Rainfall (mm.) 1950-91.



Abdalla, 1992.

Surface run-off

Despite the fact that rainfall in the region is very low, torrential surface run-off does exist following heavy rains. The table below verifies this statement.

Table 2
Gauged discharges of some streams in the Red Sea Region

Stream	Mean annual discharge (m^3)	Period
Odrus	2 471 114	1960-1986
Arbaat	18 933 167	1957-1986
Arab	13 847 816	1960-1987
Gowb	4 955 874	1958-1982

Source: Musa (1991)

To compensate for the lack of data in this field, Musa (1991) attempted to estimate the surface run-off in different parts of the region. On the basis of the computed coefficients for the gauged streams and the general knowledge of the characteristics of the soil, rainfall and gradient, the potential surface run-off was estimated for different parts of the region.

Table 3 shows the water surplus in the region after allowing for overestimation, evaporation and covering the human and animal water needs. According to the table there is a 50% chance that the annual surplus for the whole region will be 315 888 622 m^3. There are a 90% and a 10% probabilities that the annual run-off in the region may reach the values of 66 634 272 m^3 and 813 098 172 m^3 respectively (Table (3)).

Table 3
Estimated potential surface run-off and the annual water surplus at different probability levels in the Red Sea Region.

	90% Prob.	50% Prob.	10% Prob.
Estimated potential run-off	168 628 700	667 137 400	1 661 556 500
Allowing for overestimation (25%)	126 471 525	500 353 050	1 246 167 375
Allowing for evaporation (33% of (2))	84 314 350	333 568 700	830 778 250
estimated animal and human need	17 680 078	7 680 078	17 680 078
Surplus	66 634 272	315 888 622	813 098 172

Source: Musa (1991)

If it could be used for irrigated agriculture, the 90% surplus of 66 634 272 m^3 would be sufficient to irrigate about 21 357 feddans (A feddan = 0.42 hectars). Using a 3 120 m^3 per feddan (the rate applied in the white Nile pump schemes), the surplus with 50% and 10% chance will irrigate 101 246 feddan and 260 608 feddan respectively (Musa 1991).

Thus there is some water available from stream run-off in the region as this research has shown clearly. But more detailed research and investigations are needed to answer the questions of where, when this water is found and how exactly it could be utilized.

Groundwater

Groundwater potential has not yet been investigated. The only reference to it in the RESAP research activities is in the work of water supply at different urban centres in the region (A/Ati 1990, Dabloub 1990, 1991).

Generally speaking the groundwater in the region is quite limited because the region is underlain, mainly, by the basement complex rocks which are a poor water bearing formation. The available groundwater is usually found in the cracks and fissures of the basement complex and in the shallow recent deposits of the beds of seasonal streams. The latter is the most important and dependable source of water on the region despite the fact that recharge is entirely dependent on the annual rainfall received.

Vegetation

The present day vegetation, flora and fauna and environmental setting in the Red Sea Region emerged on account of a long process of environmental degradation from what had been a relatively better setting. Crowfoot (1948) reports past descriptions that suggest a tropical woodland environment in the region about 300-200 B.C. Relics of former vegetation and plants, protected from extinction in inaccessible areas such as hill tops and steep sides are indicators of better past environments. These include plant species such as olive, terns, lichens and mosses, all characterized by definite Mediterranean affinities of moist, cool rich habitats. Such microhabitats and niches are present in remote areas in the region.

The more recent literature (18th - 19th century) describes the region as: a landscape of sporadic vegetation in a relatively harsh climate where human life had been mainly in localized hospitable habitats. On the coastal fringe, stream deltas provided more lasting water and forage for livestock. Inland existed some favourable habitats with sufficient water and fairly rich plant cover (herbaceous

and seasonal) for domestic grazing and perennial (trees, shrubs, bushes) that sustain browsing during the dry season.

Some locations in the Red Sea Region have been subjected to various ecological investigations during the past few decades. These included some special habitats such as Arkawit, Jobel Elba, the coastal semi-desert plain and the salt marsh.

The floristic composition that dominates over extensive areas in the region was used to mark the vegetation types and zones. This facilitated the broad classification of the regional vegetation by Crowfoot (1948), Braun and Massey (1929), Andrews (1948), Harrison and Jackson (1948) and Kassas (1956). There is, however, a general agreement that the region is ecologically classified as Acacia desert/semi-desert scrub.

The most common plant species include; *Acacia tortils*, subsp. *spirocarpa* (Samr), *Salvadora persica* (Arak), *Balanites aegyptiaca* (Higlig), *Capparis decidua* (Tundub), *Calatropis procera* (Usher), *Leptadihia pyrotechnica* (Marakh), *Aerva javanica* (Gobbeish), *Casia* spp (Senna), *Citrullus colocynthis* (Hanzal), *Aristida* sp (Homra), *Panicum turgidum* (Tumam). These plant species are typical colonizers of the dry tropical environment that characterize the Red Sea Region. Recurring droughts reducetheir local abundance and they may periodically disappear in locations towards the margins of their geographical distribution. Some species such as Dracaena, Olea and Dodonea have already become endangered and have shrunk to remote protected microclimates e.g. mist hill tops of Erkowit and Jebel Elba.

Studies on vegetation in the Red Sea Region have been formulated according to a systems approach that documents the ecological aspects of vegetation from its production perspective. The studies conducted aimed at establishing vegetational patterns and to relate them to past and present environmental complexes. Understanding such relationships would inevitably facilitate improved management of the vegetative resource for the benefit of man and his livestock.

a. Floristic composition

The work on floristic composition in the region included the collection of reference material, species lists, families, local names, uses and growth habits of species. Aspects of the general landscape are described and supported by photographs. Important trees, shrubs and herbs have been examined and detailed ecotaxonomical description is given.

This is an up-to-date contribution showing vegetation changes that have taken place since the flora of the region was last studied by Jackson and Harrison (1948) and Kassas (1957).

b. Mapping of regional vegetation

Here, the geographical location, the boundaries, habitat factors and floristic components are recorded. Major plant communities have been identified and mapped into zones or patterns. Where applicable, transects were used in locations with distinct gradients e.g. soil type, moisture regime, salinity (salt marsh) and uphill gradients. This research will end up with the production of a vegetation map and covers vast areas in the Red Sea Region.

Sabir (1991) assessed the degree of vegetation degradation around Sinkat and suggested that measures for improvement should be undertaken. Sabir and Mohammed (1990), surveyed the vegetation of the Red Sea Coast. Their study covered the eco-taxonomical characteristic and the Zonal pattern of vegetation between the shoreline and the semi-desert plain. Mohammed (1990) outlined the ecology of key species that lend their names to the communities and discussed the environmental complexes responsible for vegetation degradation.

The work on vegetation mapping links closely with that on the floristic composition in the Region.

c. Vegetation history

This contribution is mainly on vegetation change and the dynamics behind it. Satellite images and/or aerial photograph and ground observations were used to provide information on trends of change using a cultural landscape perspective. The work has been concentrated in Sinkat and Arkawit only.

Krzywinski (1990, 1991) working in Arkawit, suggested that it seemed evident that the degradation of the environment of the Red Sea Region was connected to changes in the utilization of the resources, demography and economy as well as sedentarisation more than to climatic change.

Blomberg (1990), reported that, using satellite images for Sinkat (1973-90) and field observations she was not able to collect enough data and the method she used was entirely unsatisfactory. The candidate had problems registering the annual plants.

Vetaas (1992), extensively studied the vegetation of Arkawit investigating the interaction between biotic and abiotic factors controlling temporal and spacial dynamics of vegetation. Comparing recent data on the vegetation of Arkawit with data from 1953, his results indicate a succession from an open woodland to a very open scrubland. Also, the rate of change has increased in recent decades. He showed that plants of commercial value such as hardwood have decreased and browse resistant plants have increased, probably as a result of increased human population and intensified browsing. He argued that species with a disjunct distribution restricted to the area, may be more susceptible to the interaction of disturbance and drought than those extending their distribution into the Sahel.

The collected micro-environmental data verify moisture as a causal factor which initiates a set of other factors.

This may absorb some of the biotic disturbance and preserve total species number but not the available resources (relative abundance).

Alstad (1991) looked into the influence of woody vegetation (mainly *Acacia tortilis*) on micro climate & soil conditions around its base to evaluate what effects this fine-scale influence on soil conditions may have on the soil in the landscape as a whole. The results indicate that the effects of *A. tortilis* on soil conditions are mainly limited to the upper few centimetres of the soil profile. He also points out that, there are spacial variations in the regional effects of woody vegetation. Hence, the fine scale soil amelioration around single trees cannot be extrapolated to a community level.

d. Vegetation quantification

Research in this area is on-going. One candidate is screening a range of crops for salinity tolerance in the region. The candidate is also looking into the ecological and agricultural aspects of potential crops in the region.

This work covers sixteen crops and details of their germination capacity under different salt levels. The overall results indicate the relative suitability of the physical setting in each site for the cultivation of the selected crops. The crops are being selected on the grounds of their desirability in the region and their salt tolerance. Recommendations based on the vegetative performance and yielding abilities of the crops were made for the cultivation of the crops on a subsistence level.

Some work is also being conducted as an ecological survey of pastures in the Red Sea Region. The study is aimed at evaluating range quality, quantity, seasonality, biomass and preference.

The results obtained so far point to the dependence of ground cover (annual & perennials) in the region on the sporadic rainfall. So grazing is most concentrated on areas where rainfall is relatively high and much runoff water is available. During the dry season, trees, shrubs and bushes provide fodder for browsing livestock. Trees are mostly felled (shredded) to provide feed stuffs for the smaller animals like goats. Over-utilization of the resource (grazing and cutting) is evident, especially around the settlements.

A research project is also on-going to examine the woody plants in the area and their potential for development.

The major woody species in the region are studied. Their density, distribution, vegetative performance, biomass, regeneration and importance are recorded.

The results obtained so far indicate that the overall density of trees follows a radical pattern around urban settlements. Densities of trees being least or nill at the vicinity of the settlements. The finding also point out that it is the impact of humans (cutting for charcoal and fuelwood and felling for browsing) which is responsible for the degradation of the woody species. Recurrent droughts may also be partially responsible for the degradation.

* Remarks; It is perhaps pertinent to state that in years of normal rainfall, the environment is self-supporting and self-maintaining; these are the keys terms that characterize the natural environment of the region at large. But periodic disturbance due to drought, overgrazing, cutting down of woody vegetation, etc. pose a distressing picture of the landscape. Varying degrees of barrenness develop where seasonal brown cover normally dominates the landscape soon after the rainy season. Seed regeneration of woody plants fails and a wide to narrow generation gap is created in woodlot stands. Plant species which are sensitive to aridity temporarily disappear and hence the noticeable decline in species diversity. There is clear indication of lessened resource degradation farther away from villages and in distant areas, least frequented by nomadic herdsmen. Such places would contribute to post drought recovery through reestablishment of vegetation is good years.

During the last two decades, the regional ecological balances have been oscillating resulting in fluctuations between sufficiency and famine. Sufficient evidence of adaptability is provided by the ecological responses measured on vegetation.

Conclusions

The available information should be used to establish improved systems of production which would permit an increased population to live while providing for the future, i.e. building a new balanced ecosystem. It is, therefore, hoped that woody plants and pasture management and livestock raising should be compatible with the ecological equilibrium. Furthermore, water economy and soil protection are to be harmonised to maximise cultivation of food and cash crops.

Reference List

(1) Abdalla, M.K. (1992) The Climate of the Red Sea Province of the Sudan. Unpublished M.A thesis (awaiting examination), University of Khartoum, Sudan.

(2) Ahmed, F.B. (1991) Soils of the Red Sea Salt Marsh in the Sudan: Some ecological observations. A paper presented in RESAP workshop at Sinkat.

(3) Alstad, G. (1991) The influence of Acacia tortilis on soil in and north-eastern Sudan. M.Sc thesis, University of Bergen, Norway.

(4) Andrews, G.M. (1948) The geology of the Sudan. In Tothill, J.D. (ed) Agriculture in the Sudan. Oxford University Press.

(5) Andrews, G.M. (1948) Vegetation of the Sudan. In: Tothill, J.D. (ed) Agriculture in the Sudan. Oxford Univ. Press.

(6) Ahmed, F. (1972) The Ecology of Tehilla igneous complex Kassala Province, Sudan. Unpublished Ph.D. thesis. University of Khartoum.

(7) Baashar, M. (1990) Livestock resources in the Red Sea Province. A paper presented in the 4th RESAP workshop, Sinkat.

(8) Barbour, K.M. (1961) The Republic of the Sudan: regional geography. University of London Press. London.

(9) Blomberg Y. (1990) Landscape ecology and Vegetation history in the Red Sea Area. A report in Proceedings of the RESAP annual workshop.

(10) Braun, A.F. and Massey, R.E. (1929) Flora of the Sudan. Thomas Murby and Co. London.

(11) Crowfoot, G.M. (1948) Flowering plants of Northern and Eastern Sudan. Orphan Printing Press Ltd. Loeminster.

(12) Delany, F.M. (1956) Geological map of Derudeb, Sheet 46 I, Scale 1: 250000 - Geological survey, Sudan. Khartoum.

(13) EL Tom, M.A. (1972) The reliability of rainfall over the Sudan. Geog. Annlr. 24 (Series A) pp. 28-31.

(14) EL Tom, M.A. (1991) The climate of the Red Sea Region of the Sudan: an outline. RESAP Technical Paper No. 1, RESAP, Khartoum.

(15) Glover, S., Robinson, P. and Henderson, J.P. (1954) Provincial maps of the reliability of annual rainfall in East Africa. Q. J. Roy. Met. Soc., vol. 80, pp. 602-609.

(16) Harrison, M.N. and Jackson, J.K. (1948) Flora of the Sudan. Dept. of Forestry Notes. Khartoum.

(17) Ireland, A.W. (1948) The Climate of the Sudan. In Tothill, J.D. (ed) Agriculture in the Sudan. Oxford University Press.

(18) Kabesh, M.L. (1962) The geology of Muhammad Qol Sheet. Mem. Geol. Surv., Sudan No. 3, 61 p.

(19) Kassas, M. (1957) On the ecology of the Red Sea coastal land. J. Ecology, 45, pp. 187-203.

(20) Krzywinski, K. (1990) Drought or Landuse changes as causes for Desertification in the Red Sea Cultural Landscape. Proceedings of annual workshop. RESAP.

(21) Krzywinski, K. (1991) Factors behind the decline of Dracena Ombet. Proceedings of annual workshop. RESAP.

(22) Lotfi, M. (1962) A note on the mineral deposits in Port Sudan area, Red Sea hills, Sudan. J. Geol. (UAR), vol. 6, pp. 79-82.

(23) Lotfi, M. (1963) The geology of Port Sudan area. J. Geol. (UAR), vol. 7, pp. 73-88.

(24) Mohamed, B.F. (1990) The Vegetation of the Red Sea Province. Association and future trends. Proceedings of annual workshop, RESAP.

(25) Musa, S.B. (1990) Rainfall in the Red Sea Province. A paper presented in the RESAP second annual workshop, March, Khartoum, Sudan.

(26) Musa, S.B. (1991) Surface run-off in the Red Sea Province. RESAP Technical Paper No. 5, Khartoum, Sudan.

(27) Qureshi, I.R. (1971) Gravity measurements in the north-eastern Sudan and crustal structure of the Red Sea Geophys., J.R. Astron. Soc., vol. 24, pp 119-135.

(28) Sabir, A. (1991) Aspects of Vegetations degradation and change in Sinkat area. Proceedings of annual workshop, RESAP.

(29) Sabir, A. and Mohamed, B.F. (1990) The ecology of the Red Sea coast in the Sudan. Environment and Vegetation. RESAP Technical paper No 4, Khartoum, Sudan.

(30) Sestini, J. (1965) Cenozoic stratigraphy and depositional history, Red Sea coast, Sudan. Bull. Am. Assoc. Pet. Geol., vol. 49, pp. 1453-1472.

(31) Stakopan, V. (1965) Water balance in the Sudan. Sudan Met. Services, Memoir No. 5, Khartoum.

(32) Shaddad, M.Z. (1990) Mineral wealth of the Red Sea Province and its role in development. A paper presented to the RESAP 4th annual workshop held at Sinkat. (22nd-24th Oct.).

(33) Vail J.R. (1978) Outline of the geology and mineral deposits of the Democratic Republic of the Sudan and adjacent areas Over Seas Geology and Mineral Resources. London.

(34) Vetaas, O.R. (1992) The interaction between Biotic and Abiotic factors controlling temporal and spatial Dynamics of vegetation. Unpublished Ph.D. thesis, University of Bergen, Norway.

(35) Whiteman, A.J. (1968) Formation of the Red Sea depression. Geol. Mag., vol. 105, pp. 231-246.

(36) Whiteman, A.J. (1970) Comments on the classification of the basement complex of the Red Sea hills. Sudan Notes and Records, vol. 51, pp. 126-130.

(37) Whiteman, A.J. (1971) The Geology of the Sudan Republic. Clarendon Press, London.

(38) Younis, M.G.A. and Abdalla, T.B. (1987) Artificial catchments to provide water for nomads, Eastern Region. Unpublished Report, Soil conservation, landuse and water programming (Khartoum) in association with the UNDP Khartoum.

(39) A/Ati, H.A. (1990) Water Supply in Sinkat Town. A paper presented in the RESAP workshop at Sinkat.

(40) Dabloub, S. (1990) Water Supply in Port Sudan Town. A paper presented in the RESAP workshop at Sinkat.

(41) Dabloub, S. (1990) Water Supply in Halaild and Tokar Towns in the RESAP workshop at Sinkat.

THE SOCIAL SCIENCE CONTRIBUTION WITHIN THE RED SEA AREA PROGRAMME: A DISCUSSION

Leif Manger

1. Introduction

This "paper" is based on a transcript of my presentation of the social science component in RESAP. It followed after the oral presentation of the paper by Salah Beshir and Fatih al Rahman. As in their case, my presentation did not aim at presenting a complete picture of the empirical findings within RESAP, but aimed at a discussion of what data types the programme is working with. I also tried to give a rationale for the question why such data-types would be of importance. Therefore the presentation was organised around a flow-chart in which the data types and relationships between them was illustrated. It is important therefore that the reader refers to this flow-chart in Fig. 1 continuously while reading these thoughts. For a better account for such data I have included a paper by Abdel Ghaffar Moh. Ahmed and Muhamed Yusif el Mustafa that was also available to the conference participants as a context. That paper was originally written for one of the RESAP workshops (Sinkat August 1990) and has been edited by me to better fit the present context. Finally I tried to indicate some overall evaluations of RESAP with a focus on the major themes of the Addis conference.

2. The context of physical environment in the Red Sea

The presentation of Beshir Salah and Fatih al Rahman gave information that described the box "Natural Environment" on Figure 1. Important overall conclusions were:

i) variable rainfall
ii) variable natural environment due to seasons, soil types, topography etc.
iii) some avaialbility of water for agriculture

My initial question becomes then - in what sense does this environment constitute a productive base? A number of issues arise:

2.1. The problem of access to resources

One basic problem a society of this nature must solve is how to organise access to resources. One major principle which is employed by the Hadendowa is that such access is organised basically within their **system of descent**. We have to know something about the segmentary tribal system; we have to know that the Beja is a confederation, that the Hadendowa, among whom we have done most of our work, is one of the tribes within that confederation; we have to know something about the lineages, the sublineages and camp clusters, and also, the way the Beja organize themselves in relationship to production and in relationship to ownership of resources. This type of information is represented by the left side of the flow chart.

An important aspect of this is the fact that there is a **differentiated access to different resources**. Some of this land that we have heard about is pasture, some is agricultural land, and the people have different types of access to it. There are two types of rights, **asl** and **amara**. **Asl** is the right for those people who first came to an area, **amara** rights being for those people who came to an area which had already been settled, but who were given permission to live there. As a token for this secondary right of access they pay something called **gwadab**. This can be a part of an animal, which is not much in material value but is a significant token of recognition that this land belongs to someone else. This implies that people accept that they can't make a well, cannot start cutting trees etc. without having the permission from this other group, i.e. the group that holds **Asl** rights.

Another aspect of access to resources is that it can be disputed and can lead to **conflicts**. Thus we should have an idea of the Hadendowa political system through which conflicts can be dealt with. Political positions of **nazir, omda** and **sheikh** are important in this context, but so is the council, **majlis**, in which they deal with these conflicts. Here lineage members come together and discuss, according to tribal customary law, **urf**, within which such conflicts are codified and solutions are found.

2.2. The context of production

Again, relating to the context of our natural scientists, we should find out how do people actually make a living from such reources. This requires a different type of data-sets. We have to know something about the productive context. We have been told that there is no normal year in the Red Sea, rainfall is varying every year, the vegetational context is very variable from the plain to the mountains and into the desert. Two years out of five may bring enough rainfall to do some agriculture. How do people manage in this context? Obviously they have to move a lot, so the **flexibility** of the system is very important.

That again puts certain demands on the **productive units**. We have to know something about what those units are, and how are they established, i.e.

marriage patterns. We have to know something about the division of labour and their ability to cooperate which makes it possible for them to deal with several types of animals: goats, camels and some sheep that all require different herding. How do they solve this? Do they have enough labour? At the same time they also want to do agriculture when there is enough rainfall, how do they deal with this?

There is also a **modern context** of labour migration to the towns, so maybe the young men are going away to earn money in the towns, which again becomes a constraint back up in the hills, as this takes away important labour power necessary in order to utilize these resources in an optimal way. A unit in this situation may not have the labour power to bring its animals down to where the best pasture is.

Charcoal - the arrow with tree and the charcoal - is obviously very important because of the importance of trees that was talked about by the botanists, and the actual removal of trees, because the charcoal demand in Port Sudan is so high, is probably one of the most serious environmental problems here. Here, the relief activities which took place in the region, are important. For political reasons, the authorities did not want the Beja to come in and stay along the roads, so they told the relief agencies to bring the relief out to the villages or the camps. Thereby they maintained people's ability to live in the local areas at the same time as people went on chopping down trees for charcoal. Relief, tehrefore is also a factor here.

In the above sketch I have tried to indicate some types of information that we need in order to deal with the natural environment. But obviously there are many other types of context that are of importance here in order to understand how people make a living. I've already mentioned the wage labour of Port Sudan, there is also the wage labour to the schemes that were mentioned, in the Gash Delta and in the Tokar Delta. With reference to such labour opportunities we need to know something about how people get work in those places and RESAP has also studied those particular processes whereby people get labour. But the scheme areas, Tokar and Gash, are not only places for employment, they are also areas with pasture, thus making the Beja ability to get access to the schemes very important. But the Schemes are also big revenue earners for the Sudan. The fact that they are organized in parastatals, and also that the revenue from the schemes go to the central government and not to the region, again becomes a type of information that becomes very important when we want to understand how to plan development in this region.

2.3. The cultural context

I have also been talking now as if the only things that matter to people are material things. But we have also tried to map the Beja way of life. What type of society is this? What type of life are the Beja, the Hadendowa, living. They are

Muslims, they are part of the Cushetic group, they are on the crossroad between the Sudanic Africa, the Middle East and East Africa, and honour plays a very important role in their lives. There is a lot of socio-cultural information here, and it will be important. Particularly when we use rhetorical statements like "development on people's own premises", "to take the local context into consideration". To achieve such aims we have to know something about how the people themselves conceptualize their own lives. And we should also realise that they might not conceptualize the environmental problems and conflicts following from that, as environmental problems, but as problems between lineages, problems that has to do with specific histories between such lineages and so forth.

These are all sketches of data types that RESAP as a project has to collect. They are available in theses and different types of arguments. What I have done is try to pull out some of this information to organise it into overall arguments. And there is a lot I have not mentioned. As a sexually segregated society, we have had some special studies on the women, and we actually needed women to do that in order to get access. We also need information about what happens to the products after they have been produced (see Figure 1). We have studies on the terms of trade and relationship between livestock and grain. We know that during the drought the terms of trade between animals and grain is really getting out of balance, a factor that may contribute in producing destitutes as much as the lack of rain. This is so because, when you sell a lot of animals in order to get one sack of grain, you start selling female animals and you interfere with the arrow in Figure 1 indicating natural reproduction of the herd. By selling female animals, the Beja cut down on their basic capital and it takes longer to rebuild your herd after if the rain is back.

3. The RESAP contribution

Let me end by summarising briefly some of the areas in which I can see RESAP providing some contributions. First of all the information we have is relevant for broader discussions within the current Sahel literature. The Red Sea area is in the part of Sahel where rainfall is the most important constraint, much more so than the nutrients. And recent literature on this type of region, challenging the dominant paradigms for understanding range management in such areas is clearly relevant, and I feel RESAP may bring information that is relevant to and could be a contribution to this discussion. Yesterday we heard similar arguments from the Mali people, and there is a basis here for comparative discussion within the SSE programme.

Secondly, we have obtained expriences with concrete interdisciplinary work. We have had a lot of discussions, a lot of struggles and I think we have got some way in realizing some of the constraints in cooperation between disciplines, both practically and methodologically. We are therefore in a better position to design relevant research plans, with more realistic assumptions about the timing, when

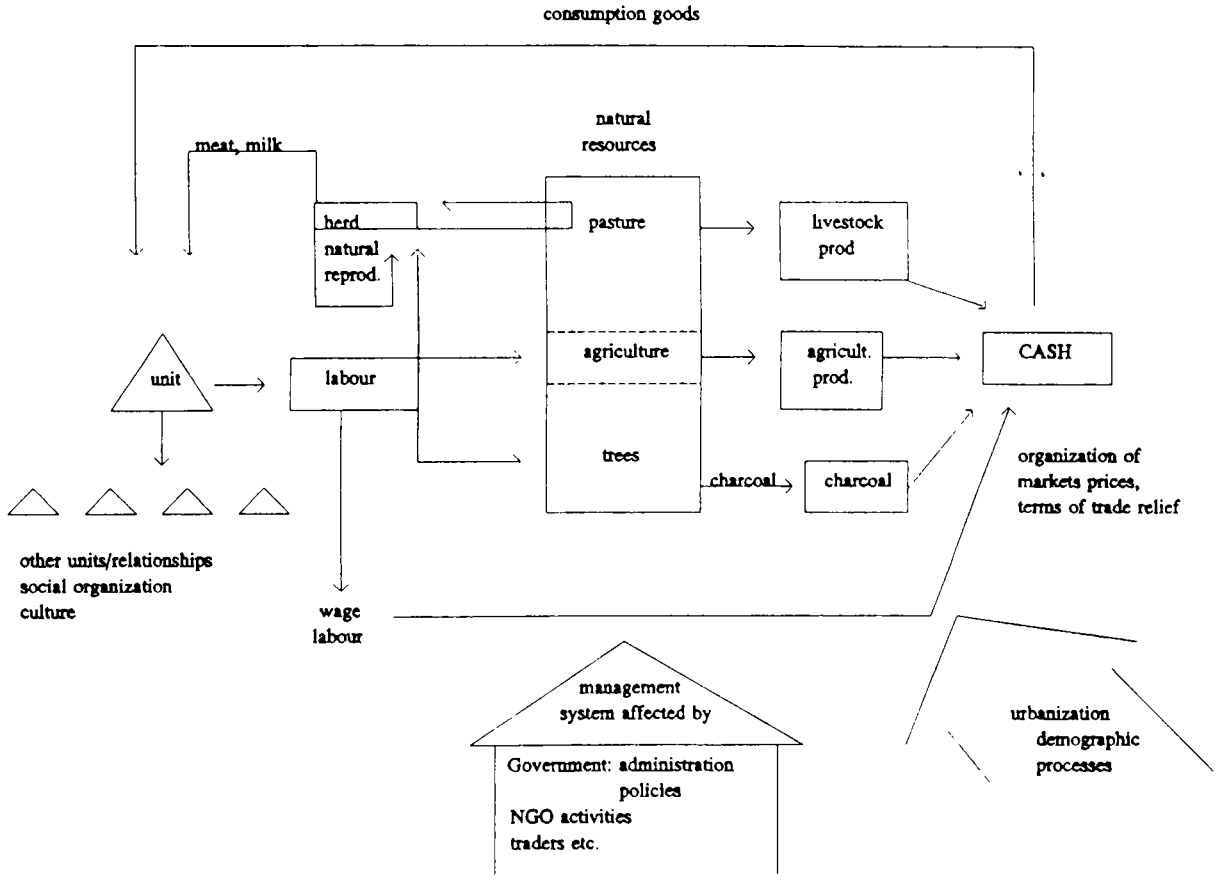
can we actually provide the data that makes it possible for us to have this interdisciplinary discussion. I also think the data I have sketched out here is a general type of information that probably belongs mostly within the individual disciplines in RESAP. We are probably now on the level of competence in which we can start formulating more specific questions about specific interdependencies within this broader picture, and making better contribution in that sense.

Thirdly, do we have an applied message? Again, I think our strongest point at this time is on the general level. We are able to document the logic of the pastoral adaptation in the area, thus showing how basic the maintenance of adaptive flexibility is for survival in the region. There is, of course, a scope for adaptive improvements, but the basic survival of the system is related to maintaining the flexibility. Looked at from the point of what is going on in the Sudan today, especially the fact that the Government is trying to privatize the schemes in the Gash, may mean that the Beja will be pushed out from their pastures, limiting them even more to the arid mountains.

Similarly, the process in the Sudan of making smaller and smaller provinces interferes with the the survival game of the Beja, which requires huge areas in order to deal with the environmental variability. With the administrative units becoming smaller and smaller, decisions taken in one place are not coordinated with decisions in a different place, might interfere negatively with the interests of the pastoralists. Thus there is a planning message. We are probably not as well off when we are asked by the Norwegian NGO about specific practical problems.

One last question, and a challenge to all participants in the SSE process. To what extent can a local and a regional administration in the Red Sea Hills, make use of the information we provide. We claim we are contributing to planning. What is the constraint of the local administration in handling this type og information; which can be very advanced in a scientific way, based on a lot of complicated technological research. What type of information is a regional and a local administration able to handle? In a situation which is common today, with the main problem being to get enough diesel to go out into the field; and trying to make a living on a salary level where you have to do many other things in order to stay alive; these are to my mind basic questions, and they should be adressed.

FIGURE 1


consumption goods
meat, milk
natural resources
herd
natural reprod.
pasture
livestock prod
unit
labour
agriculture
agricult. prod.
CASH
trees
charcoal
charcoal
organization of markets prices, terms of trade relief
other units/relationships
social organization
culture
wage labour
management system affected by
Government: administration policies
NGO activities
traders etc.
urbanization
demographic processes

A GENERAL PERSPECTIVE ON SOCIETY IN THE RED SEA PROVINCE

ABDEL GHAFFAR M. AHMED
MOHAMMED Y.A. EL MUSTAFA

1. Introduction

1.1 The aim and the scope of this paper

This paper attempts to put forward a general perspective of what has thus far been achieved in the field of characterizing the different aspects of the society (or the local communities) of the RESAP. After a time span of over four years many achievements can be sighed and yet some very important gaps may be identified. The paper starts by addressing what has been covered on the issue of population composition, the patterns of livelihood and the division of labour on a gender basis. The state of the studies on land-man relations and the land-tenure system will be touched upon and the different efforts for releasing the pressure on the local environment shall be outlined. Efforts of studying the Beja response to the latest famine and drought and the types of survival strategies they developed shall be mentioned.

The types and magnitude of studies with reference to the area's population's attitude to work shall be briefly visited. Mention shall be made of the possible comparison of the success and failure of the Beja strategies in relation to those of the Rashaida and the West Africans utilizing the same economic and ecological niche.

In considering the region within the frame of the national context, the lack of development initiatives become apparent. The research gap in this field shall be identified and a proposal for a further work shall be suggested. The responsibility of the state in the region's development shall be touched upon and a mention of the positive and negative impacts of the involvement of the NGOs shall be made. Finally an attempt to highlight the apparent gaps in our knowledge of the area shall be made and propositions for future progress in work on the region shall be advanced for further discussion.

1.2 A note on the available literature

Since the sudden awareness created by the plight of the population of the Red Sea Hills after the famine of 1984/85 many attempts for studies of the natural and social environment have followed hand-in-hand with the international relief efforts. Most of the studies started with the assumption that the available literature on the area is scanty and needs to be updated. One most cherished

objective of the whole exercise as outlined in the RESAP document is to build a defined profile of the area through the properly documented mapping of the natural and social environment.

However, it is necessary to be careful and not get drawn very far in a negative judgement of the available literature. No matter what value we may attribute to the material itself we have to acknowledge the fact that some basic data on the area exists. It mostly stems from the colonial administration files and has been presented very clearly by Morton and Fre (1986). Following that period, in the field human environment, some sociological studies were carried in the 1960s (James 1969) and the 1970s (Milne 1974, 1976, Salih 1976, Hjort and Dahl 1979). The 1980's have seen more detailed ethnographies collected from the area (Ausenda 1987, Morton 1989) in addition to a number of significant articles and reports on various issues related to the impact of famine and drought on social organization and patterns of livelihood (e.g. Fre 1986, Morton 1986, 1988, Mohamed Salih, 1989). The studies of the post-colonial period have attempted to depict the relation of people to their environment in one of two ways: (a) looking at the population in its relation to its total environment. The relation has to be revealed as part of an ecologic, economic or political analysis; or (b) these relations are taking a more explicitly symbiotic view in relation to the varieties of groups, the systems of livelihood and the natural resources to the shared.

2. Population Composition and Patterns of Livelihood

2.1 Population Composition

The population of the Red Sea Hills can be categorized into four different groups. These are the Beja, the Beni Amir, the Rashaida and a category consisting of a number of other minor groups, mainly of West Africans, Eritreans and other Sudanese from other parts of the country. While the Beja can be divided into three major sub-groups namely, the Atman, the Bisharin and the Hadendowa, they exhibit cultural similarities and have been the inhabitants of the Red Sea Hills for the past few thousand years (for more details on this issue refer to Abdel Ghaffar, et.al. 1991).

It can only be guess work to attempt to give the population number of the area by ethnic groups. The question on ethnicity was only included in the 1955/56 Census. The Red Sea Province in its present boundaries was only created in 1973 and hence the 1955/56 figures do not correspond to its exact districts. However, the 1955/56 Census, being the first national census is useful for data organized by ethnic divisions and some socio-economic data. The population of those claiming membership in the Beja groups (including the Bani Amir) in the Sudan as a whole, in Kassala Province (present Eastern Region) and various districts of the Red Sea was:

	Beja	Amarar	Bisharin	Hadendowa	Beni Amir	Other Beja	Beja Unknown
Sudan	645 703	97 651	68 588	259 594	100 654	97 041	22 175
Kassala Prov.	505 617	80 766	41 318	232 533	95 729	54 515	756
Kassala Rural	48 063	-	-	8	39 569	8 486	-
Hadendowa Dist.	222 349	401	85	218 465	424	2 321	653
Amarar and Bisharin Dist.	98 904	63 479	32 768	104	11	2 542	-
Gedaref North	14 873	6 588	7 300	814	123	48	-
Gedaref South	4 778	13	30	3 170	1 097	456	12
Kassala Town	6 954	364	49	663	1 867	3 994	17
Port Sudan Town	10 166	3 322	907	1 446	2 533	1 906	52
Suakin Town	2 594	482	33	442	142	1 495	-
Tokar	96 936	6 117	146	7 421	49 963	33 267	22

The above figures indicate that, at the time, the Beja and the Beni Amir, in what could be considered as their own rural areas, are 72% of the total population categorized as such in the whole country (Morton and Fre, 1986). At the same time using another parameter (i.e. mobility and residence) the same census gave the following figures for those in small urban centres, settled rural people and nomads in the districts of the present project area:

	Small urban	Rural Sedentary	Nomadic
Hadendowa Dist.	13 302	22 861	212 410
Amarar & Bisharin Dist.	-	3 375	98 614
Tokar	16 802	23 002	65 468
Total	30 104	58 238	176 492
%	11%	23%	66%

It is of interest to follow the changes that took place among these categories in the two censuses that followed the first one. The figures for these categories in the Red Sea Province were, in 1973 Census as follows:

	Urban	Rural Sedentary	Nomadic	Total
Persons	157 673	113 579	166 238	437 490
%	36.04	25.96	38.00	100.00

The 1983 Census provides the following figures:

	Urban	Rural Settled	Nomads
Persons	343 646	71 750	380 477
%	35	10.3	54.7

It is interesting to see the direction of change towards urbanization and the decline in settlement in rural areas.

2.2 Patterns of Livelihood

The most drastic change in the patterns of livelihood of the population of the rural Red Sea Hills areas stems from the fact that it is no longer possible to assume that animal production is universally the main subsistence source in their daily life. This is basically due to the fact that the loss of animals as a result of the recent drought didn't leave behind enough herds to support the rural settled or the nomads. However, it should be emphasized that such changing trends started a long time in the past, due not to disaster, but as a response to development planning in the area initiated by the state. The partial integration of the southern Beja into the Gash Delta Scheme and to some extent Tokar Delta in the east has helped the emergence of agro-pastoralism as a dominant subsistence among the southern Beja. The adoption of this pattern has had its impact on the nomadic movement and population concentration through shortening the first and increasing the second.

Changing circumstances have forced the Beja to take up other additional means of subsistence as part of their strategies of survival in what is turning to be a very harsh environment. Such additional means may not have pastoral association or may even have negative effects on pastoralism due to the negative impact that they may have on the natural resources of the area. These means are, for example, labour migration, either to urban areas or agricultural schemes, or charcoal burning which is having a very significant impact on the tree cover. (Some of the studies in progress are supposed to touch on this; also see Bonsaksen 1991). The patterns of migration are the types of agricultural activities other than those carried on the Gash and Tokar deltas that can be seen in Abdel Ghaffar et.al. (1991). The same source also addresses the patterns of seasonal pastoral and non-pastoral migrations.

3. Other Elements of Social Organization

3.1 The household Units and Division of Labour

All the studies carried under the umbrella of RESAP have touched upon most of the essential elements needed for our understanding of the Beja and other

groups of the Red Sea Hills (Workshop Proceedings of 1989, 1990). They mostly confirmed and added to the points raised in the early and recent literature on the region mentioned above.

The state of knowledge on issues such as the household composition and viability has been a topic of priority to researchers among and outside the RESAP Team (See Abdel Ghaffar 1990, Vågenes 1990, Bonsaksen 1991, Omer 1990, Morton 1990, OXFAM 1990. The landuse systems and the issue of territoriality and kinship were also topics that have been given attention by previously mentioned studies and are the basic occupation of some of the RESAP team members whose work is still in progress (i.e. Abdel Hamid Osman, Amal Hassan). It is important to note that recent changes in this field have not gone un-noticed, such as the process of gradual commercialization of certain land areas and the expansion of some pastoral groups outside their descent groups locality and the change in attitudes towards the environment through allowing the somewhat liberal burning of trees for charcoal (Abdel Ghaffar, et.al., 1991).

A variety of issues related to some basic social institutions such as marriage, division of labour and religious institution remain to receive special attention and reasonable material has been collected on them (see the Workshop Proceedings). The gender issue has been given special attention, to single one major topic of those just mentioned. Most of the attitudes towards womens' participation described in the early literature in relation to the status and role of women among the Beja have been confirmed. The changes forced upon the society in relation to modification of these statuses and roles such as participation in decision making on the local group level, undertaking certain practical tasks such as drawing water or going to shops in small urban centers have been documented.

One important issue which has been raised, though perhaps in a different manner and still remains a key area for further investigation, is the Beja attitude to work. While comparing the Hadendowa with the West Africans and the Rashaida, Ausenda (1987) addresses the issue of "leisureliness" without affluence within the context of the Hadendowa communities. "Under normal conditions, Hadendowa never seemed to be hurried, accomplishing all their tasks in plenty of time." (Ausenda, 1987:7.) Leisureliness is seen as "a strategy aimed at saving energy, since its expenditure would either be useless drain or it would add, but little to the food intake. Indeed, the Hadendowa leisure is included in all their activities, specially in their primary economic activity, herding". (Ausenda, 1987:15).

The West Africans appear as very industrious groups in this comparison and are making the best of the resources in the Beja territory. In the case of the Rashaida compared with the Hadendowa there seems to be a clear tendency towards a transfer of most of the grazing lands to the Rashaida herders due to their ability to mobilize relevant external resources and manage their herds under a new and a more modern and effective pastoral system (see Abdel Ghaffar, et.al., 1991).

3.2 Local Politics, The State and the NGOs

The issue of local or (ethnic group) politics and its relation to descent and other organizational forms and institutions within the Beja society has been an important area of focus in the early literature on the area Salih (1976), Ausenda (1987), Morton (1989), only mentioning some of the substantive ethnographies). However, what remained is an untouched focal issues in the political context are the mechanisms of interplay between this ethnic group politics and the regional and national context. It is rather surprising that very little effort had been devoted to such an important topic since the regional political contribution of the traditional and modern elite of the Beja area to the national politics dates back to the 1950's. Without going into details, suffice it to say that a belated attention has been paid by RESAP to this topic (Turkawi 1991).

This issue, however, has to be directly linked to the state contribution to development in the region and to the extent it has been doing its job. It is obvious that the state has been neglecting its role in this case and to a large extent depending on the NGOs (whether national or international) to do its work for it. The contribution of RESAP in the study of this relationship between the local political institutions, the regional and national authorities is found in Workshop Proceedings of 1989, 1990. The NGOs have in many respects done a lot of effort to collect the necessary data that can facilitate their work and RESAP publications, which have just started to come out, may make a significant contribution to improving the knowledge on the area and help the state to consider its position.

In the field of economics the work of RESAP particularly relates to the following fields:

A. Numerous attempts have been carried out to study some aspects of the society which are intrinsically economic in nature, or largely related to the subject of economic planning. The major focus of these attempts is essentially technical in so far as they attempt to explore those aspects of the economy with the prime purpose of illuminating their technical character. Studies which try to show the technical qualities of the available resources usable for economic development such as those dealing with mineral, forest, tourism, livestock, and agriculture (prepared by Shadad, Ghaffar, Abu Sin, Baasher, and Isam Ibrahim respectively) fall into this group.

B. Other attempts have been carried out trying to deal with issues strongly related to the economic field of societal activities, but using analytical frameworks and concepts developed and often used in other disciplines, e.g. sociology, geography, etc. In this category one can point to studies that deal with issues such as; systems of land tenure, forms of production and production relations, labour forms and structures, labour mobility, and forms of irrigated agriculture (cf. studies prepared by Abdel Hamid and Usama, Salah Shazali, Awad Ibrahim, Omyma and Maria Bjune, and El Mustafa and Usama respectively).

C. Lastly, there is a very limited number of studies which directly address particular economic topics using an explicit economistic analytical frame of analysis. Markets in the RSP and trade, as economic institutions and issues, have been addressed by Gad Karim as being economically problematic.

3.3 Urbanization and Urban Research

Prior to RESAP venture, research into urbanization in the Province was limited in both quantity and quality and applicability to the Province's developmental issues. This neglect of urban research in Sudan is not unique to the Red Sea Province. Up to the present, most of urban research has been done about Greater Khartoum which presents the challenging issues of urbanization in the country. Urbanization in the available literature is purely academic, fragmented, and focused on specific issues that are poorly integrated with the Province's ecosystem. For this reason, and to place urbanization within the system of integrated study, RESAP has given more attention and interest to the study of urban processes and linkages with other disciplines to attain a comprehensive research and development strategy for the Province.

4. What Next? Some Propositions:

It is perhaps clear from the perspective drawn above that a sizeable amount of knowledge has been accumulated on the Red Sea Hills. However, it is still important to emphasize the fact that for adequate mapping of the social, economic and natural resources of the area, attention should be paid to making the necessary interlinkages between various data types. Causations and logical relations between natural and human science material have to be clearly drawn to facilitate understanding the underlying mechanism of societal interaction and performance on the institutional and individual levels. The purpose of such an exercise is to lend a hand to development planners, as well as to unite a comprehensive profile of a region that for so long has been neglected and marginalized.

On another level, that is of planning, it is not possible to abstain from making another proposition. Given the fact that most of the studies in and outside the framework of RESAP have drawn attention to complementarities between the region and other neighbouring regions, planning for further development has to take this point into serious consideration and build on it for the benefit of the local inhabitants and the region as a whole. This can be developed even further since the region bears some resemblance to areas across the national boundaries into Eritrea. There can be possibilities of drawing the resources on both sides in a joint manner and creating a new effective viable economic political and social entity. A proposition of this nature has been drawn on an earlier occasion (Abdel Ghaffar, 1991). Preliminary as it was it lends itself to elaborations or modification and perhaps can be adopted and advocated by RESAP.

Bibliography

Abdel Ghaffar M. Ahmed, (1991), Rural Production Systems in the Sudan: A General Perspective, a Paper Presented to: Beyond the Conflict: Workshop on the Prospects for Peace Recovery and Development in the Horn of Africa, The Hague, The Netherlands.

Abdel Ghaffar M. Ahmed, (et.al.), (1991), Pastoral Management and Herd Dynamics in the Red Sea Province (Sudan). A Report submitted to RESAP, University of Khartoum-University of Bergen.

Ausenda, G., (1987), Leisurely Nomads: The Hadendowa (Beja) of the Gash Delta and their Transition to Sedentary Village Life, Unpublished Ph.D. Thesis, University of Columbia, U.S.A.

Bonsaksen, S.R., (1991), Living Today on Tomorrow's Resources: Coping with Drought Among the Hadendowa of Eastern Sudan, Dept. of Anthropology, University of Bergen.

Hjort, A., and G. Dahl, (1979), "A Note on the Camels of Amarar Beja", in W.R. Cockrill (ed.), The Camelid, Uppsala.

James, W., (1969), "Port Sudan's Overspill", Sudan Society, Vol. 4.

Milne, J.C.M., (1974), "The Impact of Labour Migration on the Amarar in Port Sudan", Sudan Notes and Records, Vol. 55.

-------, (1976), The Changing Pattern of Mobility and Migration of the Amarar Tribe of Eastern Sudan. M.Phil. Thesis, SOAS, University of London.

Ministry of Finance and Economic Planning and UNDP, (1990), Baseline Survey of the Eastern Region, Vol. I, II and III.

Mohamed Y.A. El Mustafa, "The State of the Economy in the Red Sea Province: An Overview", A Paper Submitted to RESAP Annual Workshop, Sinkat, August, 1991.

Mohamed-Salih, M.A., (1990), "Symbolic Identification Among the Hadendowa of Eastern Sudan", in: Gisli Palsson (ed.), From Water to World View, Scandinavian Institute of African Studies, Uppsala.

Morton, J., and Z. Fre, (1986), Red Sea Province and the Beja, A Preliminary Report for OXFAM.

Morton, J., (1989), Descent, Reciprocity and Inequality Among the Northern Beja, Unpublished Ph.D. Thesis, University of Hull.

-------, (1990), Aspects of Labour in an Agro-Pastoral Economy: The Northern Beja of Sudan, ODI Pastoral Network, Paper 30b.

RESAP Workshop Proceedings for (1989, 1990), (Some of the references mentioned in the text and do not appear in this bibliography are to be found in these two proceedings).

Salih, H.M., (1976), The Hadendowa: Pastoralism and Problems of Sedentarization, (Unpublished Ph.D. Thesis), University of Hull.

Vågenes, Vibeke, (1990), Women Going Public, Social Change and Gender Roles in the Red Sea Hills, Sudan, Thesis submitted for the Cand.polit. Degree, Department of Geography, University of Bergen.

Reflections on some of the African-Norwegian Research cooperation within the SSE-programme

ABDEL GHAFFAR M. AHMED

Introduction

These reflections are based on lessons learned from the RESAP experience as well as some of the points which were raised during the past two days. It is divided into three sections, i.e. A, B, and C, dealing with the RESAP setting, the interlinkage between researchers, NGOs and Government departments respectively.

A. The RESAP Context

1. With reference to our knowledge in mapping the natural, socio-political and economic settings many achievements have been made, as has already been outlined by previous presentations. However, on the local community level, it is important to emphasize the considerable pragmatic tolerance shown by the Beja towards our intrusions while embarking on their daily life and survival strategies thereforth. This can be seen with reference to such practices as cutting trees for charcoal production, selling milk or livestock or allowing women to work hard, which would in good times be considered reprehensible in their own thinking about good life. It is becoming clear from all the information gathered thus far, that the key to understanding the Beja situation lies in their enlightened awareness of the fact that, under the circumstances prevalent in their region, "necessity overrides ideals" and that their cultural preference is to show stamina and manage "somehow".

2. The question of territoriality, both physical and social, is an issue that warrants further detailed consideration and the clarification of the ambiguity of the property status of the Beja lands as both customary local lineage territory and modern state property. This clarifications is a necessary prerequisite for any further expansion of the development plans in the region; only particularly so in reference to the future prospects for any further development in the Gash and the Tokar Deltas as major contributors to the GDP.

3. It is obvious that pastoralism can no longer be seen as representing the backbone of the Beja culture. The resource base of Beja pastoralism has dramatically shrunk. Enough evidence has been presented to show how the Beja resource base have suffered from environmental hazards over the past few decades. The change in neighbouring areas has led to the

intensification of competition from other groups. The situation of hardship and lack of resources for survival have led many of the Beja to move to towns which are becoming a place of refuge for a population whose resource base in rural areas can no longer support its way of life.

4. The research results reveal that the Beja live, mentally, in a world that is rarely supported by a material base. The gap between ideology and reality is so great that one may start to wonder how these people go about their daily tasks in life. They show the least evidence of conflict and undoubtedly seem to be able to manage "somehow".

5. In dealing with people in the urban setting, where the project (headquarters) is established it becomes clear that expectations were raised. The popular leadership as well as the representatives of the government departments expected a contribution towards solving their daily problems. This is quite natural given the fact that NGOs have been operating as relief agents for over two years in the same areas. To make these groups aware of the difference between a research project and an NGO activity was not an easy task for the researchers.

   However, this issue raised the necessity of adhering to the method of "participant intervention" at certain points. Rural people whether in small villages, camps or small urban centres are not patient enough to wait for the outcome of a long term study. They wanted to see tangible results with reference to some of their problems. RESAP had to take this line and it is a lesson that has to guide the future design of similar projects.

6. Cooperation with the NGOs and government departments proved to be rewarding and in a sense solved some of the problems implied in the point raised above. It took quite sometime to convince these different bodies with the need for cooperation and coordination but in the end good results were obtained.

7. No understanding of the situation of the region or the survival strategies adopted can be achieved if the Red Sea Hills are seen as an independent entity and their linkages with other regions are not identified. The Beja of the Red Sea Hills have in their long history been in close contact with the areas to the South and South East of their region, and with the Nile Valley. These contacts have been instrumental in the survival of both human and animal populations after the famine of 1984/85 and in many ways they explain why the Beja are able, under harsh circumstances, to manage "somehow". It is important to understand the mechanisms through which these systems operate and through this understanding, be able to propose and to plan the relevant models for integrating the Beja in possible regional plans.

It is to this area of regional integration on the national level and across national boundaries that we should pay special attention in any future extension of our research activities in SSE supported programmes.

B. The issues of interlinkage between researchers, local community members, government departments and NGOs

1. These issues have been raised time and again and were and are addressed on a daily bases. RESAP has all the time emphasized the need to plan it activities in close interaction with local community members where the researcher hopes to conduct her/his work. But as mentioned earlier it became obvious that local community members have their own agenda that they wished to present to the researchers: They wanted immediate benefits. Given such a situation RESAP encouraged simple intervention activities, while trying to explain the importance of its research results to the future planning of the region. This is an area which calls for more thinking and proportionate action.

2. The interlinkages between the work of the researcher and the local government departments have gone smoothly because RESAP has, from the beginning, involved local researchers who happened to be key figures in government departments. This action in many ways restored confidence to these local researchers and their departments who were found to feel undermined by the activities of the NGOs. They were at best considered as informants or data collectors by NGOs who have facilities they can not match. The involvement in regional RESAP workshops has shown the importance of the contacts between the local researchers, government departments' employees and the academic researchers if any study results of applied implication are to be reached. Since applicability is one key concept in building the whole programme the efforts of RESAP in this area should be commended.

3. The NGOs presence in the region preceded the commencement of the research programme. The fact that emergency relief activities were the major objectives of their presence the NGOs have had to hand out support on the basis of any information they had at hand. However, when shifting their strategy from relief to development of some sustainable nature they needed more specific and specialized knowledge. The research programme has done its best to provide this and attempted to forge close links between its research topics and the NGOs activities. However, the tendency to insist on finding solutions for immediate problems made the NGOs depend on consultants rather than waiting for researchers whose result may have to take sometime before being finalized.

   On the other hand the research programme found itself all the time being compared (by the local community members) with the NGOs and found it

time consuming to explain the difference between the two establishments. Local community members do not understand why researchers are around for so long time without any tangible benefit to them.

C. Reflections

1. Most of the work we have been doing can perhaps be done by consultants in a short time span with less cost if the purpose in only to get results of applicable nature. But what we are after is the learning process that will leave our countries with a human capital. This learning process is a slow one and is subject to trial and error. Does the doner institution accept this type of thinking?

2. The setting of the project administration in our institution in the manner that facilitates the tasks of the cooperating researchers is also not easy. Our Universities and research institutions differ from Norwegian Universities and research institutions since our University administrative systems have been built on our contact and historical experience of interacting with certain European powers that differ from Norway. This is why building a model for executing the research can be a difficult task. In Khartoum we had the advantage of thirty years of cooperative relations with Bergen and as you have been told we are yet to find "the model" we want.

   Here again our relations of cooperation with Norwegian Universities and research institution increased at a time when our Universities have started to suffer from the lack of support by national Governments in terms of research funding. This was coupled with a high percentage of Brain-drain. Hence conditions for equal partnership did not exist.

3. It is important that we look at our programmes of research as an integral part of what goes on in the region we are working on. Even more so is our ability to link that with what goes on in neighbouring regions and never suggest that we can work in isolation from other forces operating in the society. This means we have to take the political realities of the region and the country in mind and be able to absorb any shocks that may be created.

4. This conference is a good example of what is happening in relation to good solid research activities in our countries and Norway. The sad part of this is that although we are in the same belt and in fact very close neighbours our coming together had to be (mediated) forged by the North. Economic reality apart we have not been able to create such a link through the help of institutions that exist in the continent be those the Union of African Universities or the OAU. We have made little effort as individuals to link to each other except for the unsystematic relations established by both "Codesrea" and "OSSREA".

A new effort is needed, and I see our research programmes as a good vehicle for doing so. How do we put together this competence in order to serve our national goals, to set our priorities and be able to make an intellectual impact upon our colleagues from the North? The need for this type of cooperation is obvious and let this meeting be the starting point.

This is one of the rare occasions in which Franco-phone and Anglo-phone African researchers meet together to discuss their research findings and discover how close they can be to each other. Our Norwegian colleagues might not be aware of how deeply rooted are the forces that militate against our coming together. Now that we have enabled to pass this hurdle let us make a run towards our common goals.

In this age of technology and the acceptance of the fact that we all have a common future, our Norwegian Colleagues can be seen as equal partners in realizing this south-south cooperation that may support the existence of north-south cooperation on an equal basis.

5. It takes a long time to build competence, create inter-disciplinary interaction and reach research results of an applicable nature. We could not have, for instance, achieved what we did, had it not been for an experience of almost 30 years of cooperation. My message to NUFU and the Ministry is to treat the time dimension of these programmes with care. These programmes can not reach their objectives without the presence of Norwegian researchers in the field with their African colleagues. The continuity of the exercise is a must for future success.

Finally and thinking loudly; what kind of lessons should we learn from our capability to handle the resources that we have at hand. Do we have enough absorptive capacity to use the financial support we are receiving or has it been pushed on us?

The Ethiopian Programmes

The Borana Health and Nutrition Study

Tadesse Alemu
Bernt Lindtjørn

Introduction

The Borana Health and Nutrition Study (BHNS) was started in 1988 and represents a joint project between the Department of Community Health, Addis Ababa University and the Centre for International Health, University of Bergen.

The BHNS studies the food system, nutrition and disease patterns in drought prone areas of southern Ethiopia and aims to promote research competence by providing field oriented research.

The Research Project

The overall objective of the research programme is as follows:

> "... to define the vulnerability profile to drought in a pastoral community in southern Ethiopia. This problem will be viewed by examining the interactions between nutrition and disease pattern.
>
> The main aim of this cooperation between Department of Community Health (Addis Ababa University) and the Institute of International Health (University of Bergen, Norway) is to promote research competence by providing opportunities for field oriented research in southern Ethiopia. Post graduate studies form part of the research."

The two study areas selected are Dubluk in the Borana Region and Elka na Mataramofa in Southern Shoa.

The BHNS has three main components: research, competence building and institutional strengthening.

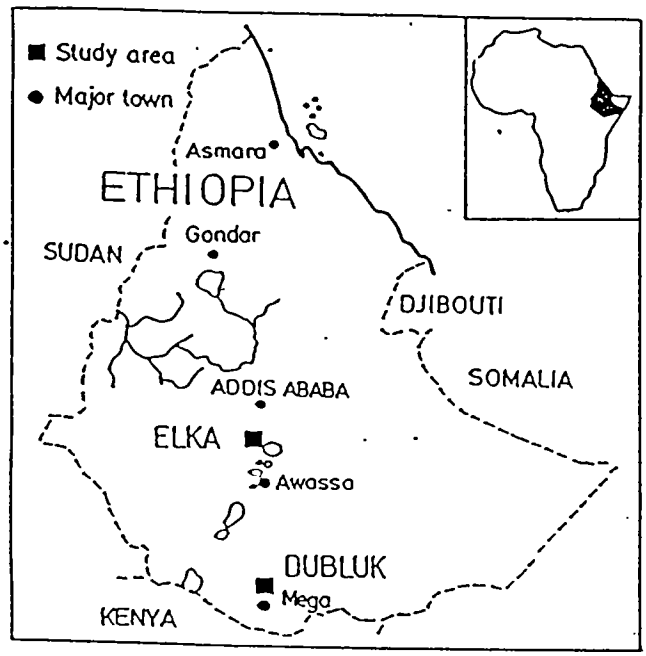


Fig. 1. Map of southern Ethiopia with the Dubluk and Elka study areas.

1. Research

The main objectives are to study

- **1.1** the nutritional status and characteristics of the food system
- **1.2** the socioeconomic and environmental factors expected to influence the nutritional pattern
- **1.3** the basic demographic determinants
- **1.4** the morbidity and mortality of the population with special emphasis on children under five years of age, school children, pregnant and lactating women and adults
- **1.5** the associations and interactions of nutrition and infectious diseases, health in general and social and population structure

2. Competence building

The project aims to promote research competence by providing opportunities for field oriented research.

3. Support to the Department of Community Health

To strengthen the Department of Community Health. This was made possible through an additional grant by the SSE programme.

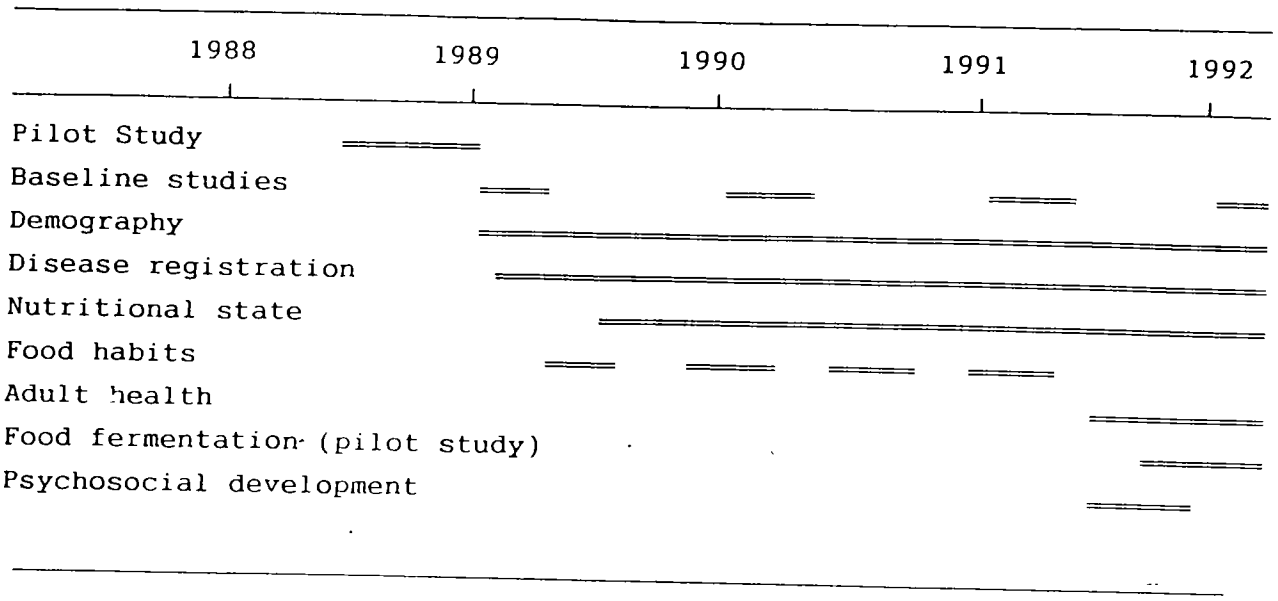
Achievements

The following are the main achievements of the BHNS:

1. Research

The main objective of the BHNS has to a large part been completed and the results have been published in scientific reports (see enclosed list of publications). A brief summary of the main published results is enclosed.

The following figure shows when the different components of the study were carried out. The study design is similar in Dubluk and Elka.



2. Competence building

Zenau Adam competed a one year Master of Science course in Epidemiology at the London School of Hygiene and Tropical Medicine as originally planned.

Dr. Tadesse Alemu has completed the data collection planned for a doctoral thesis at the University of Bergen.

Dr. Bernt Lindtjørn has submitted the doctoral thesis "Child health and nutrition. A study from drought prone areas in south Ethiopia" to the University of Bergen.

3. Support to Department of Community Health

Sets of books have been purchased and 5 year subscription of important journals in community health and nutrition have been ordered for the Department of Community Health (DCH). This literature provides the Department with essential information to teach both under-graduate and graduate students. Also a television and a video set has been purchased for the teaching programmes at the DCH.

The DCH has received a computer which shall be used by graduate students for their community health research projects.

Cooperation with other researchers and organizations

Researchers from the BHNS participate in interdisciplinary research. Thus, together with a social-scientist from Christian Michelsen Institute, Dubluk forms the common study area for both the health and nutrition as well as studies in social anthropology.

Together with the Awassa Agricultural College and the Norwegian Agricultural University (NORAGRIC), a study on the food system in Elka, which includes the following components: soil, animal and plant science, agricultural economy and food fermentation is carried out.

Together with psychologists, Professor Frances Aboud (McGill - Ethiopia Community Health Project) and Associate Professor Almaz Eshete (Addis Ababa University) a study was done to investigate the associations between psychosocial development of a child, mother child interaction and state of nutrition at a rural site in Zwai.

The BHNS staff have established functional communication links with organizations working in southern Ethiopia. Thus, the research results and their possible practical implications are communicated to governmental and non-governmental organizations working in southern Ethiopia.

Transfer of the BHNS form SSE to NUFU

The BHNS started as one of the SSE components in Ethiopia. In 1991, the Royal Norwegian Ministry of Foreign Affairs (UD) transferred the SSE programmes to NUFU. Thus, an agreement has been reached with NUFU to continue the programme until December 31, 1993.

The Research plans for 1992-93

The research plans outlined in the 1990 report included follow-up studies on the demographic and morbidity studies as well as investigations on food habits and nutritional status, mainly among children. These components have partially been completed in 1991 (see list of publications).

The following components, outlined in the 1990 report, have been initiated and are planned to be completed during the 1992-93 period.

1. Further studies on child development

Adverse environmental factors, undernutrition and the frequent exposure to infections may limit child development, and poor mental development is at least partly attributable to undernutrition. Growth retardation during childhood often results in a reduced physical work capacity when they grow up as adutls. Thus, poverty, malnutrition and exposure to infections become elements in a vicious cycle. For children in the drought prone African Sahel, periods of acute food shortage famine aggravates the situation, sometimes with disasstrous consequences.

There is a close association between child malnutrition and the nutritional status of adults. Thus, a malnourished child is likely to grow up to become an adult with a small body size. Therefore, as body-size is closely associated with working capacity, improving child growth is important both to ensure a healthy status of a child but also to improve the future working capacity of the grown up child. We wish to continue our previous work by doing in depth studies on child growth. The objectives of these components are

1 to describe the growth pattern of children under the age of 5 years in different ethnic groups.

2. to compare the growth pattern of children 6-18 years in three different geographical areas: Gambella, The Lakes' region and Borana.

3. to describe growth velocity of young children from different ethnic groups.

The data collection was completed in April 1992, and the reports are expected to be finalized by 1993.

2. Adult disease, nutritional status and working performance

Our knowledge on the adult disease pattern from Sahelian countries is very limited. The consequence of adult malnutrition The consequences of adult malnutrition and occurrence of acute and chronic disease on the working performance of adult men and women has not been studied before in Ethiopia. This type of information may be essential in order to target interventions so as to improve productivity.

This prospective research started in April 1991. It is carried out in collaboration with agriculturalists from the Awassa Agricultural College in Zwai, and may enable both the agricultural and health researchers to view the associations between food system (food production, food utilization), adult disease and nutrional characteristics and productivity.

3. Fermented Foods

Together with researchers from the Department of Microbiology and the Department of Home Economics at the Awassa Agricultural College the first phse of this research was started in September 1991. The research design and data collection has been done jointly by the BHNS and the Awassa researchers.

The main objective of this study is to improve the diet of the community. This shall be done by

1. studying the fermentation pattern of indigenous pulse (haricot beans) at home level
2 developing and introducing the use of fermented pulse as a wholesome food item to the community

The laboratory experiments take place at the Department of Microbiology, while the field trials are done in a nearby village at Awassa. This first phase is near completion. The field trials at Elka na Matarmofa, one of the BHNS study areas, will start as soon as satisfactory results are obtained form the field trials in Awassa.

Political situation and research in southern Ethiopia

1991 was a dramatic year in Ethiopia. The military regime of President Mengistu Haile Mariam was replaced by the EPRDF coalition. Although civil unrest and armed conflicts occur in our study areas, the data collecting continues. However, due to conflicts in Borana, we were not able to expand the research activities to include studies on adult health and nutrition.

As our study is the only currently ongoing prospective research on demography, health and nutrition in rural Ethiopia, we believe that results from the current period may give important information on the vulnerability of drought and civil unrest to the health status of people.

Publications and project documents

The research results and their implications have been communicated through scientific publications, at conferences and lectures at Ethiopian and Norwegian teaching institutions and through dialogue with governmental and non-governmental organizations working in southern Ethiopia.

So far the BHNS has made the following scientific presentations and publications:

Scientific publications

1. Lindtjørn, B., Famine in Ethiopia 1983-85: Kwashiorkor and and marasmus in four regions. Annals of Tropical Paediatrics, 1987; 7:1-5.

2. Lindtjørn, B., Health and Nutrition Reiief Guide. Addis Ababa/Bergen: Norwegian Church Aid; 1988. 99 pages.

3. Lindtjørn, B., The Borana Project - A newly started project in nutrition. Antwerpen: Royal institute of Tropical Medicine; 1989.

4. Lindtjørn, B., the Borana Project - a newly started project in nutrition. Annals de la Societe Belge de Medicine Tropicale, 1990; 70 (Suppl. 1): 42-43.

5. Lindtjørn, B., Malnutrition, social structure and death in the south Ethiopian famine 1985-86. 10th Scottish-Scandinavian Conference on Infectious Diseases. Oslo: 1989.

6. Tadesse, A.; Lindtjørn, B.; Zenau, A., Borana Health and Nutrition Study: Nutritional status among adults. Proceedings of Annual Meeting Ethiopian Medical Association 1990. Addis Ababa University Press; 1990:12.

7. Lindtjørn, B.; Tadessa A.; Zenau A., Borana Health and Nutrition Study: Disease incidence among children. Annual Meeting Ethiopian Medical Association 1990. Addis Ababa: Addis Ababa University Press; 1990:13.

8. Lindtjørn, B., Famine in southern ethiopia 1985-86: Population structure, nutritional status and death among children. British Medical Journal 1990; 301:1123-7.

9. Lindtjørn B.; Tadessa, A.; Zenau, A.; Bjorvatn, B., Malnutrition and food habits in Southern Ethiopia. Ethiopian-Norwegian Research collaboration on drought related problems. Royal Society of Tropical Medicine and Hygiene. Cambridge, 1990.

10. Zenau, Adam. Iron deficiency anaemia and malaria (dissertation). London: University of London, 1990. Master of Science degree.

11. Lindtjørn, B., Risk factors for fatal diarrhoea: A case-control study of Ethiopian children. Scandinavian Journal of Infectious Diseases 1991; 23:207-11.

12. Lindtjørn, B., Famine in southern Ethiopia 1985-86: malnutrition, diarrhoea and death. Trropical and Geographical Medicine 1990; 42:365-9.

13. Lindtjørn, B.; Tadessa, A.; Bjorvatn, B., Dietary pattern and risk factors for malnutrition among children in drought prone areas in southern Ethiopia. Annals of TropicalPaediatrics, 1992, in press.

14. Lindtjørn, B.; Tadessa, A.; Bjorvatn, B., Borana Health and Nutrition Study: Population growth, fertility, mortality and migration. Transactions Royal Society of Tropical Medicine and Hygiene. 1992, in press.

15. Lindtjørn, B.; Tadessa, A.; BjorvatnB., Nutritional status and risk of infection among Ethiopian children. Journal of Tropical Paediatrics. 1992, in press.

16. Lindtjørn, B., Disaster epidemiology. Lancet 1991; 337: 116-7.

17. Lindtjørn, B.; Tadessa, A; Bjorvatn, B., Child health in arid areas of ethiopia. Longitudinal study of morbidity of infectious diseases. Scandinavian Journal of Infectious diseases. 1992, in press.

18. Lindtjørn, B., Miljø i u-land. Tidsskrift for Den norske lægeforening, 1991; 111: 1633-35.

19. Aboud F.,; Eshete, A.; cherenet, H.; and Haile,G., Child development and nutritional status. 1992. Manuscript.

20. Lindtjørn, B., Child health and nutrition. A study from drought prone areas in south Ethiopia. (Dissertation). University of Bergen, Bergen. 1991.

21. Kloos, H.; Lindtjørn, B., Malnutrition during recent famines in Ethiopia. In: Hinnant JT, Editor. Sixth Michigan State University Conference on Northeast Africa. East Lansing: Michigan State University; 1992.

Planning Documents

1987 Landuse, famine and health in Southern Ethiopia: Pre-project proposal

1987 A community based study on the interactions of nutrition and health in Ethiopia (Borana). Research Plan.

1988 Agreement between addis Ababa University and the University of Bergen regarding the Borana health and Nutrition interaction programme 1988-1991.

1988 (Borana Health and Nutrition Study). In Amharic.

1991 Application to NUFU: the Borana Health and Nutrition Study. Plans for 1992 and 1993.

1992 Agreement between Addis Ababa University and the University of Bergen regarding the borana Health and Nutrition Interaction programme 1992-1993.

Progress Reports

1989 Report on the Borana Health and Nutrition Study. September 1988 - September 30, 1989.

1989 A community based stduy on the interactions of nutrition and health in Borana. Presented at First annual Meeting on review of research projects, Awassa 1989.

1990 Report on the Borana Health and Nutrition Study. September 1989 - October 1990.

1992 The Borana Health and Nutrition Study. Report 1988 - 1991. (This report.)

The Cooperative Agreement in Social Anthropology

Makonnen Bishaw

I. Introductory Background

As of September, 1990, a graduate programme leading to the Master of Arts degree in social anthropology was started in the Department of Sociology and Social Administration (SoSA), College of Social Sciences (CSS), Addis Ababa University (AAU). The desire to start a graduate training and research programme in social anthropology had been around for a number of years before that, but lack of resources necessary for launching the programme had prevented the University from realizing its aims in this as in many other academic areas.

The need for manpower equipped with knowledge and skills in social anthropology arose from the realization of the fact that Ethiopian society is a culturally rich and complex one, composed of diverse ethnic, linguistic, and religious groups. There was a need to understand the cultural heritage of these diverse groups, especially in view of the fact that many of these were undergoing transformations. Moreover, an understanding of these heritage of the many groups composing Ethiopian society is, we believe, a pre-requisite for the rational planning and implementation of development programmes.

Through assistance obtained from various external sources, the AAU was finally able to approve and launch the M.A. programme in social anthropology in September, 1990. External assistance in the form of senior instructors and material and financial contributions came from the Norwegian, French, German, and Italian Governments. While each of these governments made it possible for the graduate programme to get one senior, expatriate instructor, the Norwegian and Italian Governments have provided material and, in the case of the Norwegian Government, financial assistance to the programme.

As indicated above, the most comprehensive and substantial assistance came from the Norwegian Government within the context of its special programme of assistance to the drought-prone countries of the Sahel zone, which includes Mali, the Sudan, and Ethiopia. The Sahel-Sudan-Ethiopia programme, also known as the SSE programme, had, as its central objective, the provision of appropriate assistance aimed at improving food production and security in these countries. Among the many strategies the SSE programme employed to attain this objective was the provision of funds with the view of fostering cooperation among scientists and institutions in both the recipient countries and Norway. Such cooperation was expected to create and strengthen the research capacities and competencies of the countries concerned.

In the context of the SSE programme and beginning in 1988, discussions were held among staff of the Christian Michelsen Institute (CMI) of Bergen and CSS at AAU concerning the initiation of a graduate training and research programme in social anthropology at CSS. These discussions led to the agreement that cooperating in the establishment of such a training and research programme in social anthropology would be mutually beneficial. More specifically, the cooperative programme in social anthropology was aimed at

1.1 developing additional research capacity at CSS of AAU in the field of social anthropology through institution-based activities involving (a) course work and other training activities, (b) facilitating the exchange of scholars, and (c) infrastructural support in the form of office equipment and supplies as well as anthropological books and journals, and

1.2 implementing a multi-disciplinary, field research in a pastoral society in Ethiopia, including (a) the instruction and supervision of students, and (b) the provision of infrastructural support in the form of field equipment and vehicles.

II. Implementation

2.1 Training

The M.A. programme in social anthropology was formally started with the acceptance of the first batch of 10 students drawn from various academic[1] and governmental institutions[2] in the country. One of these 10 graduate students withdrew from the programme for health reasons[3], while the remaining 9 students have just completed their classroom training in social anthropological theory and methods. This first batch of graduate students are now preparing to go out into the field to carry out their own social anthropological research on the basis of which they will be writing their M.A. theses during the coming academic year. We are hopeful that they will all be able to complete successfully this last,

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[1]Academically, these students have had undergraduate training in sociology, social work, linguistics, and history.

[2]All of them are part-time students, since they are required to continue working two to three days per week. What is unique about graduate training programmes at the Addis Ababa University is the requirement that candidates be sponsored by their employing, often governmental, organizations. The sponsoring organization is expected to (a) guarantee, in writing, that the candidate would continue to receive his/her salary during the course of the training, and (b) indicate how the candidate's training would contribute to the attainment of the goals and objectives of the sponsoring organization. Thus, the graduate students in social anthropology came from different departments within Addis Ababa University, other institutions of higher education, the ministries of Housing & Urban Development, Culture & Sports, Planning, and the Institute of Nationalities.

[3]This student later rejoined the programme and is now a member of the second group of graduate students in social anthropology.

but important part of their training in time to graduate in July, 1993. We are also hopeful that a few of these first group of graduate students will be able to pursue their Ph.D. studies in social anthropology with the view of returning to the Department of SoSA to participate in the teaching and supervision of students. Possibilities for fellowships for a few of these students are being explored both through the Cooperative Agreement in social anthropology and other sources.

In September, 1991, the second batch of 9 students were admitted into the graduate programme. Of these, three were forced to withdraw from the programme for personal reasons, while the remaining 6 students[4] have just successfully completed their first year of classroom instruction, thereby advancing into their second year of course work. Similarly, the third batch of 10 students are in the process of being accepted into the programme. We expect these students to start their course work in social anthropology in September of this year when the University resumes classes after the summer break.
In the implementation of the training component of the Cooperative Agreement, the central concern of the Department of SoSA has been the creation of opportunities for field visits to the different culture areas within Ethiopia so that students could try to relate, as much as possible, classroom discussions with actual observations and discussions with ordinary people in different parts of the country. Consequently, some three short and long field trips were undertaken to Ziquala, about 50 km. south of Addis Ababa; South Omo, about 700 km. southwest of Addis Ababa; and parts of traditional Abyssinia, including the historic sites of Axum and Lalibella, over 900 km. to the north of the country.

During the month of June this year, all 9 students in the first batch, three of their instructors, and the secretary of the Department went to the Federal Republic of Germany (FRG) on a study tour of social anthropological institutions and museums at various universities and public organizations in Mainz, Frankfurt, Gottingen, Berlin, Hamburg, and Bonn. This very useful study tour to Germany was made possible by assistance obtained from the German Academic Exchange Programme.

Students are expected to write papers about their experiences and observations during these field trips within the country as well as the recent study tour to the FRG. Some of the papers written by students and staff regarding their field trips within the country have already appeared in the newly started Sociology Ethnology Bulletin (SEB).

Among the many useful things accomplished since the initiation of the graduate programme in social anthropology is the starting of the Sociology Ethnology Bulletin (SEB) which was made possible through funds made available by the Cooperative Agreement in social anthropology. SEB is a revival of the former Ethnological Society Bulletin which used to be published, in the 1950's and

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[4]One of the students from the first group of students who had withdrawn from the programme for health reasons returned and joined this second group, raising the total number of this group of graduate students to 7.

1960's, by the Ethnological Society of the University College of Addis Ababa, the precursor of AAU. The graduate students in social anthropology and the staff of the Department of SoSA have worked hard to produce two issues of SEB so far. In both issues, short and long articles discussing field trips as well as other anthropological topics have appeared by both students and staff of the Department.

2.2 Staff Exchange

In accordance with the Cooperative Agreement, academic staff from CMI, the University of Bergen (UB), and the Department of SoSA of AAU were able to visit and work in each other's home institutions. Thus, at the start of the M.A. programme in social anthropology at AAU, Dr. Johan Helland of CMI had come to join the Department of SoSA. Dr. Helland assisted in the teaching and supervision of students for the whole academic year in 1990-1991. He had also been with the Department at different times during 1989-1990, helping in the preparations for the initiation of the graduate programme. For some 10 months during 1989-1990, Dr. Fecadu Gedamu of the Department of SoSA was at CMI, doing research and finalizing the write-up of studies he had carried out earlier. Later, during the first semester of 1990-1991, Dr. Robert Minnich of the University of Bergen was at the Department of SoSA participating in the teaching and supervision of graduate students.

In addition to the above staff exchange opportunities, it was possible for Dr. Makonnen Bishaw, the then chairman of the Department of SoSA, to make two short, business trips to CMI in Bergen, the Ministry of Foreign Affairs in Oslo, the Department of Social Anthropology of the University of Bergen, and the head-quarters of the Norwegian Universities' Committee for Development Research and Education (NUFU), with the view of assessing the Cooperative Programme in Social Anthropology as well as to explore and discuss the continuation of the Cooperative Agreement in the future.

2.3 Infrastructural Support

The Cooperative Agreement in Social Anthropology has been instrumental in strengthening the Department of SoSA through the provision of infrastructural support in the form of personal computers, printers, software packages, and other computer and office supplies; audiovisual equipment such as tape recorders, transcriber, overhead projector, video deck with monitor, and cameras, etc.; over 700 anthropological books and journals; field equipment such as camping gear (tents, sleeping bags, cooking pots and pans, lamps, etc.) and two four-wheel drive Toyota land cruisers. This infrastructural support has made the graduate programme in social anthropology and the Department of SoSA one of the best provisioned and relatively up-to-date academic units of the AAU.

2.4 Field Research in a Pastoral Society

The field component of the Cooperative Agreement has now been completed. This component has been carried out as a multi-disciplinary research project among the Borana pastoralists and was aimed at examining patterns of resource management in general and resource availability at the household level in particular. Collaboration with researchers from the Department of Community Health of the Faculty of Medicine at Addis Ababa University and the University of Bergen has made it possible to explore the disease and nutrition situation at the household level, while the anthropological component is expected to enrich our understanding of Borana culture and society. A series of papers and reports have started coming out from this collaborative research.
This field research experience is also believed to have established the pre-conditions for some of our graduate students to carry out their own studies in this part of the country. The necessary linkages have been created with local community leaders in Borana with the view of facilitating easy entry into Borana society by any of our students and staff wanting to do research in Borana and the surrounding areas.

As pointed out earlier, this field component of the Cooperative Agreement has been instrumental in further enriching and strengthening the training programme in social anthropology at the Department of SoSa through the provision of camping gear, other field equipment, and vehicles.

III. Problems

Undoubtedly, the implementation of the Cooperative Agreement between CMI and the Addis Ababa University has been quite successful. While the field research component has been completed, the training programme in social anthropology is in full swing with three groups of 26 graduate students in the pipeline. Nevertheless, there have also been problems some of which have as yet to be resolved. To a large extent these problems may be reflections of the unsettled socio-political situation that has prevailed in the country and the region during the past few years. Among these have been delays in the start of the M.A. training programme, shortage of office and classroom facilities, shortage of teaching staff, difficulties in implementing the proposed linkage with the University of Khartoum, and inability or unwillingness of staff in training abroad to return to Ethiopia.

3.1 Delays

As pointed out earlier in this and earlier annual reports, the intention has been to start the M.A. training programme in social anthropology much earlier than when it was finally started. Even after the Cooperative Agreement had been signed by CMI and the Addis Ababa University, bureaucratic procedures on the

Ethiopian side, mainly having to do with the formal approval of the programme, were responsible for over a year's delay in implementation of the programme.

3.2 Facilities

The initiation of the M.A. programme in social anthropology within the Department of SoSA has put considerable pressure on the limited resources of the Department. Even though the Department was given this new responsibility in addition to its undergraduate programme, the physical facilities in terms of office space and classrooms has remained the same, forcing it to improvise and function under strain. Some of the senior staff had to share offices, while junior staff were forced to sit in rooms crammed with office and field equipment. Repeated requests had been made in vain for at least two rooms to serve as departmental library and store for office and field equipment. Even more critical has been the lack of classroom for the M.A. programme in social anthropology. Neither the office of the University Registrar nor that of the Dean of the College of Social Sciences have been able to assign classrooms for the M.A. programme, forcing instructors to search for vacant classrooms on a daily basis or to hold graduate classes in their own offices. During the past year, the Dean and administrator of CSS have been helpful in providing one of the staff conference halls for holding our graduate classes, but this could not be more than a temporary solution. The Department had repeatedly protested about what appeared to be the lack of genuine commitment on the part of the University in this regard. Nevertheless, so far the problem of classroom for the graduate programme in social anthropology has not been resolved.

3.3 Instructors

Compared to other departments with graduate programmes, the Department of SoSA may appear to be fortunate in that it has a considerable amount of external sup-port, particularly in the form of instructors. The Norwegians, in addition to financial and material support, have been able to send us one instructor during 1989, 1990, and 1991; the Italians have provided us with two instructors during the second semester of 1990-91 and one instructor in the Spring of 1992; the German Academic Exchange Programme has provided us with one senior instructor since before the start of the M.A. programme in social anthropology; and the French have made it possible for us to have one instructor long before the initiation of the M.A. programme.

Undoubtedly, this support has been adequate at the beginning of the programme. Nevertheless, as the programme became established with the intake of the second group of graduate students, the inadequacy of the staff situation began to be evident. The situation is bound to become even more critical with the intake of the third group of graduate students in just a few weeks from now.

By way of resolving this critical shortage of teaching staff, the Department had recommended that the AAU (a) show more concrete commitment by finding and allocating its own resources for the recruitment of appropriate staff, (b)

examine and review its own staff deployment policies and practices with the view of making it possible for the relevant staff in research institutes, such as the Institute of Ethiopian Studies, to move into teaching departments so that they can put in more than the stipulated 25% of their time into teaching and student supervision; and (c) establish links with the University of Khartoum so that staff and students from the two sister institutions could be able to engage in planned and mutually beneficial academic exchange programmes.

Following these recommendations, the AAU was able to recruit and employ a young British anthropologist and negotiations are under way for the recruitment of a second senior instructor. Unfortunately, the salary rates used by the University are so low and out-dated that very few, if any, experienced scholars, especially expatriates, will be willing to take its offers. With regard to the deployment of its own academic staff, however, the University has kept silent. The University's rather rigid staff deployment policy whereby academic staff are assigned to either teaching or research units is bound to continue creating obstacles, since such staff are required to put in only a certain percentage of their time into either teaching or research depending on their primary unit of deployment.

Through the assistance obtained from the Norwegian Government within the framework of the Cooperative Agreement, a comprehensive training and research linkage in social anthropology was to be initiated between the Department of SoSA at AAU and the Department of Sociology and Anthropology of the University of Khartoum. All parties are convinced that such linkage would contribute significantly to capacity building in the cooperating institutions, while also creating the opportunity for Norwegian scholars and institutions to benefit through participation in the academic endeavour of the Universities of Khartoum and Addis Ababa in the field of social anthropology. For this purpose, the Norwegian Government had made available some funds for a senior instructor from the University of Khartoum to come to Addis Ababa to participate in the teaching and supervision of graduate students in social anthropology. Unfortunately, due to communication and other socio-political reasons, until now it has not been possible to implement this planned cooperation between the two universities. We are hopeful that situations in the region will have improved sufficiently for this linkage between the two universities to be implemented during the course of the coming academic year.

3.4 Staff Abroad

At the moment there are five AAU staff working towards an advanced degree in social anthropology at universities in France, Britain, and the United States of America[5]. Two of these, one in France and the other in the US, are believed to

[5]These are Abbas Hadji Mohammed (France), Getachew Kassa (UK), Taddesse Beriso, Alexander Nati, and Tesfaye Wolde Medhin (USA).

have completed their Ph.D. studies. A third one in the US is known to be finishing by the end of the coming academic year, while the remaining two are expected to finish within the next two to three years. It was hoped that these staff would return to Ethiopia as soon as they finished their studies and assist in our effort toward self-sufficiency. From our experiences so far, it appears that some of these may be postponing their return for various reasons. Part of the explanation may lie in the unsettled political situation in the country, while the low remuneration and difficult living conditions in terms of housing and transportation facilities in the city may also account for their reluctance to return as expected. If this continues, the goal of attaining self-sufficiency may be rendered unattainable for much longer than initially envisioned.

IV. Summary & Recommendations

The Cooperative Agreement in Social Anthropology signed between the AAU and CMI and funded by the Norwegian Ministry of Development Cooperation has made it possible for both AAU and CMI to realize a considerable portion of the objectives they had set for themselves.

4.1 The M.A. training programme in social anthropology was started in September of 1990 with the admission of the first group of graduate students. These students have just completed their theoretical training in social anthropology and are now embarking on their field work on which their theses are to be based and submitted to the Department as the final requirement for the M.A. degree. The second and third groups of graduate students were admitted into the programme in 1991 and, now, in 1992.

4.2 The Department of SoSA, where the M.A. programme in social anthropology is based, has been strengthened through the provision, within the context of the Cooperative Agreement, of office supplies and equipment, library support, field equipment, vehicles, and instructors.

4.3 Funds have been made available through the Cooperative Agreement which have made it possible for students and staff to go on field trips to various cultural areas of the country, thereby enabling both students and staff to relate theory to practical and actual situations and problems.

4.4 The field component dealing with a multi-disciplinary research among the Borana, a pastoralist group in southern Ethiopia, has been completed. Reports on this are beginning to come out.

While these achievements may be indicative of the successful implementation of the Cooperative Agreement, there have been a number of problems that have constrained the effective implementation of the agreement. Some of these problems still persist and their resolution is extremely necessary if the viability

and sustainability of the programme in social anthropology at AAU is to be assured in the future. The following are particularly essential:
A. There is a need for a much greater and sincere commitment on the part of AAU so that the programme's resource constraints are removed. In this regard, the University could providedepartmental library and reading room mainly for staff and graduate students; a store room for office and field equipment; and a dire

i) sufficient office space for instructors, especially for expatriate ones; a reasonably large class/seminar room which can also serve as a ct telephone line;

ii) funds for the recruitment of at least two additional instructors in social anthropology;

iii) simpler and less bureaucratic staff deployment policies and procedures between research and teaching units so that staff could be deployed to either of the two units as and when needed; and

iv) policies and mechanisms for enticing those staff in training abroad to return to AAU upon their completion of their studies so that they can contribute their share to self-sufficiency at the University.

B. There is a need for continuing the Cooperative Agreement in Social Anthropology. So far the agreement has been between the AAU and CMI. Needless to say, this arrangement has been extremely useful, particularly for the graduate programme in social anthropology at AAU, since CMI had kindly put its administrative capacities and established linkages to provide invaluable logistic support to the programme at AAU. We understand that this assistance will continue to be provided by CMI for the next year and a half in accordance with agreements reached concerning the transition period. In the future, it is our hope that similar support will continue to be provided by arrangements to be made through NUFU. The continuation of the Cooperative Agreement will be essential if the initial goal of capacity-building and self-sufficiency at AAU in the field of social anthropology is to be realized. To this end, the Cooperative Agreement could help in

i) facilitating the establishment of a more lasting cooperative relationship between the AAU and Norwegian universities in general and the University of Bergen in particular in the field of social anthropology. Such collaboration would be mutually beneficial, even though AAU stands to benefit much more in the beginning;
ii) assist in the establishment of tripartite link-ages among relevant academic units at AAU, the University of Khartoum and Norwegian Universities; and
iii) help in providing for staff exchange and advanced training abroad (either in Norway or elsewhere) for some of the current graduate students of

social anthropology at AAU so that the goal of self-sufficiency could be realized.

Studies of Farming Systems in Southern Ethiopia

Collaboration between Awassa College of Agriculture and the Agricultural University of Norway

I. Approaches and Methodologies

Trygve Berg

Problems of food shortage in developing countries have been the subject of research for many decades. But the approach to the problem has shifted. The 1960s gave us the "green revolution approach". In the 1970s we got "the farming systems approach" and in the 1980s the demand for "sustainable development" forced the researchers to start looking at the farm and the surrounding cultural landscape as an "agro-ecosystem".

These shifts reflect a general trend in understanding of the problems of food shortage and agricultural productivity. In the beginning the focus was on how to maximize yield of major crops. Agronomic subjects such as plant breeding and fertilizer technology got most of the attention. Later on experience taught the research leaders that progress at the level of the single commodity could be counterproductive at the farm level. What matters for the farmer is not the yield of one single crop, but the combined output of the entire farm enterprise. The focus had to be shifted from the selected commodity to the whole farm, and agricultural economists had to be added to the research teams.

During the 1980s the unwanted side effects of the green revolution came to the surface. Those side effects included environmental as well as social and economic problems. The new agenda of sustainable development was supposed to include ecological, social and economic sustainability. For agricultural research this meant the rethinking of the systems approach. Emphasis had to be shifted from maximum productivity to optimal resource use and sustainability of production.

With this in mind, we started discussions with representatives from Addis Ababa University and Awassa College of Agriculture in the late fall of 1988. Considering the comparative advantages as well as the limitations of the partner institutions, the Awassa College of Agriculture and the Agricultural University of Norway, we decided to design a programme under the general heading Studies of Farming Systems in Southern Ethiopia. This does not mean that conventional commodity or disciplinary research is denounced. Such research is no less important than before. We need the disciplines, but we want the disciplines to

help identify appropriate ways of better resource use at the level of the farm. What this means may be better explained through one example.
One of the researchers of this programme is currently doing sophisticated laboratory experiments with certain strains of lactic acid bacteria. It may not be obvious to everybody that this has any relevance to our objectives. But, according to our approach, this research started with a survey of various communities with different production systems. The survey yielded general information on the importance of milk in the local production systems, in the food systems and in the economy. It also gave specific information on technology of milk handling and on the processing of dairy products. Laboratory analyses complemented this with additional information on chemical and bacteriological qualities of the local dairy products. These studies made it quite clear that the available technology does not permit people to utilize their milk in an optimal way and that they are unable to take proper care of seasonal surpluses of milk. The logical follow up is the on-going studies of strains of lactic acid bacteria isolated from locally fermented milk products. Development of improved technology for milk processing depends on knowledge of the quality and properties of the bacteria which do the job.

Thus, our approach involves the collection of information on farming systems, resource use and resource use constraints from local communities. At the same time complementary research is conducted on experimental farms and in laboratories. Eventually this is supposed to be synthesized into an overall understanding, and to help find the path towards improved food security and sustainable development.

Based on our perception of the nature of the food problems and considering our common research interests, the programme got components of resource and farm economics, food processing, soil productivity, and agronomy of dry-land farming, in addition to the mentioned milk technology study.

Both the surveys and the on-station research use proven methodologies. Local conditions do not necessitate major compromises with what is elsewhere considered proper research methods.

During the progress of the work, we have discovered the potentials of cross-links with other projects. This is particularly the case with the studies of the interaction between health and nutrition which are carried out by the Borana Health and Nutrition Study. There is great mutual interest in doing complementary research on agricultural production in the same community. Through such interdisciplinarity we hope that the two projects together would be able to analyze the interaction between agricultural production, nutrition and health and thus be in a position to understand what are the most critical constraints and limitations for the well-being of the people in the study area.

This study is planned, but not yet carried out. Our delays are not caused by shortcomings in the approach or the methodology, but by practical problems and limitations which we are now about to overcome.

We are also realizing a number of possibilities for cooperation with other projects. Complementary studies of agriculture and social anthropology could, for instance, be interesting because of the significance of the cultural factor in development. There could also be an interface between agricultural research and the wildlife ecology project. Off farm activities, such as hunting and gathering form an important component of the production and food systems of the farmers.

However, we have so far not been able to explore the possibilities of expanding our work towards those projects. The interest is there. Our approach do not prevent us. But our limited capacity has so far forced us to concentrate on what is mentioned above.

We are not only dealing with research. Competence building is also part of our assignment. In addition to the general competence building which is an obvious result of research, we include formal competence building in the form of academic degrees. Our approach is to integrate the project into a master degree programme and to include scholarships for Ph.D.-studies.

At the M.Sc..-level the Agricultural University of Norway has an interdisciplinary programme for NORAD-fellows which we call Management of Natural Resources an Sustainable Agriculture. The programme consists of one year of course work, one semester of field research and a final semester for thesis writing. For studies in Ethiopia we have made arrangements for the use of infrastructure and academic support at Awassa College during field work.

For Ph.D.-students the approach is a sandwich-programme where all field research has to be done in Ethiopia. We also support the development of laboratories and other research facilities in order enable as much research as possible to be done in Ethiopia. Some additional laboratory research and required course work are done in Norway.

II. Achievements

Mogessie Ashenafi and Trygve Berg

A Institutional building

The ACA-NORAGRIC collaborative research project has played a very important role in the institution building of the college in various aspects.

1. Transport

The project has supplied a Toyota Land cruiser and a Toyota pick-up for the college. Although these vehicles were initially meant for field trips included in the ACA-NORAGRIC research projects, there has always been the understanding that they may be used for other research projects funded by local funding agencies. These vehicles were put under the control of the ACA-NORAGRIC Ethiopian project leader, and except for certain extraordinary cases, were used only for research purposes.

Besides the six research projects funded by NORAGRIC, the College has more than 20 on-going research projects. Most of these projects require frequent field trips and had it not been for these two vehicles, research trips of any kind would have been practically impossible. It could thus be said that the College could sustain its research projects through this input from NORAGRIC.

2. Computers and Xerox machines

NORAGRIC has also supplied four computers, printers (including a laser printer) and two Xerox machines and photocopy paper to the college. These computers have made preparations of manuscripts and analysis of data much easier for researchers. In addition to these computers which are open for use by all researchers, two specific projects have got their own computers registered as college property. They will go into the computer pool when the projects are over.

3. Books and journals

Books and journals are of a paramount importance in the teaching and research process. NORAGRIC has supplied the College with up-to-date catalogues and the staff members were given the chance to place orders for new and updated text books and reference books. NORAGRIC has sent the necessary funds to BLACKWELL's publishing house in England and we have placed our orders. We expect to receive these books in the near future.

The importance of scientific literature for research is unquestionable. The supply of scientific journals to the university in general, and to ACA in particular, has stopped since 1988 due to problems in foreign exchange. Since then we have had no access even to abstracts of recent publications. NORAGRIC has made some funding available for the order of journals and we have selected a small number of the most important journals and abstracts for subscription for a relatively longer period of time.

4. Laboratory facilities

In one of the research projects in the ACA-NORAGRIC Project, a Ph.D. training in Dairy Technology has been incorporated. This has required the establishment of a Dairy Technology laboratory in the college. Thus NORAGRIC has supplied the necessary equipment and supplies for the establishment of a laboratory which serves not only as a research laboratory but also contributes markedly to 6the teaching process of the college.

NORAGRIC has also supplied other small technical items for other research projects . The Guest House, built as part of the project has been useful in providing housing for visiting researchers.

The college has enough enthusiastic young researchers who can identify pertinent problems and devise appropriate methodologies to curb some of the agricultural constraints of the rural poor. The college is, of course, grateful to the Ethiopian government for funding most of the research projects. However, local funding has its own limitations in that it cannot be used for the purchase of materials which require foreign currency. There is a strong relation with another international donor which is interested mainly in the strengthening of practical training in the College. Another international funding agency finances one major research project. NORAGRIC is, however, the only center which makes marked inputs that facilitate research in the College.

B. Research

1. Food Technology

The research projects under this topic consist of studies on Enset processing and dairy products processing in southern Ethiopia. These topics were addressed not because they were the only problems in food technology in Ethiopia, but because the ACA-NORAGRIC project intended to consider some problems of women that affect their daily life very mush. In rural Ethiopia, the processing of enset and dairy products is mainly the responsibility of women.
Lack of labor - and time-saving devices is one of the major difficulties, especially rural women are facing in performing their day-to-day activities. Enset, which is the main source of food for densely populated areas of Sidamo, Illubabor, Keffa

and some parts of Shoa, is a type of food source which demands labor intensive processing buy women. The research on enset processing started by making preliminary observations of enset processing in Sidama and Wolayta. Various methods of processing concepts were selected and integrated in some combination in an effort to arrive at a solution.

After evaluating various methods of mechanically removing the parenchyma tissue from the fibrous plant pseudo-stems and choosing the most effective method, processing concepts were formulated and integrated in some combinations. Three prototypes were made and the pros and cons of these prototypes were evaluated. In addition, a number of corm pulverizers were proposed and tested and the problems generally encountered were assessed. The squeezer, commonly used in the Wolayta area was adopted with minor modifications and appropriate fermentation pots were assessed. Although the choice of the concepts of multi-functional processing equipment is by now settled, further systematic field investigation has to be conducted in order to finally decide on the operator's preferred dimensions of the various parts of the equipment.

The study on dairy products processing started by surveying land holding and family labor, agricultural activities, major food crops, crop production and limitations, livestock production, inter-species composition of livestock, farm produce and food security and gross household income. This was designed to generate a baseline data for small scale dairy processing research in southern Ethiopia. Traditional methods of dairy product handling practices and the churning of fermented mild were then monitored on 53 small holder farmers in three locations in southern Ethiopia. Composition of the dairy products, their microbial quality, and the churning technology of the fermented milk were determined. Yeast-lactic fermentation of dairy products appeared to be part of the cultural life and food habit of the people in the study area. The problems of product quality, issues of product handling and imp9rovements of shelf-life could be better addressed if the merits of the already locally available technology are critically assessed, and the developments attempts harnessed towards the benefit of the resource poor farmers. The study also suggested that fermentation would very likely be improved if desirable strains of lactic acid bacteria belonging to the genus *Lactobacillus* , *Lactococcus* and *Leuconostoc* were isolated and biochemically characterized and used for inoculum.

It is to be noted that both studies in food technology have started by surveying methods in the villages and identifying the equipment used by villagers and have finally attempted to suggest relevant village type technology. This is what we call "Farming systems approach".

2. Dry-land agronomy

The technology of dry-land farming in Southern Ethiopia is studied through conventional field experiments on varieties, planting densities, planting time, fertilizer application, soil and water conservation methods, and intercropping. Such experiments need to be repeated at several locations and over several years before general conclusions can be drawn. In this case we have used five sites, all in moisture stress areas widely scattered in the Southern Zone of Ethiopia. The experiments started in 1989. This year they are again planted, now the fourth year. This means that a considerable amount of date is now accumulated and we are able to draw some conclusions.

Without going into details, we now know that chosing the right quick maturing variety of maizw, using close spacing (80 x 15 cm), and proper water conservation method (mulch or bunded furrows or both), fairly reliable and high yields are obtainable if also fertilizers are applied. The experimental yields have varied between 2 and 8 tons per hectar with an overall average of approximately 4 tons. Comparing with farmers' yields of 1 to 1,5 tons in normal years, the yeld gap is tremendous. This yield gap is a major challenge which we will return to under theme 3.

The agronomic experiments also have indicated some intercropping patterns which should be further investigated in new trials. Particularly the compbination of newer varieties of beans and sweet potatoes with the drought tolerant and quick maturing maize varieties bred at Awassa College appear promising.

3. Soils

Technical description of soil profiles with emphasis on soil physical properties are done at the research sites of the dry-land agronomy experiments. This need to be followed up with chemical analyses and field experiments to clearly establish the suitability and potentials of the soils.

4 Agricultural economics

Some basic surveys are done. Demographic, economic and agricultural baseline data are collected. Major constraints to farm productivity appear to be lack of production inputs, shortage of oxen and implements, and shortage of labour during peak seasons.

C. Competence building

The research generates informal competence building within the participating institutions in Ethiopia and Norway. In addition to that, there is a component of

formal competence building through scholarships for academi : degrees. In our case, both master and doctor degrees are included.

Our M.Sc.-programmes are designed for NORAD-fellows from many developing countries. In the case of students from Ethiopia, we integrate the field work part of their studies in the programme we have in Awassa. This means logistical support and professional assistance. So far three academic staff at Awassa College have completed their M.Sc.-studies through this programme and one more is now in Norway for course-work. Two employees in Ethiopian Wildlife Conservation Organisation (EWCO) are sent by the EWCO/Oslo-project on wildlife-ecology for the same M.Sc.-programme. In addition to those, 14 other Ethiopians have done their M.Sc.-degrees on this programme since 1988, four of them through field support by Awassa College.

At doctor degree level, our project covers two scholarships, one for an Ethiopian on dairy technology and one for a Norwegian on resource economics. The required course-work and research would normally take four years and are therefore not yet completed. The progress so far is very satisfactory for both of them except for a delay of field work for the Norwegian student because of logistical problems and local unrest and insecurity in the study area.

III. Applicability, Prospects and Challenges

Trygve Berg

Our food technology projects have made us believe that simple improvement of village technology can provide significant gains in resource utilization. In the case of enset-processing, the resource in question is the time and strength of women. In the case of dairy technology, it is the milk and the milk products for home consumption and for sale.

These projects have started well and need to be continued.

The agronomy research has shown that there is a tremendous gap between what is attainable yields with known technology and what is actually achieved by farmers. Experimental yields of four to five times farmers' yield are common. Moreover, this can be achieved with use of water conservation methods which protect against Ethiopia's worst environmental hazard, the soil erosion.

The yield gap places Ethiopia in a situation which is different from that of the countries which have the green revolution behind them. In those countries the yield gap is narrowed down, in some places to nil. In certain rice cultivation areas in the Philippines, for instance, average farmers' yield is at the same level as experimental yield at leading research centres. The focus of the research is partly how to sustain the high yields under increasing pressure from environmental problems, and partly on basic research hoping for new scientific break-throughs.

In Ethiopia the challenge is entirely different. We know the great potentials, but we also know that the instant filling of the yield gap by pouring in new seeds and chemical fertilizers is neither economically feasible, nor practically possible, nor ecologically or socially advicable. The country will have to move stepwise starting with improved use of local and national resources. The research challenge will be on farm economics and resource economics as well as on on-farm agronomy research in order to find the economically and ecologically feasible path towards realisation of the productive potentials of the natural resource base.

In this connection links to other porjects in order to put development strategies into a broader social and ecological perspective would be desirable.

When we start working on the introduction of farm level technology-innovations, collaboration with implementing agencies such as the government extension services and the NGOs, will be needed. We foresee more NGO-ivolvement during years to come, compared to what has been the case in the initial phase of this programme.

These research challenges are more than enough to keep us busy for many years. Still we should be flexible enough to take up unforeseen challenges. It is the nature of research that it sometimes reveal entirely unexpected things. Let us finish with one example. I would again take you back to the dairy technology study.

Laboratory experiments of Ethiopian strains of lactic acid bacteria have shown that some of them have unique qualities which may render them commercially valuable in food industry and biotechnology. This may raise the issue of ownership and rights to profit and benefits. We have to be prepared to address such issues, may be as a subject for research on how to develop a contractual and legal framework for North-South collaboration on research with potentially valuable biological materials.

Integrated wildlife management and utilization in Borana

Leykun Abunie, Nils Chr. Stenseth and Per Ole Syvertsen

Introduction

The project "Integrated wildlife management and utilization in Borana, Ethiopia" is a collaborative effort between the Ethiopian Wildlife Conservation Organization (EWCO) and the Department of Biology, University of Oslo (UO). Fieldwork commenced in August 1990, five months after a much delayed signing of the agreement between the two institutions, and lasted for a total of twelve weeks up to early December 1990. Since then political developments in the country, bringing a geographic shift in insecurity from northern to southern regions, have prevented further fieldwork.

The project has three major objectives: (1) Research on resource competition between wildlife and livestock in the semi-arid Borana environment; (2) general technical assistance to EWCO through material support and informal training of field staff, and specific assistance by developing management proposals for Yabello Wildlife Sanctuary; and (3) competence building in EWCO through training of two staff members to graduate level (M.Sc. in Natural Resource Management) in collaboration with NORAGRIC, the Norwegian Center for International Agricultural Development.

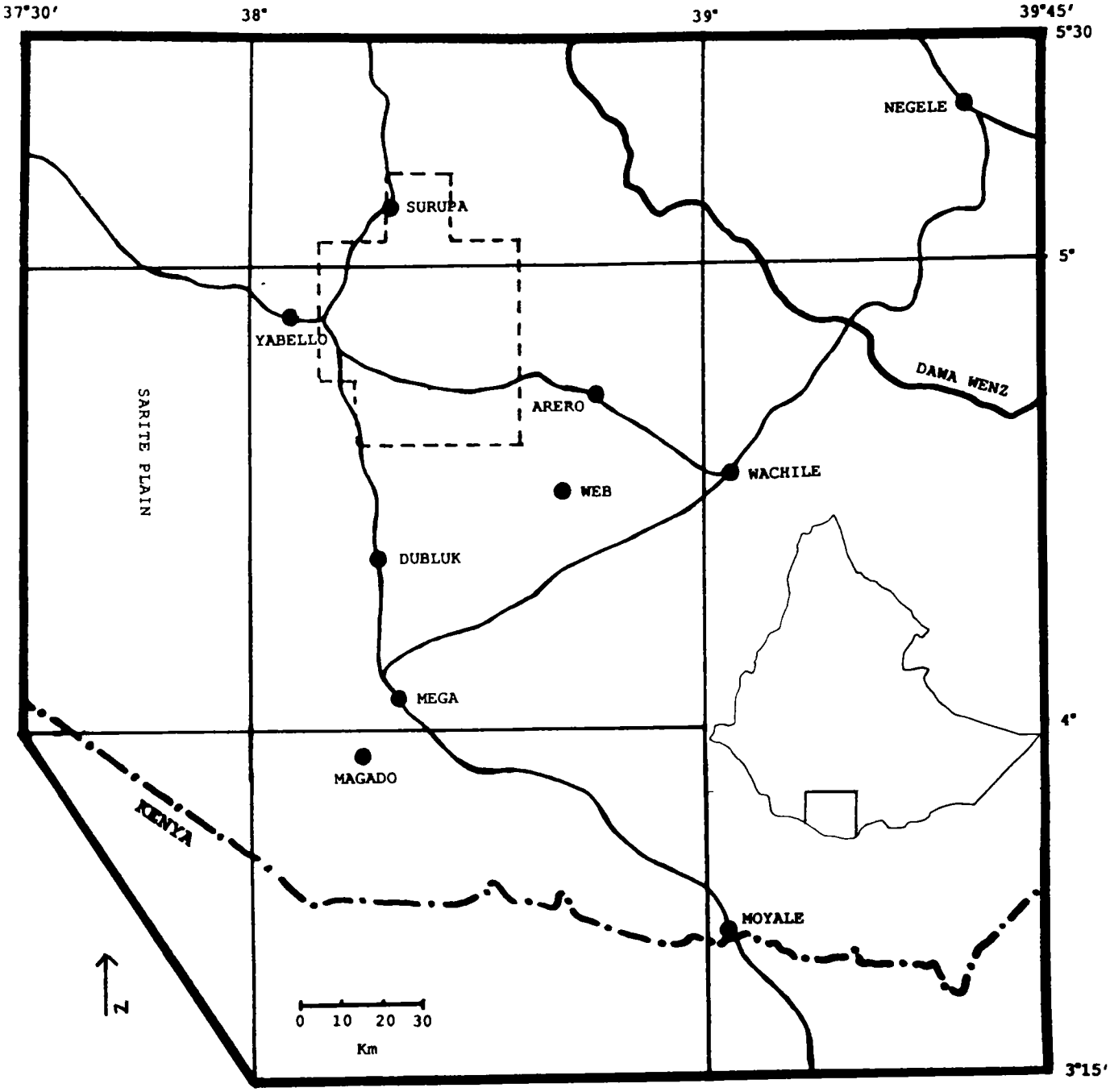
The short time available for the project has meant that objective (1) has been fulfilled to a very limited degree only. Objectives (2) and (3), however, are being accomplished well in accordance with the ideas of the project.

Study area

Fieldwork has been centered around the town of Yabello (4°56'N, 38°05'E) in Borana (previously Sidamo, now Oromo Region). Most work was carried out in the *c.* 2,500 km^2 large Yabello Wildlife Sanctuary; to a lesser extent also at the Sarite plain.

Yabello Wildlife Sanctuary (Fig. 1) is situated immediately east and northeast of the town, generally between 1,500 m and 1,700 m altitude. It consists largely of a gently undulating savanna, without permanent streams or natural lakes, dominated by communities of *Acacia, Combretum, Commiphora* and other trees and shrubs. Open grassland habitats are now scarce in the area, but this does not seem to have been the case in the recent past (AGROTEC 1974). The western

Fig. 1: Map of the Yabello area, Borana, with approximate limitation of Yabello Wildlife Sanctuary.



periphery carries remnants of degraded *Juniperus* forest. No infrastructure development of the conservation area has taken place, and apart from the Yabello - Arero road through the south-central parts of the Sanctuary and the main tarmac road near Yabello, the only motorable tracks are smaller tracks in the Did Tuyura - Did Yabello area along the western fringe. The Sanctuary was proposed in the early 1970's, but has not been gazetted, and is generally not considered in planning of regional development activities.

Sarite is a semi-arid plain at an altitude of *c.* 1,000 m, about 50 km west of Yabello in aerial distance. It is a more open, arid and grassland dominated habitat than the Sanctuary, and is less heavily used for livestock grazing.

Meteorological data are available from Yabello (*c.* 1,700 m). The climate is basically of the East African mode with two rainy season, during February-May and October-November, with the first period as the more reliable. Annual precipitation is generally in the range of 500-700 mm, of which about 40% falls in April-May (Alberro 1986). Periodic drought occurs, e.g. in 1991-92.

Borana people, predominantly cattle pastoralists, are numerically dominant in the Yabello area. Hills and surrounding areas near the town also support a mixed sedentary agricultural population. In recent years agriculture has penetrated deep into the pastoral areas and among traditional herders (Hodgson 1990).

The current wildlife scenery

Past information on wildlife in Borana is scarce. Largen et al. (1974) and Yalden et al. (1976, 1977, 1980, 1984, 1986) compiled all available information on distribution and status of mammals in Ethiopia, while Benson (1945-48) and Urban & Brown (1971) are the major references on birds in the region. Sorrell (1952) provides a description of the local wildlife setting about 40 years back. The region has close similarities with East African fauna and flora, perhaps clearest among the megafauna, but also exhibits elements of the Somali arid-adapted biomes at the Horn of Africa.

During fieldwork in 1990 and subsequent brief visits, a total of 41 species of mammals (excluding bats, insectivores and larger rodents) and 293 species of birds were identified in Borana, largely in the Yabello area. Some 60% of the mammals and *c.* 70% of the birds were recorded from the Sanctuary. The rare Grevy's Zebra (*Equus grevyi*) is found on the Sarite plain, but was not recorded in the Sanctuary. Among birds, Ethiopian Bushcrow (*Zavattariornis stresemanni*) and White-tailed Swallow (*Hirundo megaensis*) are particularly noteworthy; both species are endemic to Borana and have major sections of their distribution within the designated Sanctuary boundaries. The Bushcrow in particular is of high scientific interest, since it is believed to be a co-operative breeder (Collar & Stuart 1985).

Table 1. Species composition of the major herbivore community in Yabello Wildlife Sanctuary.

Grazers	Mixed/intermediate	Browsers
Common Zebra	Grant's Gazelle	Gerenuk
Equus burchelli	*Gazella granti*	*Litocranius walleri*
Beisa Oryx	Warthog	Günther's Dikdik
Oryx beisa	*Phacochoerus aethiopicus*	*Madoqua guentheri*
Hartebeest		Grimm's Duiker
Alcelaphus buselaphus		*Sylvicapra grimmia*
Cattle		Lesser Kudu
Sheep		*Tragelaphus imberbis*
Domestic equids		Greater Kudu
		T. strepsiceros
		Camel
		Goat

The composition of the ungulate community on the semi-arid savanna east of Yabello is shown in Table 1. Although eleven species of wild ungulates were recorded, the only common grazer was Common Zebra (*Equus burchelli*), and the overall dominant species was cattle. An aerial survey of wildlife and livestock was carried out in September, covering the Sanctuary and Sarite. Wildlife numbers were found to be very low, particularly in the Sanctuary area. In general, the Sarite plain today stands out as a more significant wildlife habitat than the Sanctuary, although the population of Common Zebra in the latter area, estimated at around 1,300 individuals (Table 2), is nationally significant (Equid Specialist Group 1992). Swayne's Hartebeest (*Alcelaphus buselaphus swaynei*) was seen in the Sanctuary during the survey. This is a most noteworthy record since this critically endangered antelope, confined to only four or five localities in Ethiopia after its extermination in Somalia, has not been reported from the region since the mid 1970's (Yalden et al. 1984). Presence of Swayne's Hartebeest in the area twenty years ago was instrumental in the establishment of the Sanctuary.

Table 2. Comparison of results from two aerial surveys in Borana. Data from June 1982 after Milligan (1983), September 1990 = this study. Legend E = population estimate, D = density (no. of animals/km^2), F = mean herd size.

Species	June 1982			September 1990		
	E	D	F	E	D	F
Common Zebra *E. burchelli*	-	-	-	1,290	0.30	11
Grevy's Zebra *E. grevyi*	-	-	-	180	0.15	2
Unidentified zebras	2,867	0.19	13	-	-	-
Cattle	324,267	20.95	68	198,670	36.12	51
Camel	7,558	0.49	11	15,292	2.78	11
Sheep/goat	101,825	6.58	68	27,060	4.92	24
Donkey	800	0.05	7	-	-	-
Horse	1,650	0.11	11	-	-	-
Domestic equids	-	-	-	946	0.17	3

Competition/range conditions

An aerial survey by the International Livestock Center for Africa (ILCA) in June 1982 (Milligan 1983) provides an opportunity for some comparisons with our study in September 1990 (Table 2). The ILCA survey primarily dealt with livestock, but included zebras without stating or separating between the two species. We did not distinguish between donkey and horse in 1990, and sheep and goats are likely to have been underestimated in our sample. A high number of observations for cattle and camel give fairly accurate estimates for these species.

The density of cattle in the Sanctuary and surrounding areas was found to have reached a high of about 40 animals/km^2 in September 1990, nearly twice the figure for the whole of the much larger census zone (15,475 km^2) in June 1982. Hence, the stocking level of cattle in September 1990 was very close to, or had overpassed, the estimated carrying capacity for the region (Milligan 1983). Camel density was estimated at six or seven times the June 1982 level.

This increase in livestock numbers is probably due to two main reasons. Since the animal die-off during the 1984-85 drought, development activities have escalated in the region. Much government and NGO effort has gone into providing new water sources in the rangelands through run-off water collection in surface basins during the rainy season for dry season use. Ponds have, for example,. been established in the Did Hara area in the Sanctuary (Hodgson 1990), an area traditionally reserved for wet season grazing. With water made available,

permanent settlement and grazing have - albeit indirectly - been encouraged. The area may have acted as a magnet to herd owners since Boran institutions for control of resource use, like communal pasture organisation and well ownership, has in effect been unable to enforce their functions.

It seems unlikely that local herd recovery alone can account for the September 1990 cattle population level. Cossins & Upton (1988), using a herd growth model with standard production parameters, found that herd recovery in Borana after the 1984-85 drought was likely to take at least 7 years. Hence, the recruitment area for the livestock present in Yabello Wildlife Sanctuary in September 1990 is unknown.

Camel numbers are based on a different line of reasoning. Camels are valued amongst Boranas largely as transport animals, for example, of water or goods to and from the market. Their remarkable adaptation to arid conditions is also important, since camels are still productive when other livestock perish. Hodgson (1990) reports that Boranas express an increased interest in keeping camels, but they lack both knowledge of camel breeding, and access to camel markets (which are largely among the hostile Somali tribes to the east) and they exhibit a reluctance to purchase the more expensive female animals. Therefore, assistance has been offered to facilitate their purchase of animals. Although it is, as of yet, perhaps unlikely to account for many animals, the apparent shift among Boranas in cultural values attached to camels may be significant.

At Did Tuyura in the western part of the Sanctuary, an area of *c.* 55 km^2 is fenced off as a Boran cattle breeding ranch under Government control. Local people were excluded from the ranch during 1990. The carrying capacity for the fenced area had been estimated at about 2,000 head of cattle, while the actual figure at the time was kept at less than 1,000 (Leykun Abunie 1991). Outside the fence, local people were themselves controlling range use (but in an area with external inputs as discussed above). These contrasting land use practices were the focus of attention for Leykun Abunie's M.Sc.-work (Leykun Abunie1991).

He found by comparing transects within and outside the ranch that Did Tuyura on average had a higher degree of plant coverage and percentage of palatable grass species than the areas to the east of the ranch. Both grasses and browse in the Sanctuary outside the fence were generally overutilized, while the ranch was underutilized. A series of road counts of animals in the two areas provided supportive evidence, as cattle densities were found to be about twice as high outside as compared to inside the fence (about 40 and 20 animals/km^2, respectively). It was further found that seedling frequencies of various *Acacia*- and *Commiphora*-species were high in both areas, indicating ongoing "bush encroachment".

No clear relationship between occurrence of livestock and distribution of wildlife were discovered, although recorded zebra densities tended to be higher at Did Tuyura than outside the fence, with a maximum density of 10 zebra/km^2 in

November (ground survey data). No evidence of seasonal movements of livestock was detected. Common Zebra seemed to be migratory in the Sanctuary area, but the pattern and extent of these movements could not be established.

Pastoralists and wildlife

A second major topic of the 1990 fieldwork was the relationship between pastoralists and wildlife, studied from a social point of view. Based on interviews and discussions with 50 men and 12 women, Lund (1991) provided a description of Boran knowledge of wildlife in their areas, and presented an interpretation of Boran perceptions of livestock/wildlife interactions and resource competition.

The Boranas claimed to take little interest in wildlife, although it was found that they possessed considerable knowledge of distribution, migration and ecology of the megafauna; their knowledge of birds were less comprehensive. Men knew more than women about wildlife (mammals and birds), and the difference was statistically significant ($t = 3.86 > t_{0.05}(60) = 1{,}67$). This is in accordance with expectations, since women do not hunt. No correlation between age and knowledge of wildlife was found. This may be because it is primarily young men that hunt.

Boran interest in wildlife centered around practical issues like loss of livestock to predators, provision of hides and meat, and - to some extent - crop damage. The pastoralists were not very concerned about competition for food and water between wildlife and livestock, although a majority of respondents would give [common] zebra as the only, or only important, competitor. Being the only (fairly) common and widespread wild grazer in the area today, this result is reasonable. Predators were most frequently mentioned as vectors of disease, before kudus (*Tragelaphus strepsiceros* and *T. imberbis*).

Few regulations on wildlife utilization and action against wild animals seem to exist in the Boran culture. Their political and ritual organisation, known as the *gada* system (Asmarom Legesse 1973), and territorial subdivision, is primarily a reflection of needs of their traditional economic entity, livestock. There seems, therefore, to be few obstacles in the Boran culture for a free utilization of e.g. game meat.

Further plans/ Conclusion

Much of the project work in 1990 was centered around animal surveys and assessment of the wildlife resource in Borana. The planned follow up involves use of radio telemetry in order to monitor zebra movements and range use, and evaluate their relationships with land use activities. It is anticipated that this phase can be initiated shortly.

The results from the animal distribution and range condition ana'ysis (Leykun Abunie 1991) showed that areas outside the Did Tuyura ranch fence were severely overgrazed. It would be a hasty conclusion, though, if this was taken to indicate that the traditional Boran institutions for resource management are unable to provide for sustainable use of the range resource. However, it may be that these institutions no longer are sufficient in the changing social and political setting of the region, particularly when it comes to coping with the breakdown of traditional grazing regimes caused by development of new water sources. This is a case for discussion with the team of social anthropologists.

It should be born in mind that EWCO is the national management and conservation body for Ethiopia's wildlife and wildland heritage. The organisation is responsible for management of the country's national parks, sanctuaries and wildlife reserves, as well as licencing of consumptive wildlife utilization in controlled hunting areas. A major part of Borana belongs to the latter category. In strict conservation areas (national parks and sanctuaries), strong regulations on human activities may frequently be warranted, while regulations can - and should - be more relaxed in other areas. The current status of wildlife, livestock and human populations in Borana strongly suggests that wildlife management in the region cannot be effective without the involvement and interest of local people.

The work by Lund (1991) and many others (e.g. Western & Pearl 1989) also point to the need to move from the "exclusion principle" to a model of integrating wildlife conservation with the needs of local people. The Borana plateau, where a number of development activities are ongoing, is one region where studies on how a fruitful wildlife - pastoralism interplay can be brought to market, could be carried out. Ethiopia is perhaps particularly interesting in this respect, since the country has initiated a process of decentralization of political power. The task calls for consorted efforts between biologists and social scientists.

References

AGROTEC, 1974. Southern Rangelands Livestock Development Project. Report produced for the Livestock and Meat Board, Imperial Ethiopian Government. AGROTEC - CRG - SEDES Ass., Rome.

Alberro, M. 1986. The Boran cattle and their tribal owners. World Animal Review 57: 30-39.

Asmarom Legesse, 1973. Gada. Three approaches to the study of African society. The Free Press, New York & London.

Benson, C.W. 1945-48. Notes on the birds of Southern Abyssinia. Ibis 87: 366-400, 489-509; 88: 25-48, 180-205, 287-306, 444-461; 89: 29-50; 90: 325-327.

Collar, N.J. & Stuart, S.N. 1985. Threatened birds of Africa and related islands. ICBP and IUCN, Cambridge.

Cossins, N.J. & Upton, M. 1988. The impact of climatic variation on the Borana pastoral system. Agricultural Systems 27: 117-135.

Hodgson, R.J. 1990. The Southern Sidamo Rangelands Project 1985-1988: Perspectives on Development Interventions and Extensions. Unpubl. report. [ILCA Library Code 633.75].

Equid Specialist Group, 1992. IUCN-SSC Equid Action Plan. Draft report. The World Conservation Union (IUCN) - Species Survival Commision.

Largen, M.J., Kock, D. & Yalden, D.W. 1974. Catalogue of the mammals of Ethiopia. 1. Chiroptera. Monitore zool. ital. (N.S.) Suppl. V: 191-220.

Leykun Abunie, 1991. Range use in Ethiopia: A case study of wildlife/livestock interfaces in Yabello Wildlife Sanctuary and adjacent areas, Borana Region. M.Sc.-thesis, NORAGRIC, Agricultural University of Norway.

Lund, O. 1991. Pastoralists and wildlife. A study of the human - wildlife relationships in Borana, southern Ethiopia. M.Sc.-thesis, NORAGRIC, Agricultural University of Norway.

Milligan, K. 1983. An aerial reconnaissance of livestock and human populations in relation to land use and ecological conditions in the SORDU project area of southern Ethiopia. JEPSS Research Report No. 5, International Livestock Centre for Africa, Addis Ababa.

Sorrell, D.S. 1952. Wild life in southern Ethiopia. Oryx 1: 285-290.

Urban, E.K. & Brown, L.H. 1971. A checklist of the birds of Ethiopia. Haile Sellassie I University Press, Addis Ababa.

Western, D. & Pearl, M.C. (eds.), 1989. Conservation for the Twenty-first Century. Oxford University Press, New York and Oxford.

Yalden, D.W., Largen, M.J. & Kock, D. 1986. Catalogue of the mammals of Ethiopia. 2. Insectivora and Rodentia. Monitore zool. ital. (N.S.) Suppl. VIII: 1-118.

Yalden, D.W., Largen, M.J. & Kock, D. 1977. Catalogue of the mammals of Ethiopia. 3. Primates. Monitore zool. ital. (N.S.) Suppl. IX: 1-52.

Yalden, D.W., Largen, M.J. & Kock, D. 1980. Catalogue of the mammals of Ethiopia. 4. Carnivora. Monitore zool. ital. (N.S.) Suppl. XIII: 169-272.

Yalden, D.W., Largen, M.J. & Kock, D. 1984. Catalogue of the mammals of Ethiopia. 5. Artiodactyla. Monitore zool. ital. (N.S.) Suppl. XIX: 67-221.

Yalden, D.W., Largen, M.J. & Kock, D. 1984. Catalogue of the mammals of Ethiopia. 6. Perissodactyla, Proboscidea, Hyracoidea, Lagomorpha, Tubulidentata, Sirenia and Cetacea. : Monitore zool. ital. (N.S.) Suppl. XXI: 31-103.

Peasant Production and Development in Ethiopia

Introduction

The Peasant Production and Development (PPDE) research programme has since its inception been a cooperative effort between Addis Ababa University, Institute of Development Research (AAU-IDR) and University of Trondheim (UNIT). The programme leadership had been shared between the two institutions, as specified in the contract between the institutions of November 1988. Svein Ege has been the Norwegian project leader throughout the period 1988-92, and was also responsible for the initial planning before the signing of the contract (1986-88). The core researchers, and especially the project leader, have experienced heavy administrative burdens attached to the programme, often in serious time conflict with their research interests and obligations.

The cooperation with IDR has been very fruitful, both in terms of academic initiatives, and in practical and administrative matters.

Many of the specific research projects under the PPDE programme are yet to be finalised. A number of reports, papers and conference proceedings have however been produced to make preliminary findings available.

Dessalegn Rahmato

I was elected coordinator of the Peasant Production and Development Project (PPDE) in October 1990, and since then we have done our best to expand and deepen the research component of the Project. The main objective of PPDE as originally planned was to expand our knowledge of peasant conditions in North Shoa, to produce a series of studies based on direct, field research, and to build up our research capabilities. Due to the nature of the enterprise -research and publication of findings have a long gestation period - the quality and success rate of the Project cannot be adequately judged at the moment.

My predecessor submitted a progress report on the activities of the Project from its inception up to 1990 at the Second Annual Meeting of the AAU-Norwegian Universities Research Collaboration held here in Addis Ababa, and I shall not repeat the contents of that report here. When I became Coordinator, the project had five staff members engaged in active research, one field supervisor, and a dozen or so field assistants employed by researchers on a short-term basis. Over the next year, and with our budget situation in good order, we were able to attract more researchers to join the Project and also to expand the scope of the research endeavor. At the same time three of the original staff members of the Project left the country for further studies, two of them supported financially by the Project.

While staff turnover has been and continues to be a constraint, the Project's programme of financing further education is a form of long term investment, and will contribute to the Institute of Development Research's (IDR) research capabilities. One of the staff members who went abroad through the Project is now back with IDR, having completed his doctoral studies; the second beneficiary is expected to return in the fall of 1993. The Project will support one more staff member in the fiscal year 1992-93., this one for a Master's programme at a university in Britain.

Of the five studies that were on-going in the last quarter of 1990, four have been completed, of which the following two have been prepared in a form conducive for publication:

Gebrehiwot Ageba: Rural Credit and Peasant Indebtedness in North Shewa.

Dejene Aredo: An Anatomy of the Household Economy: the Case of a Village in Northern Shewa.

The variety of research currently represented in the Project is both encouraging and an indicator of our future direction. Development is conceived not in the narrow economistic sense but as a wider project involving many aspects of human endeavor. We are moving away from the economist/developmentalist framework to broader concerns involving sociology, geography, environment, demography, popular culture and household dynamics. The list of research actively pursued at the present are the following:

Daniel Gamachu (continuation of previous project): Highlands of North Shewa, Welo and Tigray (Environment).

Dejene Aredo: Continuation of his studies on household dynamics, the labour process and village economy.

Gebrehiwot Ageba: Rural Credit and Peasant Indebtedness.

Solomon Gebre: Small Rural Towns and Rural Development (Sociology).

Bereket Kebede: The Value of Children in Peasant Agriculture.

Zemenfes Tsighe: Environment, Technology Perception and Decision Making.

Belay Tegegne: Problems and Prospects of Soil Conservation.

Tesfave Tafesse: The Impact of Rural Settlement on Rural Development

Assefa Hailemariam: Poverty and Household Demographic Behaviour.

Fekade Azeze: Famine and Food in Oral Literature.

Setargew Kenaw: The Significance of Traditional Beliefs in Rural Development: Spirits and Cults in N- Shoa.

We expected drafts of reports of some of the projects to be available beginning in October of this year. Many of the above researchers have attended academic conferences both at home and abroad, and have used the findings from their field research in the papers and discussions they have delivered at these conferences. I would like to mention in particular Daniel Gamachu, Dejene Aredo, Gebrehiwot Ageba, and Tesfaye Tafesse. In the kremt ("winter")period of this year, two researchers, Daniel Gamachu and Fekade Azeze spent some time at the University of Trondheim as visiting fellows.

We have planned two workshops in the 1992-93 period, one in Addis Ababa sometime inn the Fall, and a second one in Trondheim early in 1993. Hopefully, the papers presented at the workshops will be published as special PPDE Occasional Papers. If book-length manuscripts are prepared our counterpart in Trondheim will publish them as special monographs.

This year we tried to provide small grants to Graduate students working on their theses. Unfortunately, we were able to attract only one candidate. We hope we will have better luck next year. In this year also. PPDE had formally decided in principle to extend the Project to include Wollo and Tigray. All three regions share a lot of features in common, including famine history, vulnerable ecology and a rugged environment, as well as poverty and destitution. This will provide suitable conditions for comparative analyses and evaluation of development issues.

Through a special grant from the Norwegian side we were able to purchase several hundred books and research monographs for IDR's research library. All the books have been accessed in the library and are now being used by researchers and graduate students. We have a serious shortage of books and publications relating to development and rural studies, and we plan to place additional orders as soon as the funds are available. In addition, IDR has received several shipments of computers, office equipment and accessories through the Project in the past two years.

The construction of the field station in Armania, North Shoa, which was started in 1989, has now been completed. Unfortunately, due to reasons beyond our control, including the unsettled conditions in the area at the time, it was completed above budget and beyond schedule. The station nevertheless, which includes space for working and lodging, will serve as our headquarters in the area. The station is administered by a field manager, and also supervises all field research activities and has eight field assistants under him. These assistants, who are placed in different localities in the areas, were hired on a contractual basis to serve as a pool of experienced enumerators. They will be assigned to researchers depending on their needs and research sites.

There are a few problems which I wish to raise in this connection. The problems are not specific to the PPDE but are part of a larger set of constraints that had had a serious impact on the University as a whole. There has been a considerable brain drain from the country but in particular from the University in the last fifteen years. This was partly due to the revolution, political uncertainties, better prospects elsewhere and other reasons too numerous to mention. The University was unable to fill up the academic vacancies with sufficiently qualified people, and as a result the available staff became more and more over-burdened with teaching work over the years. Conditions at present are such that many staff members have little time to devote to research. Moreover, it usually takes over a year between the inception of a project and the time the field work is begun due to heavy teaching commitment. At the same time, since most research endeavor does not involve adequate remuneration for the researcher, academic staff tend to seek paying consultancies instead. As a result of all these and related other problems, PPDE had considerable difficulties attracting high caliber researchers to the Project.

Despite these problems, however, the prospects are quite encouraging. As a result of the Project, more and more work is being done in the area of rural development. The quality of the research is improving , more of the younger researchers and academic staff are benefiting from the research experience, and IDR's research capabilities are being strengthened.

Reporters´ closing remarks

Reporters' closing remarks

This summary is based mainly upon the information from the Ethiopian presentations, but is discussed with the other representatives, and appears to apply to the other countries as well.

All of the research projects in Ethiopia, although they have evolved differently, are now well established. Functional links have been made between the respective institutions in Ethiopia and Norway. The same applies to both Sudan and Mali. Despite severe constraints in all of the countries concerned; including war, social unrest and other difficulties, important results are emerging. This is a great achievement which proves the first point, that the projects are well established. In addition, research collaboration has been developed. Both of these will form a good basis for future development.

We have heard several times that the process of initiating research is a long one. Everyone here has expressed a desire that the program should be continued. This is based not only on that the results are not yet ready, but also on that much remains to be done. We hope it is a desire for the Norwegian funding agencies to maintain research links with the countries concerned. In which case, we think it both wise and rational that the established links should form a basis for future collaboration.

The nature of future competence building has not been discussed, but we have understood it to include the development or maintenance of competence within the countries themselves. This should be the ultimate goal of competence building.

In addition, it has been strongly pointed out that there is a need for collaboration or networking. We sense that a triangular collaboration, South-South-North, should be encouraged. From Ethiopia, the best example we have would be the anthropology project.

Finally, during this meeting quite a lot of time was spent discussing the dissemination of research results. A number of different methods have been attempted in the various projects and programmes. Further development of the dissemination of results to the scientific community, to implementors and to the public should be encouraged. This will also improve the window the university and research organzations have to the community.

In the case of the Mali-Programme, planning of the research collaboration was time-consuming at the outset, partially due to general lack of information and awareness of the Gourma. The importance of building up trust and respect between researchers given the basic differences between methodologies used in the various disciplines or cultures was stressed. A platform is now established for carrying out inter-disciplinary and cross-cultural research collaboration.

Having preliminary research results available will also facilitate planning of future research in the area.

The benefits of the collaboration between Norway and Mali as expressed particularly by the Malians, was training in modern research techniques and contact with international research communities.

One aspect of the collaboration which is perhaps unique in Mali, is the structure of the program. Coordination by the National Centre for Scientific and Technological Research, CNRST, creates an inter-institutional collaboration maintaining contacts with both the academic schools and the national research institutions. These research institutions have strong links both to national planning boards and to implementing agencies giving a strong potential for collaboration between the NGOs, multilateral organizations and research communities. Close contacts have already developed between the research programme in Mali and WHO, IFAD, and ILCA, and there is a potential for establishing closer contacts with, for example, UNSO, IIED, IUCN, and the World Bank, and various NGOs in the future.

The Sudanese representatives have two points to add, as they have repeatedly come up in our presentations.

The first point, is the concern from the Sudan team from day one, of meeting unrealistic expectations. There were high expectations on all, from researchers, the local people, NGOs and others, that seem to have created anxieties and worries among the researchers. These expectations were unrealistic given the various constraints the researchers were faced with.

The second point is our concern in establishing linkages with the local people, institutions, NGOs, government officials, and institutions for the purpose of rendering our research reports applicable and relevant to the crucial problems that we are attempting to resolve.

Schedule

Schedule

Saturday, August 22, 1992

Check in and registration

Sunday, August 23, 1992

All day field trip to Debre Sina

Monday, August 24, 1992

Chairman Dr. Demissu Gemeda

8:30 - 8:45	Brief Introduction	Dr. Aregay Waktola Research and Publications Officer, AAU
8:45 - 9:45	Opening Address	Dr. Makonnen Dilgassa Academic Vice President, AAU
	Mr. Geir Løkken	Research Unit Norwegian Ministry of Foreign Affairs
	Mr. Gunnar Øygard	Vice Chairman Norwegian Universities' Committee for Development Research Education
9:45 - 10:15	Coffee Break	
10:15	First Session Begins	

Theme One: Approaches and Methodology

10:30 - 11:30 Ethiopia
Chairman Prof. Abdela Gaffar M. Ahmed

11:30 - 12:00 Mali
Chairman Johan Helland

12:00 - 12:30 Sudan
Chairman Dr. Trygve Berg

12:30 - 2:00 Lunch Break

2:00 - 2:30 Presentation of Sudan continues
Chairman Dr. Trygve Berg

Theme Two: Achievements and Highlights

2:30 - 3:30 Presentation of Ethiopia
Chairman Professor Abdel Gaffar Mohmed Ahmed

3:30 - 3:45 Coffee Break

5:30 - 8:00 Dinner Break

8:00 - 9:00 Presentation - Sudan

Tuesday, August 25, 1992
Theme Three: Applicability, Prospects and Challenges

8:00 - 9:00 Presentation - Ethiopia
Chairman Prof. Abdel Gaffar

9:00 - 10:00 Presentation - Mali
Chairman Johan Helland

10:00 - 10:30 Coffee Break

10:30 - 11:30 Presentation - Sudan
Chairman Dr. Trygve Berg

11:30 - 12:30 General Discussion

12:30 - 2:00 Break

2:00 - 3:30 Interdisciplinary and Inter-country Collaboration
Chairman Dr. Aregay Waktola

3:30 - 4:30 Rapprteurs report and Discussion
Chairman Dr. Trygve Berg

4:30 - 5:30 Winding up and closing
Chairman Dr. Tadesse Alemu

Wednesday, August 26, 1992
Visit to ILCA Facilities

9:30 - 10:00 ILCA Slide Show
10:00 - 10:30 Library and Documentation Services
10:30 - 11:00 Computer Section
11:00 - 11:30 Nutrition Laboratory
11:30 - 12:00 Genebank

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Norwegian-African Research Conference
Addis Ababa 22-26 August 1992

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